BIODIVERSITY, SCALE AND SPATIAL DIFFERENCES

Conceptual entanglements, management objectives, and emerging relations in the governance of Areas Beyond National Jurisdiction

A Thesis submitted to School I - School of Education and Social Sciences of the University of Oldenburg in partial fulfilment of the requirements for the degree and title of

Doctor of Philosophy (Dr Phil.)

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Abstract

Biodiversity is a complex, evolving, and contested 21st-century concept that addresses strained human-environment relationships and threats to life on Earth. While often seen as a singular term, it encompasses a web of concepts and practices shaped by scientific, social, political, economic, legal, and technological factors influencing biodiversity understanding and governance in specific contexts. Ignoring these factors and contexts results in challenges in setting biodiversity objectives. This thesis, therefore, focuses on three crucial questions: Who defines or measures biodiversity? Why is it defined in this way at a particular time or place? And for whom?

This research mainly focuses on ocean biodiversity, particularly through the 2023 Agreement on Biodiversity Beyond National Jurisdiction (BBNJ) or the High Seas Treaty. This Agreement aims to conserve and sustainably use marine biodiversity in Areas Beyond National Jurisdiction (ABNJ) through tools and approaches such as Marine Genetic Resources (MGRs), Access and Benefit-Sharing (ABS), Area-Based Management Tools (ABMTS), Including Marine Protected Areas (MPAS), Environmental Impact Assessments (EIAs), as well as Capacity Building and Technology Transfer (CB & TT). However, differing interpretations of the term biodiversity among stakeholders made it challenging to develop the concepts and objectives of the treaty and will influence its implementation.

The thesis explores these interpretations, drawing on insights from evolutionary biology, ecology, political ecology, critical geography, socio-legal theories, communication and media studies, and science and technology studies (STS) applied to the BBNJ negotiations. It uses a combination of semi-systematic and integrative literature reviews on biodiversity and BBNJ processes, participant observations and engagement during the BBNJ negotiations in New York, interviews with national delegates, legal analyses of frameworks like the 1982 United Nations Convention on the Law of the Sea and the 1992 Convention on Biological Diversity, textual analyses of draft texts and the final Agreement, and qualitative and quantitative analyses of institutional frameworks and participatory dynamics based on BBNJ participant lists and ethnographic experiences.

This study exposes the power dynamics that shape the contested nature of biodiversity understanding and governance and ABNJ as a global commons. It highlights how biodiversity,

while used strategically to mobilise initiatives like the BBNJ, can also obscure underlying social, economic, and political agendas. This research shows how certain actors, such as Indigenous Peoples and more-than-human entities like fish, are excluded or given special status in global biodiversity discussions. It also critiques static and fragmented ocean regulations that separate biological from geological considerations and explore the challenges of implementing tools like MPAs in ABNJ descriptively and normatively. The thesis introduces the new term, *landlocked ocean*, to reflect power dynamics and global ocean governance imaginaries shaped by terrestrial and territorial philosophies, which hinder collective action.

Ultimately, the thesis provides a critical interdisciplinary framework for understanding biodiversity governance. Scholars and practitioners in biodiversity studies, environmental management, and global commons should emphasise that how biodiversity is defined—by whom, when, and for whom—has crucial implications for addressing inequality and ensuring environmental protection in global spaces, especially in the face of unprecedented change.

Zusammenfassung

Die Biodiversität ist ein komplexes, sich entwickelndes und umstrittenes Diskursfeld des 21. Jahrhunderts, das die angespannten Beziehungen zwischen Mensch und Umwelt sowie die Bedrohungen für das Leben auf der Erde thematisiert. Während der Begriff oft als einheitlich betrachtet wird, umfasst er ein Netzwerk von Konzepten und Praktiken, das durch wissenschaftliche, soziale, politische, wirtschaftliche, rechtliche und technologische Faktoren geformt wird, die das Verständnis und die Steuerung von Biodiversität in spezifischen Kontexten beeinflussen. Die Vernachlässigung dieser Faktoren und Kontexte erschwert das Setzen von Biodiversitätszielen. Diese Arbeit widmet sich daher drei zentralen Fragen: Wer definiert oder misst Biodiversität? Warum wird sie in einer bestimmten Zeit oder an einem bestimmten Ort auf diese Weise definiert? Und für wen?

Der Schwerpunkt dieser Forschung liegt auf der Biodiversität in den Ozeanen, insbesondere im Rahmen des 2023 abgeschlossenen Abkommens zur Biodiversität jenseits nationaler Gerichtsbarkeiten (BBNJ) oder Hochseevertrag. Dieses Abkommen zielt darauf ab, die Meeresbiodiversität in Gebieten außerhalb nationaler Gerichtsbarkeiten (ABNJ) zu bewahren und nachhaltig zu nutzen, unter Anwendung von Instrumenten und Ansätzen wie Meeresgenetischen Ressourcen (MGR), Zugangs- und Vorteilsausgleich (ABS), Gebietsbasierte Managementwerkzeuge (ABMT) einschließlich Meeresschutzgebieten (MPA), Umweltverträglichkeitsprüfungen (UVP) sowie Kapazitätsaufbau und Technologietransfer (CB & TT). Unterschiedliche Auslegungen des Begriffs Biodiversität unter den Interessengruppen erschwerten jedoch die Entwicklung der Konzepte und Ziele des Vertrags und werden seine Umsetzung beeinflussen.

Diese Arbeit untersucht die verschiedenen Auslegungen, gestützt auf Erkenntnisse aus Evolutionsbiologie, Ökologie, Politische Ökologie, Kritische Geographie, Sozial- und Rechtswissenschaften, Kommunikations- und Medienwissenschaft sowie Science and Technology Studies (STS), angewandt auf die BBNJ-Verhandlungen. Es werden semi-systematische und integrative Literaturübersichten zur Biodiversität und zu BBNJ-Prozessen, Teilnehmerbeobachtungen und Beteiligungen während der BBNJ-Verhandlungen in New York, Interviews mit nationalen Delegierten, rechtliche Analysen von Rahmenwerken wie dem Seerechtsübereinkommen der Vereinten Nationen von 1982 und dem Übereinkommen über die biologische Vielfalt von 1992, Textanalysen von Vertragsentwürfen und des finalen Abkommens sowie qualitative und quantitative Analysen institutioneller Rahmenbedingungen

und partizipativer Dynamiken auf Basis von BBNJ-Teilnehmerlisten und ethnographischen Erfahrungen eingesetzt.

Diese Studie legt die Machtdynamiken offen, die die umstrittene Natur der Biodiversitätsgovernance und der ABNJ als globales Gemeingut prägen. Sie zeigt auf, wie der Begriff der Biodiversität zwar strategisch genutzt wird, um Initiativen wie den BBNJ zu mobilisieren, dabei jedoch auch zugrunde liegende soziale, wirtschaftliche und politische Agenden verschleiern kann. Diese Forschung verdeutlicht, wie bestimmte Akteure, wie indigene Völker, sowie mehr-als-menschliche Entitäten, wie Fische, entweder ausgeschlossen oder in globalen Biodiversitätsdiskussionen als besonders privilegiert behandelt werden. Sie kritisiert ferner statische und fragmentierte Ozeanregulierungen, die biologische von geologischen Überlegungen trennen und untersucht die deskriptiven sowie normativen Herausforderungen der Implementierung von Instrumenten wie MPAs in ABNJ. Die Arbeit führt neue Begriffe ein, wie den “landlocked ocean”, um Machtdynamiken und die Vorstellungen globaler Meeresgovernance, die durch terrestrische und territoriale Philosophien geprägt sind und kollektives Handeln erschweren, zu reflektieren.

Letztlich leistet die Arbeit einen theoretischen Beitrag, indem sie ein kritisches, interdisziplinäres Rahmenwerk zum Verständnis der Biodiversitätsgovernance bereitstellt. Sie ist sowohl für Forschende als auch für Praktiker:innen in Biodiversitätsstudien, Umweltmanagement und globalen Gemeingütern von Relevanz und betont, dass die Definition von Biodiversität – von wem, wann und für wen – wesentliche Auswirkungen auf die Bekämpfung von Ungleichheiten und den Umweltschutz in globalen Räumen hat, insbesondere angesichts beispielloser Veränderungen..

Declarations

Statement of Originality

I declare that this thesis has been independetly written and contains no material that has been accepted for a degree or diploma by any university or institution, except as background information, which is duly acknowledged. To the best of my knowledge, this thesis contains no material previously published or written by another person, except where it is explicitly cited in the text.

Date: 08.11.2024 Signed: (Solomon Sebuliba)

Statement of Ethical Conduct

The research associated with this thesis was approved by the University of Oldenburg Ethics Committee and abides by the international and Germany regulations on good scholalry practices.

Date: 08.11.2024 Signed: (Solomon Sebuliba)

Statement regarding published and unpublished work contained within the thesis

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Date: 08.11.2024 Signed: (Solomon Sebuliba)

Publications

Material from Chapter 8 has been published as follows:

Sebuliba, Solomon. “The Landlocked Ocean: Landlocked States in BBNJ Negotiations and the Impact of Fixed Land-Sea Relations in Global Ocean Governance.” *Frontiers in Marine Science,* vol. 11, 2024, article 1306386..

Acknowledgements

A belief in a higher power has guided this journey. I am grateful to God, who always leads us to triumph. I also want to express my deep appreciation for the supportive community around me, particularly at the Alfred Wegener Institute and the Helmholtz Institute for Functional Marine Biodiversity (HIFMB) at the University of Oldenburg. The conducive work environment and financial support have been invaluable.

I extend special thanks to Dr Katherine Sammler, who inspired the initial research question on biodiversity, challenged my foundational thinking, and provided unwavering academic, supervisory, and moral support throughout this period, even amid institutional changes. I am profoundly grateful to Prof. Dr. Kimberley Peters for her invaluable feedback on various chapters and her administrative support and encouragement. Dr. Sammler and Prof. Peters have established a high standard of excellence, balancing care, hard work, collaboration, and independence, preparing me for the next career phase.

I would also like to thank Dr. Kristin Tietje for her support and encouragement in navigating the university's bureaucratic challenges, which allowed me to concentrate on writing this thesis.

For the empirical portion of this study, I owe much to those who shared their knowledge with me, including my supervisors, Dr Sammler and Prof. Peters, and external advisory committee members, Dr Alice Vadrot and Dr Tom Nurmi. I also appreciate Dr Bianca Haas' introduction to various fisheries communities and perspectives, the delegations involved in the BBNJ negotiations, and all the participants in interviews and knowledge exchanges. Special thanks to the interdisciplinary community at HIFMB. Their diverse perspectives, club meetings, and presentations helped refine my arguments. Additionally, I am grateful to the Marine Political Ecology Collective, the Marine Governance Group, and especially my office mate Merdeka Agus Saputra for their constructive ideas and feedback. I would also like to acknowledge my supportive colleagues; Anna, Alica, Kevin, Laura, Jonas, Jannik, Jana, Ole, Tabea, Pedro, Rana, Geraint, Alexa, Vani, Soli, Amelia, and Rebecca—who made this journey more manageable.

I appreciate the POLMAR graduate school and its team—especially Dr. Claudia Hanfland, Dr. Claudia Sprengel, and Christine Hieber, MSc. —for their additional research funding and opportunities that have enriched this research, including courses and international experiences (UN Ocean Conference 2022, the Rhodes Academy, regional fisheries meetings, and a semester abroad in Zanzibar).

To my family in Uganda—Mum, Dad, Agie, Maggie, Mary, Paul, and my nieces—thank you for your unwavering support.

Finally, to my dear wife, Dr. Donam Tushabe and children, the Hananiahs, thank you for enduring my physical and mental absence, the hours of silence in front of the computer screen, and the months of constant work. Your support has made this journey possible.

The responsibility for the content of this thesis is entirely my own.

Oldenburg, October, 2024

Solomon Sebuliba.

Dedication

To my three musketeers, Donam, Jemimah and Adnonijah.
Everything is possible if you dare to believe it!

List of acronyms

ABMTs	Area-Based Management Tools
ABNJ	Areas Beyond National Jurisdiction
ABS	Access and Benefit Sharing
AG	African Group
AOSIS	Alliance of Small Island States
ASEAN	Association of Southeast Asian Nations
BBNJ	Agreement for Biodiversity Beyond National Jurisdiction
CARICOM	Caribbean Community
CB	Capacity Building
CB&TT	Capacity Building and Transfer of Marine Technology
CBD	Convention on Biological Diversity
CCAMLR	Commission for the Conservation of Antarctic Marine Living Resources
CHP	Common Heritage Principle
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CLAM	Core Latin American Group
DOALOS	Division for Ocean Affairs and the Law of the Sea
EAP	East Asia and the Pacific
ECA	Europe and Central Asia
EEZ	Exclusive Economic Zone
EIAs	Environmental Impact Assessments
EIG	Environmental Integrity Group
EU	European Union
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FOH	Freedom of the High Seas
G77	Group of 77 and China
GDPPC	Gross Domestic Product per Capita
HI	High Income
IATTC	Inter-American Tropical Tuna Commission
ICCAT	International Commission for the Conservation of Atlantic Tunas
ICRW	International Convention for the Regulation of Whaling
IGCs	Intergovernmental Conferences

IMO	International Maritime Organization
Inc. Grp.	Income Group
IOC	Intergovernmental Oceanographic Commission
IOs	International Organizations
IOTC	Indian Ocean Tuna Commission
ISA	International Seabed Authority*
IWC	International Whaling Commission
LAC	Latin America & Caribbean
LDC	Least Developed Countries
LDC	Least Developed Country
LI	Low Income
LLC	Landlocked Countries
LLDC	Landlocked Developing Countries
LMDC	Like-Minded Developing Countries
LMI	Lower Middle-Income
MARPOL	International Convention for the Prevention of Pollution from Ships
MDs	Movies and Documentaries
MENA	Middle East and North Africa
MGR	Marine Genetic Resources
Mining Code	International Seabed Authority Mining Code
MP	Maritime Presence (all ship types by flag)
MPA	Marine Protected Area
MPAs	Marine Protected Areas
NAR	North America
NAFO	Northwest Atlantic Fisheries Organization
NEAFC	North East Atlantic Fisheries Commission
NPFC	North Pacific Fisheries Commission
OECD	Organisation for Economic Co-operation and Development
OIs	Online Imagery
PSIDS	Pacific Small Island Developing States
RFMO	Regional Fisheries Management Organization
SAR	South Asia
SDGs	United Nations Sustainable Development Goals

SIDS	Small Island Developing States
SSA	Sub-Saharan Africa
TT	Transfer of Marine Technology
UMI	Upper Middle-Income
UN	United Nations
UNCLOS	United Nations Convention on the Law of the Sea
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFSA	United Nations Fish Stocks Agreement
UNGA	United Nations General Assembly
VCLT	Vienna Convention on the Law of Treaties
WCPFC	Western and Central Pacific Fisheries Commission
WWF	World Wildlife Fund

Note that this list is not exhaustive as it does not include country acronyms and all organisations that participated in the BBNJ negotiations without any specific discussions. Find those in the relevant sections and tables.

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A guide for a non-expert audience

This thesis covers various topics that may feel overwhelming, especially for non-experts. This one-page summary is meant to guide non-experts through the thesis's main ideas and key points.

The thesis explores how scientists and policymakers understand, frame, and impact societies' relationship with the diversity of life on this planet, especially in marine habitats worldwide. It is not just a scientific study but a reflection on this crucial moment as extinction rates of between 200 and 2,000 extinctions occur every year driven by human impacts, and what kind of future we want to create or leave behind for future generations. This reflection is set against the backdrop of our significant challenges today. While intergovernmental teams and international negotiations have been struggling to address these issues and find solutions, progress has been slow, especially now with conflicts like those between Russia and Ukraine and Israel and Palestine. The world is deeply divided, and finding common ground seems more complex than ever.

Nevertheless, in the middle of all this, something positive happened in June 2023. After more than 20 years of talks, governments came together to agree on a plan to protect and use marine life in areas that belong to no single country—parts of the ocean known as the High Seas and the Seabed. These areas are unique because they belong to everyone, yet they have been largely ignored and poorly managed. This agreement, called the BBNJ (Biodiversity Beyond National Jurisdictions) Agreement, is a big step toward working together to protect managing the largest and our shared habitat on earth, the ocean commons. Biodiversity is an essential but imperfect idea and metric for measuring the variety of life. This moment of analysis is essential as this new agreement has just been negotiated. Not everyone has an equal voice/participation in this negotiation. However, reaching this deal was not easy. The involved governments, organisations, and the public all had different ideas about what the agreement should focus on. The principal question was how can we use things (resources) equally and fairly so that they are protected and not depleted, or how can we protect things (resources) in a way that they are not depleted yet still being used? Which comes first, and which is the most important in this context?

This study involved closely watching and participating in the discussions between countries and groups as they created the BBNJ Agreement to protect ocean life. The author examined records of these meetings, interviewed people involved, and reviewed essential documents to

understand the main points of conflict and cooperation. This information was then analysed to see how different groups define biodiversity, approach ocean protection, and deal with issues of power and fairness. The BBNJ Agreement offers hope for a shared global effort to protect ocean life, but it also reveals that different ideas about biodiversity can cause disagreements. For the agreement to work, countries need to find common ground on fairly and sustainably managing ocean resources.

Governments proposed four main strategies to achieve these goals. These include:

1) Equal access to marine resources and sharing the benefits (known as Marine Genetic Resources and Access and Benefit Sharing).
2) Designating protected areas in the ocean where human activities are limited (known as Area-Based Management Tools, including Marine Protected Areas).
3) Assessing the potential environmental damage of activities before they are allowed (Environmental Impact Assessments).
4) Building capacity and sharing technology to manage these areas.

Despite these proposals, many governments and interested parties remain sceptical about how practical these approaches are in protecting these last habitats. Ultimately, the agreement was adopted with some aspects of life framed in economic terms, like genetic resources, included, while others, like fisheries, were partly excluded. This democratic process will also inform the ratification and entering into force of the Agreement, which means some voices were heard. In contrast, others were left out, potentially leading to a disagreement.

Part 1: Setting the scene and the analytical approach

Chapter 1: Project background

1.1. Introduction

The world is at a critical crossroads as the ongoing debate on mass extinctions, the loss of species and habitats, ecosystem degradation and change, and the potential collapse of the planet's ability to sustain life continue to draw public attention. At this pivotal moment, international efforts have been directed towards the oceans, particularly in Areas Beyond National Jurisdictions (ABNJ), considered by some as the last conservation frontier on earth (Di Giminiani and Oakley, 2023; Gjerde et al., 2016; Hall, 2001; Laffoley, 2005). In June 2023, after decades of formal and informal negotiations, amidst a period marked by significant global economic, social, and political instability (for instance the Ukraine-Russia war and the COVID-19 pandemic)—national governments under the United Nations General Assembly (UNGA), reached a landmark Agreement. This new treaty, known as the Biodiversity Beyond National Jurisdictions (BBNJ) Agreement or the High Seas Treaty, aims to conserve and sustainably use marine biodiversity in ABNJ by operationalising four main elements (BBNJ Agreement, 2023). These four elements include 1) Marine Genetic Resources (MGR) and Access and Benefit-Sharing (ABS), 2) Area-Based Management Tools (ABMTs), including Marine Protected Areas (MPAs), 3) Environmental Impact Assessments (EIAs), and 4) Capacity Building and Transfer of Marine Technology (CB&TT). It is seen as a significant milestone in international ocean governance (Leary, 2019a), the BBNJ and its negotiation process have drawn diverse perspectives from various stakeholders regarding marine biodiversity and its objectives (see section 5.3, Tracing Marine Biodiversity in the BBNJ).

However, since the late 1980s, when the word biodiversity entered the environmental lexicon (Wilson, 1986), its widespread use to rally support for international conservation efforts (Mendenhall and Bateh, 2024) has led many to assume it has a universal meaning (Casetta et al., 2019b). This assumption has created a decision-making trap, where divergent and often conflicting objectives are included in biodiversity discussions and practices, as seen in the BBNJ Agreement and negotiation processes—the central focus of this thesis. The confusion arises when biodiversity is treated merely as a word (Meinard et al., 2019), rather than what it truly is: a **discourse**—a complex set of explicit and implicit ideas, practices, and ways of understanding, speaking, and interacting with the natural world (Barad, 2007; Foucault, 1971). Discourse reflects different ways of knowing, valuing, and experiencing the world with tangible real-world consequences, even when not openly discussed (Barad, 2007). The context in which

biodiversity is discussed or practised plays a crucial role in shaping how it is understood and acted upon. This is because the truths about the natural world are not objective; they emerge from processes of knowledge production that are influenced by power dynamics (power explored further in later sections) within specific cultural and intellectual frameworks (Robbins, 2020). This does not deny the material existence of the natural world (Lévi-Strauss, 1978/2003), but as Foucault argues, nothing has inherent meaning until that meaning is ascribed to it (Foucault, 1971). Therefore, like any discourse, biodiversity cannot have a single, definitive meaning, set of objectives, or practices, even though scholars and practitioners often treat it as such, including in the BBNJ contexts.

The central aim of this thesis is to examine biodiversity as a discourse for understanding the natural world. It will investigate what different groups—such as ecologists, biologists, and policymakers—seek to understand, measure, or manage in specific contexts like the BBNJ, why they do so for what purpose, and for whom or whose benefit.

Despite a growing body of literature on the challenges of negotiating and implementing the BBNJ Agreement (Blasiak et al., 2016; Gaebel et al., 2020; Warner, 2014), many BBNJ scholars, negotiators, and practitioners have mistakenly treated biodiversity as a universal concept (see Chapter 6: Tracing Marine Biodiversity in the BBNJ dis-Agreement). Throughout the negotiation process, and now as the treaty is being signed and awaits ratification, there is widespread support for the Agreement's adoption, with many stakeholders assuming their interpretation of biodiversity aligns with what is being considered without examining the specific contexts in which biodiversity is being operationalised. The prominence of biodiversity as a term in environmental management creates a delusion of the same objectives, with stakeholders failing to fully understand the unique context of ABNJ and its impact on biodiversity meanings and practices in ocean governance.

This thesis also highlights the challenges that arise when universal assumptions about biodiversity go unchallenged in international negotiation processes. This results in divergent objectives that are difficult to operationalise or marginalise the perspectives and rights of some stakeholders. The thesis uniquely contributes to the existing literature by analysing biodiversity as a discourse and addressing three key issues that are underexplored or limit the operationalisation of biodiversity, particularly in global contexts like the BBNJ (Biodiversity Beyond National Jurisdiction) framework.

First, it broadly explains what factors and processes—social, political, scientific, technological, and legal—make terms like biodiversity prominent and relevant across different spatial and temporal scales, influencing decision-making processes. **Second**, it explicitly identifies the key actors and actants (as defined in the subsequent sections) that shape biodiversity understandings and objectives while also addressing the historical processes that have placed these actors in those positions of power. This historical context, where the actors and actants are analysed together with the processes that have put them in positions of power, is often overlooked in current discussions on biodiversity. **Thirdly**, the thesis explores how existing ocean governance frameworks, particularly the United Nations Convention on the Law of the Sea (UNCLOS, 1982), influence the conceptualisation of biodiversity in new Agreements, especially the 2023 BBNJ Agreement. This direct connection between biodiversity conceptualisation in the BBNJ and the influence of existing frameworks like UCLOS is still lacking in the BBNJ literature. Moreover, as analysed in Chapters 4 and 5 of this thesis, many scholars, including those in the BBNJ literature, use biodiversity merely as a catchword without critical thinking about *why* and *what* it does in those specific contexts they intend to address. **Finally,** the thesis explores the landed human relationships in ocean space that continue to shape ocean governance frameworks.

In essence, the thesis uniquely combines critical inquiry about who defines biodiversity discourses, for what purposes, and for whose benefit, particularly in the management of global commons (Ulrich and Vadrot, 2013; Tiller et al., 2019; Santo et al., 2020; Tessnow-von Wysocki and Vadrot, 2022). These, further detailed in section 5.5, which traces marine biodiversity objectives—highlight the challenges awaiting the implementation of the BBNJ Agreement and addressing environmental issues in ABNJ. **Through discourse analysis, the thesis traces the origin and evolution of critical biodiversity concepts and practices that specific groups (e.g., ecologists, biologists, and policymakers) aim to enact, for whom they are intended, and the challenges of treating biodiversity as a universal, unchanging discourse in global governance**.

The thesis adopts an interdisciplinary approach (see the Underlying approach and theoretical framework in Chapter 2 and Methods in Chapter 3), drawing from both the natural sciences (e.g., evolutionary biology and ecology) and social sciences (e.g., geography, anthropology, and psychology). For instance, it uses critical geography and political ecology as frameworks to analyse the spatial interactions, including geographical contexts (ABNJ), archival sources (BBNJ documents and literature), and multilateral negotiations (BBNJ), as sites and processes

where biodiversity is defined. These frameworks also help reflect on the role of power and politics in shaping biodiversity objectives within the BBNJ. Additionally, socio-legal theories situate the legal aspects of biodiversity meanings and governance within the broader social processes that shape these practices. Science and Technology Studies (STS) emphasise the social construction of scientific knowledge within specific technological, geographical, political, and socio-economic contexts. Media and communication studies further illuminate how public discourse, through media and representations, reveals implicit truths and spatial biases. A historical constructivist approach is employed throughout to trace how the specific actors shape biodiversity (see discussion below on who is an actor) and critical moments, such as the Convention on Biological Diversity (CBD, 1992) and the BBNJ Agreement, which influences resulting biodiversity discourses.

By integrating theoretical understandings with practical applications, this thesis aims to bridge the realms of social science and natural sciences, offering valuable insights for multiple stakeholders, scholars, and managers involved in biodiversity concepts, objectives, and environmental management. Through its innovative application of diverse research fields and methodologies, this project contributes significantly to analysing discourse in flux. The thesis's practical implementation on the international stage, focusing on the recent BBNJ Agreement and processes (see further introduction in the sections below), delves into the complexities and ambiguities inherent in defining biodiversity concepts and setting management objectives at global scales.

Furthermore, the thesis addresses gaps in environmental management, law, political ecology, and geography related to biodiversity governance, which geographers argue have predominantly been explored within land-based practices. Beyond tracing the evolving concept of biodiversity across various contexts, this work illuminates its connections to other domains, such as power dynamics, territoriality, and the commercialisation of nature (Steinberg, 1999; Peters, 2023). It underscores the ABNJ (Areas Beyond National Jurisdictions) significance as a crucial frontier for modern conservation efforts and or perpetuating old ideologies of nature management (Gjerde et al., 2016), whether as merely a resource-based entity or as an interconnected system that we are all part of and must sustain for our existence (Merrie et al., 2014; Sequeira et al., 2019; Spencer et al., 2023; ZHU, 2009).

The broader implications of this research include raising awareness of the role of theory in practice and the consequences of neglecting the ambiguity and nuances of biodiversity as a multi-layered common in international debates. This understanding is furthermore vital for

developing countries [defined here as low-income countries as per World Bank group ratings], scientists, conservationists, and other marginalised groups whose perspectives and rights often take a back seat to the interests of dominant actors in global discussions (Bennett et al., 2022; Shields et al., 2023). The project's transferability to policymakers enables it to contribute to comprehending and addressing tensions, ambiguities, and synergies in attending to the ecological crisis both internationally and locally.

The remainder of this Chapter (Project background) is structured as follows. First, the research is positioned within the broader context of biodiversity, examining why it is a significant concept, what it encompasses, and how it intersects with issues of agency and power. This section establishes the central focus of the thesis. The chapter then discusses the research's urgency, relevance, and contributions, introducing the research questions guiding the thesis.

1.2. Situating the research

1.2.1. Why biodiversity is a prominent discourse: the power of words

Words, terms, and concepts all belong to the realm of discourse but have distinct differences. Words represent general meanings and are found in everyday vocabulary and dictionary definitions; they are not confined to any particular discipline (Carter, 2012). In contrast, terms are usually specific to a particular field or discipline and have a single, agreed-upon meaning within that context (Brownson, 2018). The challenge arises because terminology consists of words, which can be used in either broad or specific ways depending on the situation (Olson and Torrance, 2009). For example, biodiversity can function as a general word in everyday language but becomes a specific term when used in particular contexts or disciplines, such as ecology, to convey distinct concepts. In this context, concepts refer to the underlying ideas or notions that a given term represents (Finch, 2000). In other words, concepts provide the framework for understanding and discussing specific issues or phenomena within specific contexts (Meyer and Land, 2005; Ravitch and Riggan, 2017). Biodiversity is used broadly in language and as a term in specific contexts, making it a slippery discourse to grapple with. Since this thesis focuses on specific contexts, biodiversity will be treated as a term throughout the discussion.

When a term like biodiversity rises to prominence, it sparks discussions about its intended meaning and the concepts it is designed to engage with (Luhmann, 1995). This phenomenon can be observed in how specific ideas, like sustainable development, capture the public imagination, gain importance in national and international processes and dominate scholarly

discourse (Blythe et al., 2018; Hajer and Versteeg, 2005; Mebratu, 1998; Pezzoli, 1997). However, not all terms denote concepts with the same longevity, power, and influence. Some may capture attention briefly, resonating with a moment in time or specific circumstances, but then fade as their relevance diminishes. This short longevity is evident with transient issues or trends, such as digital technologies (I return to this throughout this thesis) or fashion that may not sustain their significance over the long term (Gurcan et al., 2023; Huebner, 2005). For example, concepts like "green consumerism," which reflect moral and behavioural motivations of consumption for a sustainable future (Sachdeva et al., 2015), while they surged in academic literature in the past few decades, they have arguably had a limited impact on public discourse, and their influence waned over time (Chander and Muthukrishnan, 2015; Harbo et al., 2017; Paavola, 2001; Zhu and Sarkis, 2016). In contrast, other terms like biodiversity exhibit a remarkable ability to persist, maintaining their relevance over time and across geographical locations. The terms become embedded in various discourses and practices, continually shaping and being shaped by new contexts (O'brien et al., 2007). Their endurance is not accidental but rather the result of complex processes, often with debates among different groups and individuals attempting to interpret and re-interpret their meanings (Beunen and Barba Lata, 2021).

Over time, these terms may also undergo a process of politicisation and mythification, where their origins and contextual meanings are transformed or romanticised, making them more appealing or universally accepted (Ceccarelli, 2013; Slabbert, 2006). This glorification often emerges from influential figures, institutions, or cultural movements that value the continued use of certain concepts. As they become more widespread, the terms gradually enter into conventional usage, becoming words that are part of language and the lexicon, solidifying their place in the collective consciousness, even by those who may not fully understand their contextual meanings (Ceccarelli, 2013; Foucault, 1971). These words achieve a level of permanence and adaptability, allowing them to find relevance in new and diverse settings (Olson and Torrance, 2009). The concepts they denote become more than ideas, evolving into powerful (ideological) tools for understanding and engaging the world, influencing how people think, communicate, and act across different cultural and temporal landscapes. This links directly to the central theme of this thesis:

How do various processes (social, political, scientific, technological, and legal) shape and influence biodiversity concepts, making biodiversity a term relevant across different spatial and temporal scales?

However, it is the concepts and practices that make terms relevant. The prominence of the term biodiversity in scientific and other public contexts is tied to the growing recognition of environmental crises across different spatial domains and scales. These crises are often cited as unprecedented biodiversity loss (Almond et al., 2021), climate change and its impacts like global warming, extreme events like hurricanes, floods, droughts and heat waves, ocean acidification, sea level rise, and iceberg melting (IPCC, 2023), pollution of air, soil, and water (Rochman and Hoellein, 2020), fish stocks collapse (FAO, 2024), among other issues. The issues are interlinked and should not be viewed in isolation, although they are often reported as separate problems (Ansori and Yusuf, 2023; Pescaroli et al., 2018). The complexity of the situation is compounded by the fact that the multifaceted environmental impacts observed today are not merely the result of recent natural phenomena but are the culmination of (uneven) human actions spanning centuries, reflective of the Anthropocene epoch (Chakrabarty, 2018). The Anthropocene epoch is characterised by the significant global impact (some) humans have had on Earth's geology and ecosystems, including but not limited to anthropogenic climate change and the sixth mass species extinction attributed to human causes (Ceballos et al., 2015, 2015; Clark and Yusoff, 2017; Davies, 2016; Johnson et al., 2014; Yusoff, 2016, 2018).

Moreover, these human-induced impacts and consequences are also not evenly distributed across scales (Jacobson et al., 2019). Some regions and populations are more affected by the resulting environmental crisis than others. For example, low-lying coastal areas and island nations are disproportionately affected by rising sea levels and extreme weather events (Sammler, 2020b). Meanwhile, industrialised nations, which have historically contributed the most to greenhouse gas emissions, often have more resources to mitigate and adapt to these changes (Elzen et al., 2013; Lamb et al., 2021). The unequal distribution, access, and use of resources mean that certain groups contribute to and or-, are more affected by the crisis than others (Hulme et al., 1999).

These inequalities are crucial in how environmental concepts like climate change or *biodiversity* —the focus of this thesis— are understood and managed. As the environmental crisis deepens, biodiversity, as a word, has become a rallying point for conservation, sustainable development, and global governance efforts. However, understanding biodiversity requires a careful examination of both its scientific underpinnings and the broader context in which it is used. The complexities of the environmental crisis and the multifaceted processes involved challenge scientific understanding and management (Casetta et al., 2019a).

1.2.1(a) What is biodiversity?

The primary challenge is understanding biodiversity as more than a word or a noun but also as a term and concept. This exploration is further elaborated in Chapter 4: Biodiversity Contested, Critical Concepts and Moments, which underpins some critical issues underpinning biodiversity discussions and operationalisation.

According to Article 2 of the 1992 CBD (Convention on Biological Diversity), biodiversity is;

> *The variability among living organisms from all sources, including, among other things, terrestrial, marine, and other aquatic ecosystems, and the ecological complexes of which they are part, includes diversity within species, between species, and within the ecosystem.* (CBD, 1992).

This CBD definition is sometimes assumed to provide a universal definition of biodiversity, especially in international contexts (CBD, 1992). However, biodiversity's conceptual land and seascape grapples with intertwined constructivist and disciplinary perspectives. In other words, how biodiversity is understood is influenced by various perspectives, including those continuously constructed by social and political processes and those from specific scientific fields of inquiry or practice. These perspectives are deeply connected, making it challenging to separate biodiversity concepts from the specific contexts in which they are applied. In fact, shortly following the CBD definition of biodiversity, various other definitions and assertions erupted (DeLong Jr, 1996) (as will be further explored in Chapter 4).

The difficulty in deciphering biodiversity discourses is primarily embodied in the word biodiversity itself. Etymologically, *biodiversity* consists of two words: *bio* (life) and *diversity* (variety), which suggest *the variety of life.* In this generalised sense, biodiversity appears as a fact or a noun that can be objectively defined and understood. The core concepts of "life" (bio) and the "diversity of life" are complex and challenging to grasp fully. Discussions about the nature of life are deeply rooted in history, spanning different cultures and periods beyond just modern history (Bedau, 2024; Fleischaker, 1990; Martin, 2010)That is because, within the debates on life or biodiversity in this thesis context, many facets may never be captured by traditional ways of knowing or communicating.

Various meanings of life are contested in various knowledge frameworks, grappling with philosophical questions about existence and, therefore, potential loss or absence of life (geo, non-life or non-existence) (Povinelli, 2016). Biodiversity directly engages those inquiries,

making it one of the most debated concepts and difficult to grasp in the scholarly literature (as will be argued in Chapter 4: Biodiversity contested, critical concepts and moments). The challenge partly lies in the clash of different histories and cultures, each with its own social, economic, political, scientific, and technological factors that shape views on what constitutes life or non-life (things without life). This includes molecular, chemical, and physical characteristics that further complicate the distinction (Campbell, 2003; Ma, 2014). The inherent dynamic nature of biodiversity concepts is also due to the phenomenological changes—alterations in how objectivity and reality are subjectively perceived and experienced—occurring over time and across various spatial contexts (Dereniowska and Meinard, 2021). Therefore, to understand biodiversity or its role in environmental discourses, one must deal with life's complexities, varying philosophies, theories, knowledge frameworks, and their degrees of validation across infinite temporal and spatial scales. **This thesis partly grapples with this complexity in Chapter 4 by tracing exemplar concepts of life, like organisms or species, in biodiversity literature.**

For example, the traditional understanding of biodiversity from natural science fields, which inform the CBD definition, views biodiversity as an objective feature of the natural environment (Casetta et al., 2019a). Biodiversity becomes a collection of distinct entities that exist independently of human perception. In this view, biodiversity is treated as a tangible concept that can be classifiable, quantified, objectively collected, and analysed using mathematical indices. However, the view of biodiversity as a quantifiable objective feature comes with multifaceted challenges (Gotelli and Colwell, 2001; Hillebrand et al., 2018; Lyashevska and Farnsworth, 2012). For instance, the concept of a species, central to understanding biodiversity, is complex and can be defined by various criteria, such as reproductive isolation, genetic similarity, or morphological traits (Bock, 2004). Species have been primarily defined from morphological attributes using physical collections (Bakker, 2022; Darwin, 1859). These criteria evolved with advancements in science and technology (Brigandt and Love, 2012; Mallet, 2010) (for example, the advancements allow probing molecular scales of physical specimens, extending the conceptual boundaries of a species from morphological attributes to genetic scales (Strasser, 2012; Yang et al., 2006). Technology is crucial in defining species in this context by enhancing the concept's reliability, verifiability, and practical use through tools like genetic analysis and advanced data collection methods (Ji et al., 2013). What one group of scientists might classify as distinct species based on morphological attributes can change based on new genetic data. A notable example of species classification changing is the case of the African forest elephant (*Loxodonta cyclotis*) and the African savanna elephant (*Loxodonta*

africana) (Roca et al., 2001). Traditionally classified as a single species due to their morphological similarities, African forest and savanna elephants were reclassified as distinct species after genetic studies revealed significant divergence (Roca et al., 2001). This genetic evidence underscores how technology-driven science can reshape our understanding of nature. In other words, biodiversity is contested.

Seen through critical lenses, though, scholars have questioned whether species are indeed an objective feature of the natural world or just social constructions of physical phenomenon (Czech et al., 1998; Hopster, 2019). This is because human perceptions, cultural contexts, and even social values influence how species are defined or categorised. A growing body of literature challenges the utility of the species concept for management actions (Fleishman et al., 2006; Jacobsen et al., 2008; Mace, 2001; Roberge and Angelstam, 2004; Simberloff, 1998; Wheeler and Meier, 2000). Some of these aspects are what are explored in Objective 1 of this thesis (in Chapter 4:

The debate about understanding species highlights the evolving and subjective nature of biodiversity. Elements of biodiversity can furthermore evolve, interact, and operate across different spatial and scalar boundaries (Jones, 2009a). Phenomena observed at one scale can show emergent properties or dependencies at other scales (Chave, 2013; Teng et al., 2020). For example, genetic diversity at the molecular level within populations influences species diversity at the community level, thereby affecting ecosystem functioning and resilience (Booy et al., 2000; Pauls et al., 2013). The inverse is also true with ecosystem functioning and resilience shaping species diversity, with adaptations occurring even at the genetic scale over time (Carrol et al., 2007; Davis et al., 2005).

Similarly, spatial differences also influence the variety of life forms and their interactions (Boer, 1985; Britton, 1989; López-Gómez and Molina-Meyer, 2006; Rahbek, 2005; Roeleke et al., 2018) (Rahbek, 2005). For instance, local variations in environmental conditions, such as temperature, precipitation, and soil composition, contribute to the distribution of life forms within a given area and biodiversity (Williams et al., 2012). These local variations and *biodiversities* contribute to measuring global biodiversity (Baillie et al., 2008; Purvis and Hector, 2000; Turak et al., 2017). In essence, global biodiversity becomes a composition of sub-bio diversities, interacting and influencing each other through complex networks. The interconnectedness and feedback loops operating within and between different organisational levels across spatial and temporal dimensions determine the overall measurements of biodiversity (Fisher et al., 2024; Gross and Blasius, 2008; Williams et al., 2017). These

dimensions transcend mere ecological aspects to include socio-economic and political processes that influence biodiversity's abiotic and biotic aspects and inform management objectives.

For instance, human activities such as agriculture, mining, and industrialisation, crucial for human livelihoods, exert pressures on ecosystems (Assessment, 2005; Mondal and Palit, 2022; Rockstrom et al., 2009). Managers and decision-makers then grapple with balancing these utilitarian aspects of biodiversity with the need for protection (see Chapter 5, section Chapter 7: Conservation and sustainable use objectives). Essentially, the challenge is determining which aspects or perspectives to include or prioritise when setting objectives and the spatial extent needed to reach the set targets in time before a worse environmental catastrophe happens. Different stakeholders—scientists, policymakers, local communities, and conservationists—may prioritise different aspects based on their unique perspectives on life and nature. For example, non-expert locals or Indigenous Peoples often view nature in ways that may differ from or conflict with the rigid, metric-based methodologies used in scientific research(Smith, 2012). Human experiences are shaped by social processes, beliefs, and ideologies, leading to implicit assumptions about the natural world (Robbins et al., 2022). Thus, perceptions of biodiversity are constructed within particular knowledge frameworks that allow for specific conceptions and management approaches (Sammler, 2020a; Vadrot, 2014). Ideas such as pristine, wilderness, or authentic tropics are not merely innate mental images of nature but are ongoing reconstructions shaped through social-political processes such as culture, media and or education (Cerda and Bidegain, 2018; Fischer and Young, 2007; Lorimer, 2005; Lorimer, 2015; Robbins et al., 2022).

In management, questions arise as to whether to focus on biodiversity as a collection of individual entities versus their functions, local versus regional biomes and terrestrial as well as marine ecosystems (Brose and Hillebrand, 2016; Hillebrand et al., 2018; Hodapp et al., 2014; Meyer et al., 2018), and considerations of other social, economic, or political dimensions. A lack of consensus results in fragmented efforts, where actions taken in one area can undermine efforts in another (Clement et al., 2015; Ferraro and Faille, 2024; Haas et al., 2022; Shih et al., 2020). For example, a focus solely on local aspects without considering the cumulative impacts observed on a larger scale leads to simplistic targets that fail to address the interconnected environmental crisis (Dajka et al., 2022; Fisher et al., 2024; Hillebrand et al., 2023).

All of this raises questions about how power is operationalised concerning biodiversity and its impact on biodiversity understanding in practice. This is also relevant for this thesis, which

explores biodiversity within the BBNJ international negotiations, where various stakeholders and differing power dynamics emerge. It is, therefore, essential to situate biodiversity within the discourses of power in policy and decision-making processes.

1.2.2. Biodiversity and power

In policy and decision-making processes, biodiversity concepts and objectives are shaped by institutional actors and the *power* dynamics between stakeholders and knowledge producers (Opdam et al., 2008; Tessnow-von Wysocki and Vadrot, 2020; Vadrot, 2014, 2023). For this thesis, an institution is understood as a recognised pattern of behaviour within a material entity or organisation, possessing attributes such as "offices, personnel, budgets, and equipment" (Young, 1982: 285). These institutions establish the "rules of the game or codes of conduct" that define social practices, assign roles to participants, and guide interactions among them (Young, 1999: 3). Institutions, therefore, are where actors, as described below, are identified, knowledge is produced, and *biodiversity* concepts and objectives are legitimised (see also Chapter 5 on inclusive participation). As a result, *biodiversity* and *power* are intertwined through institutional processes that legitimise certain actors and knowledge production.

In this context, an actor refers to any entity with agency, including individuals, organisations, or nation-States. For example, individuals such as policymakers or scientists and organisations like environmental NGOs or government agencies are all considered actors in biodiversity governance. Latour (1993) expands this concept to include non-human entities, which he calls actants, arguing that they also can exert influence. Examples of these non-human actors include organisms (Harden-Davies et al., 2020) as well as research facilities (Yesson et al., 2007), environmental technologies (Pimm et al., 2015), and data analysis tools and algorithms (Guralnick and Hill, 2009). Human and non-human actors/actants can play a role in biodiversity governance. However, their recognition and legitimacy depend on their integration into specific institutional practices and the *power* dynamics that govern them.

To understand how *power* operates in biodiversity governance, this thesis draws on vital theoretical frameworks from thinkers such as Foucault (Foucault, 1975/1995), Bourdieu (Bourdieu, 1977), and Habermas (Habermas, 1985). These include ideas of *disciplinary power* and discourse (Foucault), *symbolic power* and *habitus* (Bourdieu) or *communicative power* and *ethics* (Habermas). While there are other theories of *power*, this thesis will use Foucault, Bourdieu, and Habermas's theories as the framework for analysis and discuss other sub-

perspectives of how *power* operates in biodiversity governance. Each of the *power* theories has its differences, interdependencies and consequences (Christensen, 2024), but an exploration of these is beyond the scope of this paper. However, I acknowledge that there are multiple layers of *power*, connected and distributed across networks of actors, with differences in influence and authority across various scales and processes. In this thesis, *power* refers to the influence and control specific stakeholders and knowledge producers have over how biodiversity concepts and objectives are defined, prioritised, and implemented in science, policy, and decision-making processes.

Those in *power* shape knowledge, and this knowledge, in turn, reinforces their *power* (Haas, 2018; Hardy and Thomas, 2014; Schieman and Plickert, 2008). In the context of this thesis, this also manifests as decision-making *power*, with entities such as governmental bodies, large NGOs, and influential scientists influencing biodiversity narratives and objectives. However, the execution of these decisions can depend on various factors, such as resource availability, and may lose momentum over time as new ideas gain attention (Sabatier, 1986; Sabatier and Mazmanian, 1980). Still, having decision-making *power* is essential for implementing those decisions. Smaller organisations, vulnerable communities, and non-human actors (like plants, animals, or ecosystems) lack direct influence in global policymaking. They must rely on larger entities like governments or NGOs to advocate on their behalf. This is not to ignore the processes that shape *power* structures, where smaller organisations and local actors actively work to renegotiate *power* and challenge the dominance of governments and large corporations in decision-making (Satizábal et al., 2021; Satizábal et al., 2022; Sorel and Almeida, 2016).

These processes are crucial because decision-makers create the *ideological power*, as Lukes (2005) describes, that shapes the desires and beliefs that influence how [biodiversity] is perceived and valued by society. This allows the ruling class to maintain *power* by controlling cultural norms, ideologies and even their populations (DeMarrais et al., 1996; Haymes et al., 1997). The views adopted by the ruling class become the norm, making their approaches, such as biodiversity management, appear natural and inevitable. Opposing the ruling class or introducing alternative perspectives grapples with the pushback from the ruling class (Foucault, 1975/1995) and what society considers the norms (Dixon, 2017; Ewick and Silbey, 1995). Therefore, what is prioritised in biodiversity management is determined by those who can participate in framing power structures and or have the ability to influence policy and decision-making processes (Vadrot, 2014). In these contexts, concepts like biodiversity are used by actors to gain institutional legitimacy, as they help them frame and position their activities

within broader narratives (Rein and Schön, 1993). **However, what is missing in this current discourse on *power* and biodiversity is identifying why specific individuals or entities are positioned to influence biodiversity concepts.**

This thesis explicitly addresses this, not only by identifying the influential actors and actants that influence biodiversity understanding and objectives but also by the historical processes that have placed them in these positions of *power*. Understanding this helps clarify how specific biodiversity narratives and decisions come to being and what mechanisms enable their sustenance.

Another critical aspect of biodiversity and *power* is communication and language. These two aspects are critical in negotiations and social interactions, shaping meaning in expressing concepts (Luhmann, 1995). Jürgen Habermas describes this as communicative *power*, which influences others for specific ends (Habermas, 1985). In biodiversity contexts, language shapes and defines concepts, including excluded concepts, how they are understood, and objectives set. In written text, language is essential for ensuring clear definitions and consistent use of terms to avoid misunderstandings (Blum and Levenston, 1978). This foundational understanding is crucial for analysing biodiversity concepts and ideas from the various oral or written discourses. Whether scientific, cultural or ethical perspectives, biodiversity concepts are deeply rooted in linguistic expressions, framing how biodiversity resonates with diverse audiences (Lange et al., 2022). Therefore, those with more communicative *power* (often through the English language in international settings) dominate the debate (Alexander et al., 2016; Poiani et al., 2000; Vadrot, 2016). Overly stated narratives or different interpretations in a policy text can exclude other nuanced perspectives that exist alongside these narratives when policies are being formulated (Coyle, 2017; Langton, 2004). Therefore, it is crucial to study concepts in context to understand how they are bordered and formulated. Chapter 6: Tracing Marine Biodiversity in the BBNJ dis-Agreement elaborates on the role of language.

Other *power* dimensions exist in the context of environmental management. For example, those who control critical resources—such as funding, information, or political support—hold *power* over those who depend on these resources (Provan et al., 1980). *Power* consolidation occurs when actors controlling these resources strengthen their control by building networks (Allen, 2009). Building these networks involves bringing others into their sphere of influence—often by aligning the interests of the other actors with their own goals. For example, mining industries with significant financial resources often persuade local communities to support their mining objectives by offering funding for some of the community's social initiatives (Dashwood, 2014;

Fineman and Clarke, 1996; O'Connor and Gronewold, 2013; Owen and Kemp, 2013). This strategy consolidates the *power* of the larger organisation by expanding its network of allies. Through this process of *power* consolidation, influential actors gain the ability to shape the direction of biodiversity policy and decision-making, as well as control the flow of information and resources. As a result, they can dictate which issues are prioritised and how they are addressed. Therefore, questions arise for scholars and decision-makers concerning how and who decides biodiversity priorities and sets objectives, as well as when the concept is politically, scientifically or otherwise sound and not (Casetta et al., 2019a; DeLong Jr, 1996; Sarkar, 1999, 2008, 2021; Vadrot, 2011, 2014).

These inquiries are crucial because the conceptual land/seascape of *biodiversity* continues to evolve rapidly (Casetta et al., 2019a) representing ideological dichotomies spanning the scientific and emotional (e.g. Shavit and Griesemer, 2018), ecological and social (e.g. Shiva, 1991), profane and sacred (e.g. Githitho, 2003; Negi, 2012) and or utilitarian and intrinsic (e.g. *Millennium Ecosystem Assessment*, 2001). Biodiversity gains more recognition and diverse usage as awareness of environmental issues like the sixth extinction epoch attributed to human activity increases (Avise et al., 2008). However, biodiversity abstractions and implementation operate through multiple *power* networks, as well as spatial and temporal scales (Gonzalez et al., 2020). Some scholars view biodiversity as a complex and vague concept, complicating management, while others argue its complexity is necessary to address the multifaceted nature of the environmental crisis (Meinard et al., 2019).

Efforts to refine *biodiversity* concepts encounter hurdles, as they may either be overly broad to suit specific contexts or excessively specific while aiming for broader applicability (*Millennium Ecosystem Assessment*, 2001; Assessment, 2005). It has become clear that achieving consensus on what biodiversity is is impossible and that focus needs to be turned **to what different groups are trying to measure or manage, for what purpose, and for whom**. This will be the primary approach for this thesis. It is also crucial to relate complex phenomena to the social, biological, economic, and *power*-related origins from which they acquire expression (Schuppert et al., 2021). Concepts like biodiversity gain specific meanings in some contexts and are somewhat easier to understand within a particular management framework, discipline, group, or time (Conley, 2006). As biodiversity concepts transition from one context to another—such as from terrestrial to marine settings or from local to international spheres—without rigorous analysis, both conceptual and practical challenges are exacerbated (Schrijver, 2016). **This thesis pays**

attention to these dynamics and tensions and the definition of biodiversity in the contexts of oceans and beyond.

Despite long-standing debates across environmental, social, economic, and other literatures, many still treat biodiversity as a concept that never changes in understanding and application. The term biodiversity itself is often used as a catchword (Meinard et al., 2019). While the term's popularity effectively rallies support for environmental action (Mendenhall and Bateh, 2024), users of the term often overlook the diverse interpretations and implications of a universal biodiversity concept (Fischer and Young, 2007). This simplification can lead to a superficial understanding and application of the concept and a narrow perspective that fails to address the dynamic and interconnected nature of the environmental crisis. This dynamic can be linked to Foucault's theories of *power* and discourse, where *power* is not just held but exercised through the production of knowledge and the shaping of discourses (Foucault, 1971, 1975/1995). In this case, the broad and all-encompassing concept of biodiversity becomes a discourse through which *power* operates. By framing biodiversity in such a way, particular groups' specific ecological, cultural, and socio-economic needs are overshadowed, allowing *in*fluential stakeholders to embed their interests within the broader narrative. Foucault argues that *power* is diffused through social institutions (Foucault, 1975/1995), and here, dominant actors—such as governments, large NGOs, or corporations—may use the discourse of biodiversity to maintain control while marginalising other vulnerable actors and actants.

Therefore, discourses are not neutral but are tools of *power* that shape what is considered legitimate knowledge (Foucault, 1975/1995). By promoting an all-inclusive idea of biodiversity, *power*ful actors can obscure competing priorities, masking how their interests are served. Vulnerable communities, which may have specific stakes in biodiversity linked to their cultural or socio-economic contexts, can thus be excluded from decision-making processes. Actants, the non-human, on whose behalf actors must give *power* are then entirely excluded from these discourses. In this sense, discourse reflects existing *power* relations and a mechanism through which those relations are reinforced, as Foucault suggests (Foucault, 1971). The ability to define what counts as important biodiversity—much like other forms of knowledge production—becomes a way to control policy outcomes, shaping environmental objectives. Therefore, the current environmental crisis can also be argued to be an outcome of current discourses on environmental concepts like biodiversity.

While debates about the operationalisation of biodiversity were prevalent in the 1990s (DeLong Jr, 1996), they are increasingly neglected in literature and practice today, leading to frustrations

for those seeking to address the environmental crisis that the biodiversity concept poses to represent. In domains such as international law and policy, there is a minimal acknowledgement of biodiversity's conceptual evolution or ambiguity, resulting in fragmented (Enright et al., 2021) or static governance frameworks (Peters, 2020), ill-equipped to address dynamic concepts and situations (Bakalov, 2020; Maxwell et al., 2020). This is partly because traditional laws are generally built to be stable and restrictive to change to solidify or legitimise phenomena embedded in landed logic and colonial legacies (Fon and Parisi, 2009; Lambach, 2021; Peters, 2020).

In the remainder of this Chapter, I set out in more detail the pressing need for this research, the research aims and objectives, and the structure of the thesis.

1.3. Contemporary instances: The case for research

Having introduced the contentious and shifting situation regarding biodiversity meanings and objectives, **this thesis also aims to situate the scientific and policy understandings and implications of biodiversity's meanings and practices in contemporary instances**. The empirical focus of this discussion is primarily based on the spatial interactions in the *oceans* (i.e. *marine biodiversity*) while drawing connections to other spatial domains.

This focus on oceanic or marine environments is informed by the recently growing concerns and awareness of environmental issues in the world's oceans, with explicit concerns about *marine biodiversity* (Campbell et al., 2016). The declaration of the United Nations (UN) Decade of Ocean Science for Sustainable Development in 2017 (2021-2030, UNESCO, 2021, which is directly connected to the UN's 2030 Agenda for Sustainable Development, adopted in 2015 (Lee et al., 2016; United Nations, 2015), along with the adoption of the Biodiversity Beyond National Jurisdictions (BBNJ) Agreement in 2023 (BBNJ Agreement, 2023) —both to be implemented under the 1982 United Nations Convention on the Law of the Sea (UNCLOS) (UNCLOS, 1982)—, is a testament to this marine biodiversity oceanic (re)turn (Andrea et al., 2023; Peters, 2020; Peters and Squire, 2019; Sammler and Peters, 2023). The decade is meant to provide a framework to deepen scientific understanding, promote awareness of ocean issues in public discourse, and enhance policy coherence in addressing ocean-related challenges (Ryabinin et al., 2019).

In addition to frequently cited issues like fish stock collapse or ocean acidification, emerging and expanded uses of oceans, including for marine scientific research, bioprospecting, and deep-sea mining, can potentially harm the ocean and society (Nickels, 2020; Warner, 2014).

There are starkly unequal distributions of benefits and burdens accruing from the use of marine resources and space, with technologically, geographically or historically advantaged societies exploiting an ever-increasing share of the scarce resources (fish, fossil fuels, mineral resources) at the expense of vulnerable communities (Armstrong, 2017; Campbell et al., 2022; Collins et al., 2019; Lanz, 2011). The Ocean Decade slogan, the science we need for the ocean we want, calls for and assumes collective responsibility to address these challenges (Andrea et al., 2023; Peters, 2020). The recent focus on the oceans is Areas Beyond National Jurisdiction (ABNJ), considered by some as the last conservation frontier (Di Giminiani and Oakley, 2023; Gjerde et al., 2016; Hall, 2001; Laffoley, 2005).

While the concept of the frontier has been explored in literature (Fisher and Wieczynski, 1977; Knott and Mather, 2021; Latour, 1993; Lattimore, 1955; Turner, 1893), its contemporary meanings, particularly concerning its implications for ocean governance, are critical for understanding biodiversity discourses in the BBNJ contexts. The following section focuses on how the ABNJ emerges as the *last conservation frontier* and what makes this perspective crucial for this thesis.

1.3.1. The last conservation frontier

Throughout much of recorded history, the scope of human knowledge, explorations and discoveries mainly were confined to the terrestrial surfaces and immediate surroundings (Bowler and Pickstone, 2009; Council et al., 2010; Macleod, 2009). In terrestrial environments, exploration and knowledge were limited and shaped by the regions where people settled, such as mountains, deserts, forests, rivers, and lakes (Semple, 2023; Tan et al., 2022). In marine environments, explorations focused on the coasts and ocean surfaces. The vastness of the oceans and the challenges of navigating them limited the extent of marine exploration (Rock et al., 2020; Rozwadowski, 2019; Steinberg, 1999b). This limited perspective shaped most concepts, including biodiversity, developed within accessible areas (Helms, 1988; Semple, 2023). However, technological advances are now pushing the boundaries of human reach, challenging traditional understandings of concepts like biodiversity. This shift necessitates a reassessment of how biodiversity is understood and governed in new contexts amidst emerging social relations.

Technological advancements make it almost impossible to imagine any geographical or spatial context on Earth beyond human reach (Díaz et al., 2019). However, areas like the ABNJ (Areas Beyond National Jurisdiction) remain largely unknown or difficult to access, making them

appear as the final frontiers for managing and reassessing concepts like biodiversity. **Understanding these areas as frontiers is critical to current biodiversity discourses.**

The concept of the frontier itself is beyond the scope of this thesis but is crucial for understanding ABNJ as a unique site for analysing biodiversity abstractions. Historically, the frontier symbolises a threshold of expansion where societal, cultural, and political dynamics transform (Berend, 1999; Turner, 1893). Historian Frederick depicted the frontier as the westward movement of European settlers into untamed American landscapes and adapting to new ways of life (Turner, 1893). Frederick described the frontier as where the wilderness masters the colonist…[and] finds him a European in dress, industries, tools, modes of travel and thought... (Turner, 1893), shaping America's national ethos and character (Bazzi et al., 2020). In other words, the frontier, according to Turner, is a geographical space that is wild, untamed, and often devoid of humans. However, this portrayal overlooks the human and non-human in those spaces and hides the darker aspects of this Westward expansion (Fisher and Wieczynski, 1977; Knott and Mather, 2021; Latour, 1993; Lattimore, 1955). It downplays the systemic injustices and inequalities that accompany the expansion on marginalised communities and actants, who suffer dispossession, displacement, and violence (Laako and Kauffer, 2022; Latour, 1993). The expansionist ideology frames the frontier only as a land of opportunity and progress. Yet the intense economic exploitation of natural resources that accompanies this expansion also leaves lasting adverse effects on the land and seascape, disrupting ecosystems and undermining the livelihoods of communities dependent on these land/seascape (Fisher and Wieczynski, 1977; Lattimore, 1955). The same risks apply to contemporary spaces termed frontiers, like the deep sea or outer space, where unchecked industrial activities could result in similarly harmful impacts.

In contemporary instances where almost all earthly geographical realms can be reached and have existential territorial or resource claims, the frontier reincarnates as transitions in interpreting space and the relational interactions between established and emergent systems (Hirsch, 2009, 2020; Ioris, 2018). Science and technology have become the essential tools—or apparatus—humans integrate with (Barad, 2007) to (re)define the new frontier. These tools enable humans to venture into macro and micro-worlds, such as microbial environments (Wilson, 2010), and extend human vision beyond visible light to ultraviolet and near-infrared spectrums(Belleville, 2019). They help scientists determine the metrics of life, where the observer (with their expertise and biases), the apparatus design (size, range, sensitivity), and

the observed entities influence one another (Schwieterman et al., 2018). This apparatus is so powerful that it extends human reach even into outer space (Sammler, 2024; Sammler and Lynch, 2021a, 2021b), driven by growing government and private sector interest in space exploration, mining and even the long-term goal of human colonisation of other extra-terrestrial spaces (Clifford et al., 2018; Ríos Muñoz et al., 2024; Sommariva, 2015; Zacny et al., 2013). Ultimately, the apparatus and economic imperatives of exploration and exploitation are what is redefining space, distinguishing the familiar from the unfamiliar; without the apparatus, certain worlds remain inaccessible, un/understudied, and or unconquered by humans (Sammler and Lynch, 2021a).

The frontier, therefore, has become a locus of opportunities and innovation, operating at the boundary between the mapped and unmapped or explored and under-explored spaces (Senarathne and Wang, 2015). This perspective is critical in this thesis exploration, as technology has made it possible to redefine both ABNJ, biodiversity and their governance. These expansive, deep and distant ABNJ spaces, sometimes considered pristine like the Arctic and Antarctica (Hossain and Morris, 2017), were once challenging to access by humans, remaining enigmatic for a long time (Bridge, 2009; Hine et al., 2023; Miller et al., 2018; Sammler, 2018). Speculations even existed that scientists knew more about the moon (strictly speaking, it is surface) than ABNJ spaces like the deep sea. The deep ocean eluded scientific investigation due to its depth and the challenges posed by limited resources and technology (Rock et al., 2020). However, technological advances and growing demand for resources have led to increased access, exploration and exploitation (Harden-Davies, 2018; Keil, 1968; Levin et al., 2019; Peters and Squire, 2019).

As resources within national jurisdictions become scarcer, attention has increasingly turned to ABNJ spaces like the deep sea, facilitated by advancements in science and technology (Amann, 1982; Atmanand et al., 2024; Bath, 1989; Du et al., 2024; Sharma, 2024). These areas, often called global commons, are seen by extractive industries for economic exploitation—whether through mining critical minerals or harvesting marine life for pharmaceuticals (Chung et al., 1981; Drechsler, 1973; Mero, 1960). Deep-sea mining raises urgent questions about ABNJ governance and related equity and environmental challenges (McDermott et al., 2013). The geographical distance rendering ABNJ out of sight and out of mind has allowed several unregulated activities to go unnoticed (Schuldt et al., 2016). Deep-sea mining poses significant risks to marine ecosystems, such as seamounts, hydrothermal vents, and the pelagic zone (Ramirez-Llodra et al., 2010), and has long been outside public debate. These ecosystems are

crucial in global climate regulation, carbon sequestration, and fisheries maintenance (Le, 2016). Deep-sea mining activities and the effects arising from the ocean floor (for example, plumes) affect bodies, spread through the water column, and have far-reaching extents, including geopolitical significance (Saputra and Sammler, 2024). Together with existing threats such as climate change, pollution, and other stressors stemming from land-based sources and other anthropogenic activities, they exacerbate environmental concerns in ABNJ (Afana, 2023; Brent et al., 2020; Kang and Liu, 2021; Luypaert et al., 2020; Möllmann et al., 2021).

Moreover, the advancements in extractive technologies for accessing and using resources in ABNJ have widened the equity gap between nations, leading to tensions among those with technological capacities seeking to exploit resources within ABNJ and those without or not vying to exploit those spaces (Lodge et al., 2017; Sala et al., 2018). The activities and the benefits accruing from the use of resources in the Area must benefit all humans kind, compounding the equal access, benefit sharing and distributive injustices queries in the management of global commons (Armstrong, 2017; Collins et al., 2019; Freestone, 2018; Nordquist, 2011; Schlosberg and Collins, 2014). Moreover, as global commons, these areas attract diverse interests and stakeholders, sometimes with overlapping and or conflicting claims in the access and use of ABNJ spaces and resources (Armitage, 2008). Concerns vary, with different stakeholders prioritising different things, e.g. political interests over environmental concerns, which can lead to disagreements in management objectives.

The traditional and emerging uses in ABNJ have intensified with technological advancements that have expanded the traditional views of these spaces. For instance, artificial intelligence and robotic innovations such as remotely operated vehicles (ROVs), autonomous underwater vehicles (AUVs), and submarines have fostered military, scientific and cultural ventures in the oceans deep (Barnes et al., 2023; Weibel, 2023). For example, in 2019, the Five Deeps Expedition successfully reached the deepest measured point of the ocean in the Mariana Trench, the Challenger Deep, using a specially designed submersible (Fitzherbert, 2019). In 2023, the implosion of the Ocean-Gate submersible Titan during an expedition to explore the Titanic's wreckage highlighted the extension of these endeavours into social enterprises, including the realm of extreme tourism (Weibel, 2023).

In science, the conventional ecological theories depict the deep sea as largely devoid of life (Herring, 2007), are now increasingly challenged due to more technological access and studies. Examination of deep-sea benthic samples uncovered increased species diversity (number of species), habitat complexity and peculiar ecological interactions, such as the significance of

dark energy and chemosynthetic production in sustaining life (Danovaro et al., 2014). Some scholars even argue that deep-sea diversity may sometimes be as high as in shallow marine environments, sometimes resembling the richness found in tropical waters (Coleman et al., 1997). The observed high species diversity is attributed to increased sampling effort and success accorded by technological advancement (Danovaro et al., 2014). However, certain regions of the deep are still largely unexplored and may remain unknown (Urbina, 2019).

Advancements in technology are not only facilitating these activities but also reshaping how biodiversity is understood—for example, shifting the focus from simple species counts to genetic resources and big data (Devictor and Bensaude-Vincent, 2016; Waterton et al., 2013). Biodiversity governance concepts, once confined to Earth, now extend to novel territories like extra-terrestrial biodiversity (Shahar and Greenbaum, 2020). In doing so, technology automates the traditional frontier experiences of exploration, exploitation and violence, often adversely affecting marginalised communities and the non-human environment (Fang et al., 2019; Parris-Piper et al., 2023). Additionally, techno-utopianism emerges, where science and technology, both contributors to the environmental crisis, are seen as solutions through their influence on laws and governance frameworks (Childs, 2020; Deberdt and Le Billon, 2023). Technology thus serves as an agent of social and cultural transformation, shaping perceptions and values around biodiversity (Natale and Balbi, 2014). As a result, tech-driven responses to environmental crises play a pivotal role in defining the ABNJ as a modern frontier (Coninck et al., 2008).

These perspectives are crucial in understanding how technology is redefining the future of biodiversity understanding and governance in the ABNJ, a topic that has received limited attention so far (Lübker et al., 2023). The vastness, depth, and fluidity of ocean spaces, particularly in the ABNJ, already create significant challenges for accessing these spaces, even more so for understanding and managing environmental concepts (Nyman, 2019; Peters, 2020; Steinberg, 2001; Steinberg and Peters, 2015). Oceans defy conventional norms and categorisations, challenging traditional ways of thinking and governing the oceans (Helmreich, 2009; Sammler, 2020b; Steinberg and Peters, 2015). Their dynamic nature requires innovative approaches to marine management. For example, coral reef conservation has historically focused on protecting specific areas from direct human impacts like overfishing and pollution (Wilkinson, 1996). However, research increasingly shows that factors such as rising sea temperatures, ocean acidification, and increasingly frequent and severe storm events—

phenomena driven by climate change—are significant threats that were not adequately addressed by these traditional methods (Dubinsky and Stambler, 2011; Erez et al., 2011; Hoegh-Guldberg et al., 2017; Lough, 2008). Emergent concepts, like assisted evolution, which involves breeding corals more resilient to these conditions, are now being proposed as potential solutions (Humanes et al., 2021).

This thesis emphasises recognising oceans as dynamic spaces that fundamentally reshape how biodiversity is conceptualised and governed. Understanding this fluidity is crucial because existing frameworks for legitimising and practising biodiversity on a global scale are not equipped to address the complexities of evolving environmental challenges. These frameworks often rely on static definitions and outdated approaches, failing to account for the shifting and interconnected nature of the contexts in which they operate (Pinsky et al., 2018). Despite this, there has been limited research into how these governance structures fall short and reinforce narrow conceptualisations of biodiversity meanings and practices through their cumulative influence. This thesis seeks to fill that gap by examining how existing ocean governance frameworks contribute to biodiversity concepts' static modes of thinking and governance. The thesis builds on the fact that ocean governance is fragmented (Figure 1.1 and Table 1), insufficient and highly influenced by the 1982 United Nations Convention on the Law of the Sea (UNCLOS (UNCLOS, 1982), as discussed further in the next section.

1.3.2. An insufficient ocean governance framework and the Law of the Sea

The insufficient and fragmented ocean governance framework is another crucial consideration and case for this research. For decades, the governance of oceans and ABNJ, in particular, has been defined under UNCLOS (UNCLOS, 1982), assisted by a patchwork of international, regional and subject-specific ocean governance frameworks (**Figure 1.1**). Each of the frameworks emphasises its own attributes and management objectives concerning marine biodiversity in ABNJ, elaborately explored in various works such as Billé et al; Gjerde and Yadav, 2021; Langlet and Vadrot, 2023a, 2023b; Rochette et al., 2015; Wright et al., 2016b (see also Figure 1.1 and Table 1).

For example, the 1995 United Nations Fish Stocks Agreement (UNFSA) focuses on conserving and managing straddling fish stocks and highly migratory fish to ensure their long-term sustainability and promote international cooperation (UNFSA, 1995). However, it does not broadly address other parts of biodiversity. Similarly, the International Whaling Commission (IWC) focuses on conserving whale populations and, increasingly, other cetaceans without

addressing broader marine biodiversity concerns (Wright et al., 2016a). Other key frameworks include the Intergovernmental Oceanographic Commission (IOC) of UNESCO, which fosters international cooperation in marine science (Ehlers, 2000), and the Regional Fisheries Management Organizations (RFMOs), which manage fish stocks in specific regions of the High Seas (Haas, 2021). Each of these bodies brings a unique perspective and set of priorities, highlighting the multifaceted nature of ocean governance.

However, UNCLOS is seen by many scholars as the *constitution of the oceans* that provides a comprehensive legal framework for all activities and uses of the world's oceans (Aricò, 2015; Oude Elferink, 2005; Pollock, 1977; Pyć, 2019; Scott, 2005). It is also the principal framework for emerging international ocean governance treaties like the UNFSA and the recent BBNJ (Biodiversity Beyond National Jurisdiction), serving as the basis for addressing environmental issues in ABNJ (Nordquist et al., 2004; Nordquist, 2011; Nordquist and Long, 2021). Indeed, the UNCLOS regime has been used to accomplish much in many respects, particularly in creating economic boundaries through maritime zones, delineating fundamental principles, rights, and responsibilities of States in the use of marine space and resources (Beckman, 2013; Chircop et al., 2008). It also defines ABNJ as one of the ocean zones (see the Underlying approach and theoretical framework Chapter 2: Underlying approach and theoretical framewor, section 2.5.1. Defining the geographical remit), significantly influencing ocean governance and marine biodiversity objectives (Chapter 6: Tracing Marine Biodiversity in the BBNJ). **This section 1.3.2. on the insufficient ocean governance framework introduces UNCLOS as a critical legal framework for the oceans, emphasising its influence on established and emerging governance concepts, including marine biodiversity in ABNJ. This introduction is an integral part of building the case for this research**.

Before UNCLOS, the oceans were primarily governed by the 17th-century concept of the *Freedom of the Seas* which gave Coastal States rights over ambiguously defined areas of territorial sea adjacent to their land (O'Connell, 1971). This allowed some States to redefine their territories seldom and extend their jurisdiction over the sea (O'Connell, 1971). UNCLOS aimed at standardising state claims over the sea to preserve world order and peace through peaceful relations between sovereignties and jurisdictions while using ocean resources and spaces (Allott, 1992). It did so by zoning the sea into the territorial waters of States, the continental shelf, the exclusive economic zone (all areas under national jurisdiction), and the areas beyond the limits of national jurisdiction (ABNJ). Strictly speaking, all UNCLOS provisions can be categorised into two main parts: maritime zones and boundaries and dispute

settlement. In other words, while UNCLOS covered a range of matters, its value system and role were essentially the settlement of maritime disputes through these zones.

Recalling paragraph 1 of the UNCLOS preamble, UNCLOS was Prompted by the desire to settle, in a spirit of mutual understanding and cooperation, all issues relating to the law of the sea and aware of the historic significance of this Convention [UNCLOS] as an essential contribution to the maintenance of peace, justice and progress for all peoples of the world…. Further recalling the failed negotiations that resulted in UNCLOS I, II and III, the contentions were essentially the same. The major naval powers sought global maritime mobility to secure their strategic and diplomatic interests, while the coastal States sought to extend their control over the marine resources adjacent to their territories (Alexander et al., 1977; Barston, 1980; Buzan, 1981; Charney, 1984; Fawcett, 1977; Rose, 1990; Yankov, 1977). In negotiating international treaties, issues of contention are the fulcrum for reaching a consensus and are often the critical reasons behind the treaty (D'Amato, 1970).

In this respect, this legal-political regime, UNCLOS, which took decades to develop, enabled States to reach some form of consensus on how to address maritime conflicts which were enshrined in a history of wars due to problematic economic and political dogma, territory, and boundary-marking (Moore, 2018; Nordquist et al., 2018). Notably, the United Nations, under which modern international treaties are negotiated, was created in October 1945 to prevent war, reaffirm human rights and dignity, ensure justice and respect for international law, promote social progress, practice tolerance, maintain international peace and security, regulate the use of armed force, and advance economic and social development globally (United Nations, 1945)This value system embodies all legally binding international treaties, including those related to ocean governance (see section 5.1.2(a), The UN system and its military dilemma).

Therefore, UNCLOS was arguably developed without any meaningful form of environmental concerns, negotiated and drafted when issues like climate change were not central to international discussions (Vadrot et al., 2022). However, it included provisions pledging the conservation and management of living marine resources and protecting the marine environment (see core regime in Part X11 of UNCLOS). These aspects, largely negotiated as technical and science-based elements, were enshrined in the general objective of peaceful relations among States (Nordquist et al., 2007). As stated in the UNCLOS preamble:

> *Recognizing the desirability of establishing through this Convention, with due regard for the* sovereignty of all States, a legal order *for the seas and*

oceans which will facilitate international communication and will promote the peaceful uses of the seas and oceans, the equitable and efficient utilisation of their resources, the conservation of their living resources, and the study, protection, and preservation of the marine environment.
(UNCLOS, 1982*:* Preamble)

The negotiators did not fully consider the complexities of environmental issues, for instance, how climate change would impact the legal baselines upon which ocean zones and governance are established (Sammler, 2020b). Notably, issues such as sea level rise present a significant challenge, particularly when coastlines recede onshore, especially for small island States (Sammler, 2020b). The UNCLOS regime lacks explicit instructions on adjusting these baselines in response to changing coastal conditions. While Article 16 of UNCLOS mentions the obligation to delineate baselines on charts or specified coordinates, this does not extend to establishing regular baselines as described in UNCLOS Article 5. Exceptions exist for the extended continental shelf seaward limits, acknowledging the reality of unstable coastlines and advocating for a flexible approach to natural conditions. However, this poses challenges in defining the ABNJ itself (see Underlying approach and theoretical framework; 2.5.1(b) ABNJ as an abstract UNCLOS zone).

Moreover, UNCLOS technical spatial considerations, encompassing the various jurisdictional zones (Territorial and Contiguous zones, Exclusive Economic Zones (EEZ), Continental Shelf (CS), High Seas, and The Area), can easily clash with ecological criteria for managing marine life (Gjerde and Ong, 1993; Lyons, 2018; van Dyke and Broder, 2011). Ecological zonation involves multifaceted dimensions, including vertical and horizontal aspects, temporal and spatial elements, and interactions among living and non-living components (Farina, 1998). Various factors, such as residence time, sustainable population establishment, proximity to habitable land, light penetration, oxygen levels, temperature, salinity, turbidity, nutrient concentrations, species biomass, water flow rates, and wave impact, contribute to ecological zonation (Lalli and Parsons, 1997; McManus, 2001). Challenges arise when ecological considerations collide with legal zones, leading to conflicts such as those witnessed in the establishment of the Chagos[1] MPA in the British Indian Ocean Territory, that encroached

1 Chagos Marine Protected Area Arbitration (Mauritius v United Kingdom) (Award of 18 March 2015) PCA Case No 2011-03 (Chagos MPA).

on economically significant fishing zones of its neighbouring Indigenous communities (Hays et al., 2020; Vithanage, 2012).

As environmental and societal challenges evolve, there is growing recognition of the need to reassess and clarify aspects of UNCLOS to address these issues effectively. Article 62 [2] of the Vienna Convention on the Law of Treaties (VCLT, 1969), allows parties to withdraw from a treaty if there is a fundamental change in circumstances that affects the basis of their consent and obligations (Addo, 2016). Environmental changes can constitute fundamental shifts, challenging the assumptions when UNCLOS was negotiated. Despite this, there appears to be little urgency among countries to revisit these treaties. This reluctance is partly because many international environmental treaties, unlike those related to trade and finance, lack effective enforcement measures, rendering them paper treaties with little impact (Hoffman et al., 2022). As a result, while updating UNCLOS environmental provisions may be necessary, the motivation to do so is hindered by the broader issue of weak enforcement in the international legal framework. Governments seem contented with the existing frameworks as long as their fundamental interests are protected.

Therefore, treaty law must be robust (Abbott and Snidal, 2000), considering historical, current, and potential future changes. Otherwise, it risks losing relevance or necessitating costly and time-consuming renegotiations (Alvarez, 2002; Steinberg, 1999b). Negotiating international treaties requires numerous stakeholders, extensive review, and debate over structure, content, and terminology (Boyle and Chinkin, 2007). The process often spans years, and once finalised, treaties typically remain unchanged for extended periods (Buzan, 1980; Pedrozo, 2022). To address this, negotiators sometimes include provisions allowing flexibility, adaptability, and the longevity of Agreements (Galligan, 1979; Redgwell, 2019). These provisions enable the development of implementing Agreements or amendments to address issues overlooked or inadequately addressed at the time of the treaty's formation, such as the BBNJ under UNCLOS. However, new treaties inevitably build upon existing ones, integrating themselves within the established institutional and legal framework. They cannot erase the conceptual, historical, or legal foundations on which previous treaties or international law are built (Boyle and Chinkin, 2007).

2 see Article 62 of VCLT.

This thesis will also address how existing ocean frameworks, particularly UNCLOS, impact the conceptualisation of biodiversity concepts and objectives in new Agreements, particularly the 2023 BBNJ Agreement.

1.3.3. The emerging BBNJ Agreement

Having laid the foundations of this research, I will present the final case within the emerging BBNJ Agreement and negotiation processes. **The BBNJ Agreement and its processes provide an ideal case study for understanding the operationalisation of biodiversity in the global marine sphere at this moment.**

Despite the achievements facilitated by the UNCLOS regime (Moore, 2018), the ongoing environmental crisis and the neglected social and distributive aspects of resource use and depletion reveal UNCLOS as an incomplete and potentially outdated policy (Roach, 2018). This argument has persisted since UNCLOS was formalised in 1982 (Steinberg, 2001). UNCLOS falls short in addressing complex environmental and social issues (Boyes, 2014; Mossop, 2020; Telesetsky, 2021; Zhang et al., 2021). It has become evident that even the patchwork of existing governance structures alongside UNCLOS has failed to address these ocean challenges, particularly in ABNJ (Freestone et al., 2006; Freestone, 2018; Vadrot et al., 2022). Treaties such as UNFSA (UNFSA, 1995), which focuses on straddling fish stocks, and the Convention on Biological Diversity (CBD), which addresses biodiversity in general, either fall short in jurisdictional scope or fail to address the pertinent issues in ABNJ fully (Goldsworthy and Brennan, 2021)Modern environmental issues and governance challenges involve diverse stakeholders with divergent interests, challenging the effectiveness of the existing ocean governance regime (see also Chapter 7, Section 7.6, Fragile foundations: Navigating potential conflicts from the BBNJ Agreement).

In a desperate effort to address these challenges, the UN General Assembly, after a decade of informal deliberations, began 2018 a series of intergovernmental conferences (IGCs) to negotiate and develop an international legally binding instrument under UNCLOS (Scovazzi, 2015), known as the BBNJ (biodiversity beyond national jurisdictions) Agreement or simply the BBNJ. The main objective of the BBNJ, increasingly referred to as the High Seas Treaty (Mendenhall, 2024), an issue revisited later, is the conservation and sustainable use of marine biological diversity in ABNJ through four broad themes: 1) Marine Genetic Resources (MGR) as well as Access and Benefit Sharing (ABS), 2) Area-Based Management Tools (ABMTs),

including Marine Protected Areas (MPAs), 3) Environmental Impact Assessments (EIAs), and 4) Capacity Building and Technology Transfer (CB&TT).

However, the development of the BBNJ Agreement has unfolded amidst a complex land/seascape of conceptual, socio-economic, geo-political, and legal considerations. Differing views on ocean governance principles (Vadrot et al., 2022), debates about institutional authority in ABNJ (Langlet and Vadrot, 2023b), unequal involvement of various stakeholders and perspectives (Blasiak et al., 2016; Blasiak et al., 2017) including the rights of nature (Harden-Davies et al., 2020), and challenges in creating a coherent legal framework are among the issues (Mendenhall et al., 2022; Santo et al., 2020).

From the outset of informal preparations, countries like the United States, Russia, China, and the United Kingdom questioned the need for a new agreement, believing existing frameworks were sufficient to address the environmental crisis in ABN (UNGA Res 59/24 §73, 2005). There was also significant debate among stakeholders regarding the legal framework for the BBNJ Agreement, with some advocating for the CBD over UNCLOS (Cloutier, 2023; Lothian, 2022). The CBD and its Nagoya Protocol are recognised for biodiversity conservation, sustainable use, and equitable benefit-sharing—critical aspects of the new BBNJ Agreement (Humphries et al., 2020). However, the CBD lacks robust international monitoring and compliance mechanisms and does not explicitly cover ABNJ (Harrop and Pritchard, 2011). Moreover, the CBD and Nagoya Protocol applies only where national laws exist (Chiarolla, 2013; Greiber, 2019; Morgera et al., 2013). In contrast, UNCLOS is seen as a more legally binding treaty with established institutions like ITLOS to address legal matters and with specific provisions for ABNJ (Bodansky, 2023).

The interplay between the BBNJ and other institutional frameworks raises questions about how the BBNJ Agreement will meet its objectives without undermining existing frameworks (Blasiak et al., 2016; Gjerde and Yadav, 2021; Langlet and Vadrot, 2023b). Some view the BBNJ Agreement as adding to an already fragmented ocean governance framework, potentially increasing administrative burdens on unintended ocean users such as scientists (Barnes, 2016; Beringen et al., 2022; Caldeira et al., 2023; Friedman, 2019; Haas et al., 2021; Langlet and Vadrot, 2023b; Qu and Liu, 2022; Quirk and Harden-Davies, 2017; Scanlon, 2018; Wang and Zhang, 2024).

Even after UNCLOS was selected as the legal framework for the BBNJ Agreement, debates arose over negotiation terminology—specifically, whether the BBNJ should be an implementing agreement *of* or *under* UNCLOS (UNGA Res 59/24 §73, 2005). The term *under*

UNCLOS was preferred to provide the BBNJ with some autonomy during discussions, avoiding engaging with the complexities of UNCLOS's historical and conceptual challenges. This choice aimed to balance maintaining a foundational link to UNCLOS while allowing the BBNJ to adapt to new environmental and geopolitical realities. This nuanced choice highlights the complex role of language in the negotiation processes. This issue will be explored in detail in the Underlying approach and theoretical framework (Chapter 2) and throughout this thesis.

Additionally, there was a lack of a consistent understanding of the purpose and objectives of the BBNJ Agreement—the conservation and sustainable use of marine biodiversity in ABNJ—which added to these tensions (UNGA Res 59/24 §73, 2005). The concepts of conservation, sustainable use, and marine biodiversity are multifaceted, lacking clear, coherent, and consistent meanings, as addressed more elaborately in Chapter 4: Biodiversity contested, critical concepts and moments and Chapter 6: Tracing Marine Biodiversity in the BBNJ dis-Agreement. These complexities are compounded by the need to accommodate stakeholders' diverse needs and interests (Chapter 5: Inclusivity in Global Commons Governance) while addressing emerging concerns and evolving understanding of ocean governance. From the outset, significant divisions surfaced regarding the overarching ideas, principles, and objectives of the emergent BBNJ Agreement (Crespo et al., 2019).

The decision to define and prioritise certain aspects of marine biodiversity, such as the MGR concept, or to leave critical concepts like marine biodiversity undefined introduced ambiguity into the negotiation processes. Noteworthy debates, expanded in Chapter 6, included whether elements like fish should be included as part of marine biodiversity, particularly emphasised by fisheries communities (Crespo et al., 2019; see also Chapter 6, Section 6.7. Fisheries out: our fish is not your marine biodiversity). Other significant contentions surrounded the proposed strategies for achieving the objectives of conservation and sustainable use of marine biodiversity (Chapter 7: Conservation and sustainable use objectives in the BBNJ).

For instance, Marine Protected Areas (MPAs) in the BBNJ Agreement are considered essential conservation tools, strongly promoted by the EU since the start of the informal negotiations (UNGA Res 59/24 §73, 2005). The EU consistently prioritised MPAs for achieving BBNJ objectives, with resource use in ABNJ being a secondary concern (see Chapter 7, section 7.4. "Pursuing conservation and sustainable use through ABMTS/MPAs"). On the other hand, delegates from low-income countries prioritised the use aspect, relegating MPAs to a lower priority (Popova et al., 2019; WANG, 2019). These contrasting positions reflect the diverse

perspectives of stakeholders concerning biodiversity objectives and management frameworks, as elaborated in Chapter 7.

The historical inequalities, for instance, in access and use of marine space and resources (Wilson, 2021) and the neglect of the rights of nature and marginalised voices in ocean governance (Harden-Davies et al., 2020; Morgera et al., 2023; Morgera and Lily, 2022), raise questions about the facets included or excluded in the BBNJ Agreement and their implications for addressing the environmental crisis. The lack of a definition of *marine biodiversity* in the BBNJ Agreement, despite biodiversity being the central theme for negotiations (Mendenhall and Bateh, 2024), allows for broad interpretation of what may or may not be included. The predominant participation of specific stakeholders, for instance from high-income countries (see Chapter 5: Inclusivity in Global Commons Governance), raises questions concerning *who* defines environmental concepts, for *what* purpose and for *whom*, especially in global commons (Santo et al., 2020; Tessnow-von Wysocki and Vadrot, 2020; Tiller et al., 2019; Ulrich and Vadrot, 2013)These divisions, further elaborated on in Chapters 5 to 7, are among the many challenges the BBNJ faces in addressing the abovementioned ABNJ issues.

Current reviews of BBNJ literature mainly focus on the process and obstacles of treaty negotiations, providing various sub-perspectives on geopolitics, international relations, environmental law, or the main four BBNJ elements: MGR and ABS, ABMTs/MPAs, EIAs, and CB&TT (Tessnow-von Wysocki et al., 2021; Tessnow-von Wysocki and Vadrot, 2020). They highlight the interactions between institutional frameworks (Gardiner, 2020; Nickels, 2020), rights of nature (Harden-Davies et al., 2020; Vadrot et al., 2022), ocean resilience and human activities (Gjerde and Yadav, 2021), and the importance of traditional knowledge (Mulalap et al., 2020) among others. These aspects represent some of the different facets of marine biodiversity and its goals in the BBNJ Agreement. **However, despite the varied nature of the BBNJ literature, there is a lack of critical analysis on how these sub-themes contribute to the overall understanding and objectives of biodiversity— considered the rallying discourse for this treaty (Mendenhall and Bateh, 2024).**

How concepts are defined and understood in various contexts determines governance frameworks (Conde et al., 2022). Similarly, how marine biodiversity in ABNJ is understood shapes how governance in the BBNJ Agreement will be implemented. As discussed in Chapter 8, humans are predominately landed, which affects how they perceive governance concepts, including those related to biodiversity and geographies like the ocean and ABNJ. Many scholars

and practitioners have deferred these discussions to future working groups and Conferences of Parties (COPs) (Deasy, 2023; Roach, 2021b).

This thesis builds on various sub-perspectives from the BBNJ processes and literature to unveil nuanced perspectives about biodiversity objectives, particularly in the current discourse on the BBNJ Agreement. While existing scholarship primarily focuses on the broad implications of various understandings of scientific or environmental concepts in the oceans (Cochrane et al., 2016; Steinberg, 1999b), or on procedural aspects of the BBNJ negotiations—such as geopolitical tensions, institutional interplay, or the four thematic pillars (MGR, ABMTs, EIAs, and CB&TT) (Hughes and Vadrot, 2023), —**this research fills a crucial gap by examining how the contested and evolving understanding of *biodiversity* influences governance structures and policy outcomes in ABNJ.**

This thesis departs from traditional legal or institutional analyses by interrogating the normative and conceptual ambiguity of definitions and contested meanings of critical BBNJ discourses like *marine biodiversity* within the BBNJ framework. It offers a nuanced exploration of how biodiversity abstractions shape—and are shaped by—divergent stakeholder interests, socio-political contexts, and power dynamics (Chapters 5, 6 and 7). Through its explorations, it highlights the tensions between the Global North and South (Tenniswood, 2018), the rights of nature (Harden-Davies et al., 2020), and the historical inequalities in access and use of marine spaces (Wilson, 2021). This approach enables a broader understanding of how environmental governance is negotiated and legitimised at the international level.

This thesis is timely, coinciding with the negotiations and conclusion of the BBNJ negotiations, and also forward-looking. It anticipates how the BBNJ Agreement could set legal precedents for managing other global commons, such as outer space (George and George, 2022; Samata, 2023). By linking biodiversity abstractions within BBNJ contexts to broader environmental and political discourses, this research offers fresh insights into understanding biodiversity and the governance challenges and opportunities presented by complex, multi-stakeholder treaties to address pressing global environmental crises. This critical analysis is essential to understanding the broader implications of biodiversity meanings and governance in marine and non-marine contexts.

1.4. Specific objectives

Having now introduced the research topic and case for this research, the specific objectives of this thesis are;

1. To explore the biodiversity discourse by identifying who defines biodiversity, for what purposes, on whose behalf, and in which contexts.
2. To analyse the nuanced understandings of marine biodiversity and objectives through the lenses of scales, interests, power dynamics, and stakeholders that shape and are shaped by biodiversity meanings and governance within international frameworks, using the BBNJ Agreement and its processes as a case study.
3. To envision global ocean biodiversity governance in light of the terrestrial nature of human societies.

1.5. Introduction to Chapters

The thesis is divided into three main parts across eight chapters, each closely linked to the one before and after, reflecting the complex and interconnected nature of the biodiversity discourse. Sections submitted or published with the author's significant contributions are noted in the introduction of each Chapter.

Part 1 introduces the background of the research, consisting of the project overview (Chapter 1), Underlying approach and theoretical framework (Chapter 2), methods (Chapter 3), and the first objective (Chapter 4).

- Specifically, following this introduction, **Chapter 2: Underlying approach and theoretical framework discusses** how biodiversity is analysed as a discourse in this thesis, focusing on selecting methods and theories that allow for an interdisciplinary approach. It emphasises the importance of acknowledging subjectivity in understanding biodiversity and highlights the connections between environmental, geographical, social, and political dynamics. The chapter also explores the author's positionality, stressing the importance of reflexivity and ethics in research, directly informing the following chapter on methods.
- **Chapter 3: Methods** explains the data collection and analysis tools, including quantitative and qualitative approaches, to capture the complexity of biodiversity discourse.
- **Chapter 4: Biodiversity contested, critical concepts and moments** addresses the first objective. It focuses on the key features of biodiversity discourse by exploring who defines biodiversity, for what purpose, and in what contexts. It links these questions to broader global environmental governance issues and serves as a secondary literature review, placing the thesis within the historical development of biodiversity discourse.

Part 2 focuses on contemporary biodiversity meanings and governance issues, using the BBNJ (Biodiversity Beyond National Jurisdiction) as a case study to address the second objective. It has three chapters (5, 6, and 7).

- Specifically, **Chapter 5: Inclusivity in Global Commons Governance** explores the role of inclusivity in shaping biodiversity discourses within the BBNJ context, analysing the power dynamics among stakeholders. It examines who influences biodiversity decisions and how they achieve this position.
- **Chapter 6: Tracing Marine Biodiversity in the BBNJ dis-Agreement** investigates how marine biodiversity is defined (or not) in the BBNJ process, emphasising the role of language and law in legitimising specific biodiversity perspectives and values. It discusses how stakeholders from diverse backgrounds determine which aspects of marine biodiversity are prioritised.
- **Chapter 7: Conservation and sustainable use objectives in the BBNJ builds on Chapter 6,** examining the implications of varying perspectives on setting conservation and sustainable use objectives. It highlights tensions arising from different interpretations of "sustainable use" or "conservation." This chapter also analyses past ocean governance conflicts, showing how conflicting interpretations of environmental concepts can create disputes and hinder resolution (section **7.6. Fragile foundations: Navigating potential conflicts from the BBNJ Agreement**). It stresses the importance of effectively avoiding these interpretation conflicts to implement the BBNJ Agreement.

Part 3 on the future of marine biodiversity governance includes Chapter 8, which answers the third objective and concludes with Chapter 9, offering the thesis synthesis, contributions, and a final outlook.

- **Chapter 8: Biodiversity and Landlockedness** introduces the concept of a "landlocked ocean" to highlight how terrestrial biases shape biodiversity understanding and governance in the BBNJ contexts. It reflects the disconnection most people, whether landlocked or coastal countries, can have in ocean spaces, especially in ABNJ, resulting in shoving land concepts of governance into the marine context.
- **Chapter 9** synthesises the findings and contributions and offers suggestions for future research directions.

Table 1: Overview of major international ocean governance frameworks applicable to Areas Beyond National Jurisdiction (ABNJ). For detailed interrelationships between these frameworks, refer to Figure 1.1

Acronym	Full name/role
Aichi Targets	Biodiversity targets under the CBD agreed upon during the Aichi Biodiversity Conference
ATS	Arctic Treaty System
BBNJ	Biodiversity Beyond National Jurisdiction
CBD	Convention on Biological Diversity.
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CLCLS	Commission on the Limits of the Continental Shelf
CMS	Convention on the Conservation of Migratory Species of Wild Animals
DOALOS	Division for Ocean Affairs and the Law of the Sea
FAO	Food and Agriculture Organization
ILO	International Labour Organization
IMO	International Maritime Organization
IOC	Intergovernmental Oceanographic Commission
ISA	International Seabed Authority
ITLOS	International Tribunal for the Law of the Sea
IWC	International Whaling Commission
London Convention	Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter
MARPOL	International Convention for the Prevention of Pollution from Ships
PRISMA	Programs and initiatives related to the monitoring and management of fisheries.
RFMO	Regional Fisheries Management Organizations
SOLAS	International Convention for the Safety of Life at Sea
UNCLOS	United Nations Convention on the Law of the Sea
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFA	United Nations Fish Stocks Agreement
UNGA	United Nations General Assembly
UNSG	United Nations Secretary-General

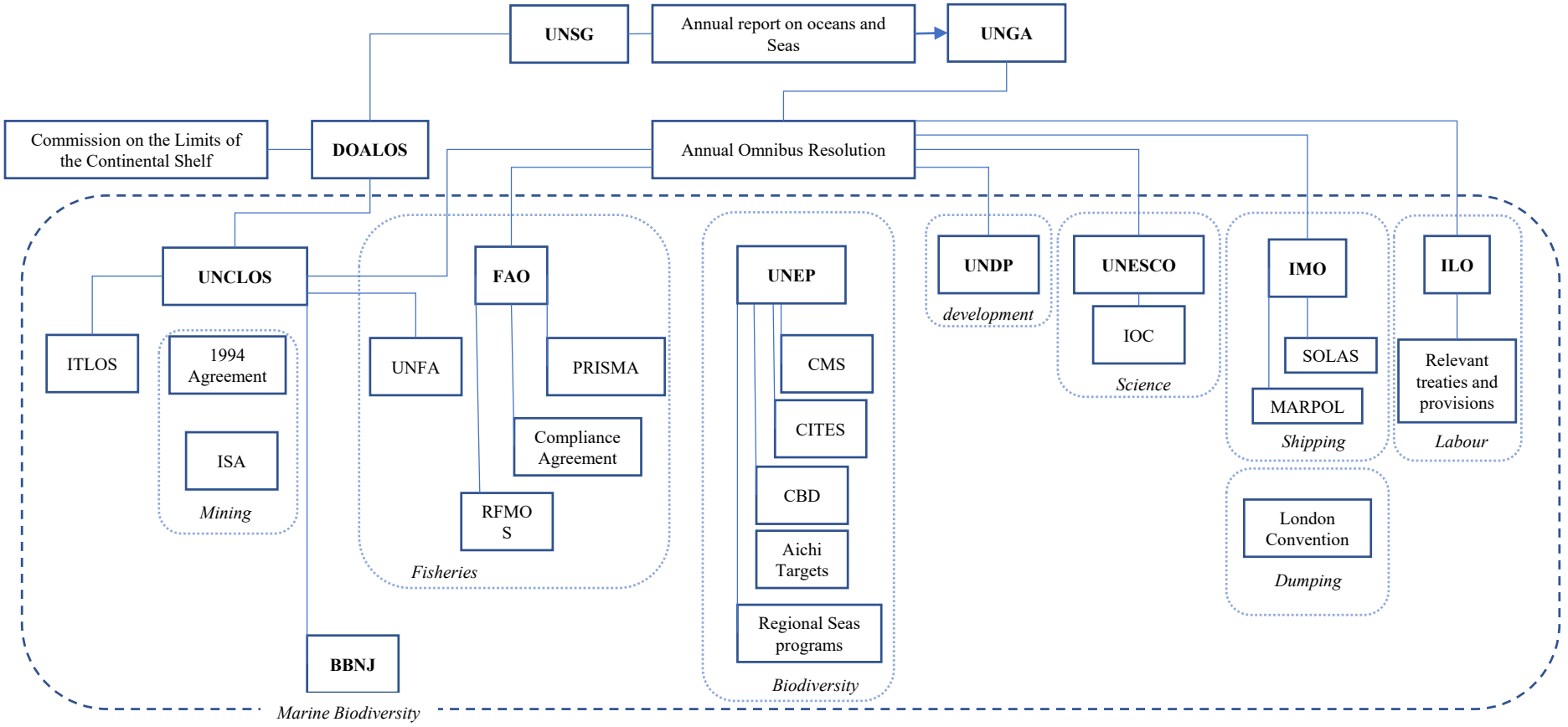

Figure 1.1: A Schematic representation of the existing global ocean governance framework, highlighting the focus areas of various international bodies and Agreements (in italics). The diagram also introduces the newly negotiated ***BBNJ Agreement***, designed to address gaps in the governance of marine biodiversity in areas beyond national jurisdiction. Adopted from Haas (2021) citing Degnarain and Stone (2017).

Chapter 2: Underlying approach and theoretical framework

2.1. Introduction

How does one navigate the complexities of a concept with numerous interpretations without becoming overwhelmed?

This chapter aims to discuss the thesis's underlying approach and theoretical framework and build a framework for an interdisciplinary analysis of biodiversity discourses from the inception of the research topic to its execution.

Understanding biodiversity involves more than abstract theories or numerical data. Biodiversity is a multifaceted concept that resists simplistic examination, demanding interdisciplinary involvement and a nuanced understanding of its evolving interpretations across different scales (Casetta et al., 2019b). To engage with biodiversity discourses, one must consider different viewpoints, periods, locations, theoretical ideas and practical applications. It is crucial to be aware of the perspectives, biases, and assumptions that arise at each level of analysis to conduct a thorough investigation. This Chapter offers the tools and strategies needed to engage with biodiversity discussions thoughtfully and effectively, ensuring that the complexity of the topic is addressed without losing clarity or focus.

One of the main challenges in discussing biodiversity is defining the scope of the study, especially since the discourse itself is constantly evolving. Focusing on specific contexts and identifying recurring patterns that either remain stable or change over time has been particularly useful in biodiversity debates (DeLong Jr, 1996). Rather than concentrating on individual elements of the biodiversity discourse, this thesis uncovers underlying patterns within various contexts to understand the processes that shape or create knowledge concerning the specific elements. This approach helped track potential shifts in the understanding of biodiversity within these contexts over time, making future analysis and comprehension easier. No matter the approach, it requires engaging with various fields and disciplines and carefully selecting the correct theories to capture the multifaceted aspects of the discourse. This project's key fields included environmental and related disciplines, social science, international law and relations, geography, communication, and technology studies. These fields also played a crucial role in shaping this study's underlying approach, theoretical framework and methods.

This Chapter is organised into three main sections. The first section explains how to position yourself within the complex discussions around biodiversity. The second section introduces the theoretical perspectives for analysing biodiversity within specific contexts. The third section shows how these perspectives were applied to define the scope and focus areas of the study.

2.2. Finding the researcher within the discourse: acknowledging my positionality

One of the fundamental aspects of any research project relates to how you choose the topic (Peters, 2017). While literature plays a crucial role in framing questions, personal experiences are also meaningful within existing narratives (O′Leary, 2021). Even if questions have been previously explored, researchers may revisit them if the answers are unsatisfactory or new lines of inquiry emerge, using different approaches or frameworks (Bell and Waters, 2018; O′Leary, 2021; Peters, 2017). Each research may also bring new knowledge through situated perspectives (Rose, 1997). In other words, who we are shaping the research we do (Rose, 1997).

Positionality places a strong emphasis on highlighting one's personal experiences when researching to show how interpretations may be influenced by who we are (Soedirgo and Glas, 2020). Every study inherently carries biases aligned with the author's value systems, even as science aspires to objectivity (Latour, 1998). The narrative of objective science centred on gaining knowledge through hypothesis testing (Frid et al., 2023), tends to overlook those subjectivities a researcher brings (Muradian and Gómez-Baggethun, 2021). By recognising a researcher's positionality, a distinctive perspective emerges—where the researcher is both a subject and object within the study, acknowledging the reciprocal influence between the researcher and the researched (Hammersley and Atkinson, 2019; Peters, 2017; Rose, 1990; Rose, 1997; Watts, 2008). Acknowledging this reciprocity allows the incorporation of diverse perspectives, contributing to a transparent interpretation of the research findings that can be weighed against the researcher's position (Hammarberg et al., 2016). To conscientiously acknowledge positionalities and transparently document them, one recognises potential biases and attempts to minimise them when presenting narratives on the discussed issue (Alejandro, 2021). I have navigated this process in selecting this thesis research project and past projects.

For instance, from a young age, I was curious about human and non-human life and the systems that sustain it. I would collect insects and keep them in small containers, providing them with food and grass. As I progressed in my academic journey and gained insights into various scientific and biological fields, I became increasingly fascinated by the workings of both human and non-human bodies: the worlds of people but also animals, insects, etc. These innate

curiosities, coupled with my academic pursuits, had initially fuelled a desire to pursue a medical degree for my undergraduate studies. However, circumstances led me to pursue a bachelor's degree in conservation biology instead, which still aligned with my inherent interests and academic background, whilst away from my initial plans. My childhood curiosities resurfaced in the choice of my bachelor's thesis, in which I focused on human-environment interactions.

Indeed, I had often wondered about the disappearance of large flocks of mysterious flying creatures resembling black birds that used to grace our neighbourhood in the suburbs of Kampala, the capital city of Uganda, every evening, only to vanish by morning. These mysterious creatures, I later learned, were Megachiropterans—the straw-coloured fruit bats *Eidolon helvum*—also known as flying foxes (DeFrees and Wilson, 1988). They were once abundant in these suburbs and across various ecosystems in Uganda (Kityo and Kerbis, 1996). Initially mistaking them for birds, my realisation that they were bats sparked a curiosity in taxonomy and systematics (systematic biology), a fascination that persists to this day and will be reflected in this thesis. The phenomenon of witnessing these bats in large numbers in the night sky gradually dwindled over time, with only a few groups remaining in certain areas. Informed by my bachelors studies on the impact of human activities on wildlife, my project at the time focused on analysing the potential impact of human settlements and land-cover use and change on the population of *Eidolon helvum* in Kampala and its surroundings (Sebuliba, 2014). While literature confirmed that similar inquiries had been made in the early 1990s with projections of continuous decline in these species (Kityo and Kerbis, 1996; Perpetra and Kityo, 2009), my curiosity allowed me to reengage with the topic and study what has changed. The thesis ultimately laid the groundwork for my ecological work on bat morphology and ecology, other small mammals, and subsequent biodiversity surveys. Biodiversity was emerging as a central concern of mine.

Later, in my Masters thesis, I explored natural history museums as biodiversity and cultural databases (Sebuliba, 2020). The interest arose from my ecological fieldwork as a graduate consultant for Uganda's environmental and social impact assessment projects. I collected birds and small mammals for study and analysis. These specimens were later prepared and curated in museums, providing valuable data for projects such as the International Union for Conservation of Nature (IUCN) Red List for Ugandan mammals and socio-ecological surveys for oil exploration efforts (Plumptre et al., 2015). Despite the recommendations being ignored, my involvement in advising against exploration in specific ecologically sensitive areas sparked my curiosity about natural resources' political, institutional, and legal governance. Witnessing

the disregard for ecological considerations in decision-making made me question the underlying frameworks and power dynamics that influence such outcomes. Economic interests and political pressures primarily drove the decision to overlook our recommendations.

First, the Ugandan government was seeking to diversify and boost its economy, with crude oil exploration seen as a critical resource for these endeavours (Mahroum, 2017; Mawejje, 2019). Influential stakeholders, including oil corporations like Tullow, Total Energies, CNOOC International, and the Ugandan government, seemed to prioritise financial gains over environmental sustainability. The voices advocating for environmental protection are marginalised or silenced in such settings (Bassey, 2002). The disregard for ecological considerations highlights the complex interplay between economic incentives, political agendas, and regulatory constraints (Gibbs and Jonas, 2000; Young, 2002)I was intrigued by how the scientific study of biodiversity was linked to socio-political worlds, not least through decision-making. These experiences laid the foundation for my interdisciplinary work and my decision to pursue an interdisciplinary Master's degree in biodiversity and collection management at the Senckenberg Museum of Natural History in Germany.

During my Masters studies, I expanded my understanding of biodiversity studies through museum collections and research (Sebuliba, 2020). I got further training in taxonomy and systematics based on physical and genetic characteristics, nature-cultural representations and their institutional underpinnings. As a systematic taxonomist, collections became crucial for understanding and managing biodiversity. Subsequently, I conducted consulting work, examining the role of museums in conservation and addressing issues such as big game hunting and colonial legacies (Sebuliba et al., 2021). I questioned the origins of natural and cultural artefacts in Western contexts and explored the (falsely constructed) boundaries between nature and culture in museum collections. The significance of collections in promoting concepts like wilderness versus civilisation, self versus the other, and legitimate versus illegitimate have become intriguing topics for my work. In my doctoral research, these threads tie together. I extend this inquiry, particularly into the complexities of understanding biodiversity from different social, political and economic contexts.

Providing this background is crucial as it has shaped my worldview and influenced the various topics and analyses this thesis reflects. As a trained conservation biologist, my view of biodiversity has always been a straightforward concept for understanding the natural world. Working in scientific, community, and policy settings, I gradually realised that my perspectives

were continually reshaped by the specific contexts where I operated, with biodiversity being the only constant concept. As I began to explore PhD opportunities, I developed research proposals on various topics, including the socio-ecological impacts of urban expansion near national parks and the governance of global commons, both from a conservation perspective. However, this interdisciplinary scope led to challenges during job interviews, where my qualifications and perspectives no longer aligned neatly with traditional biological fields. This experience motivated me to pursue a PhD, where I could fully engage with and contribute to the interdisciplinary study of biodiversity.

Amidst this struggle, I found a position focused on Biodiversity Scale and Difference in Marine Space at the Helmholtz Institute for Functional Marine Biodiversity and the Alfred Wegener Institute for Polar and Marine Research. Growing up near Lake Victoria in Uganda, my relationship with water was primarily terrestrial. However, I became interested in marine biology through ecological studies and in ocean space through media. Therefore, despite my limited experience with the oceanic, biodiversity as the concept motivated me to pursue this opportunity.

After securing the position, a pivotal question from my supervisor, Dr Katherine Sammler, is: What does biodiversity actually mean? —challenged the very foundations of my academic work and career. First, I knew biodiversity was a multifaceted concept, but at least with a straightforward definition. Bothered by this question, I turned to the 1982 Convention on Biological Diversity (CBD) definition of biological diversity and described some quantifiable metrics learned as a conservation biologist. Upon engaging Dr Sammler and various literature on the philosophical debates and diverse perspectives on nature, I realised that what I had previously perceived as a straightforward biodiversity concept carried more nuances beyond the few facets I had worked with.

To engage with the multifaceted concept of biodiversity, it was essential for me to acknowledge my foundational understanding of biodiversity and conservation as a fixed grand narrative and biological praxis and to be aware of the potential biases this perspective might introduce (Green et al., 2007; Soedirgo and Glas, 2020). Building on this awareness, I have engaged with a wide range of literature spanning the natural and social sciences to offer a balanced understanding of the various perspectives of biodiversity discourses. I draw on ecological and evolutionary biology literature from the natural sciences, which I am very familiar with, including studies on species classification, biodiversity theory, ecosystem dynamics, and conservation strategies.

This helps in situating biodiversity understanding from a biological and ecological standpoint. Simultaneously, I explore social science literature, such as environmental sociology, anthropology, critical geography, political ecology, science and technology studies, communication and media studies and social legal theory, to offer insights into other social biodiversity perspectives. This includes examining how cultural practices, economic systems, laws, policies, and ethical considerations influence biodiversity abstractions and objectives.

By reflecting on my positionality and being mindful of the potential biases it could introduce, I can openly engage with and integrate these diverse sources of literature and perspectives. This process sometimes requires additional training, such as the legal analysis training at the Rhodes Academy (2023), to enhance my understanding and approach to disciplines I am not traditionally trained. I employ various methods—from qualitative techniques like ethnographic studies to quantitative analyses (see 5.2. Analysis of inclusivity in BBNJ)—to ensure that my biodiversity exploration is well-informed and comprehensive, aligning with the aims and objectives outlined in Chapter 1.

Having placed the research in my own story, I detail the theoretical framework for this research analysis and methods. This structured exploration allows for a nuanced understanding of biodiversity, addressing its complexity while ensuring that each objective is met with the appropriate methodological tools. To begin with, how does one engage the various literature on biodiversity topics? This is the focus of the next section.

2.3. A review of a discourse

Dr Sammler prompted me to ask what biodiversity is. I made a classical move to literature to uncover a more comprehensive and nuanced understanding of biodiversity meanings. The intended approach was to review the concept of biodiversity across various disciplines. However, the initial challenge for any review is to establish a clear and precise problem the review seeks to address (Souza et al., 2010)The challenge is particularly pronounced in this thesis. Critically, the question is not merely about *what biodiversity is* but *what it does and for whom*. Addressing this question requires exploring multiple sources of biodiversity knowledge, each with its complexities.

This section discusses how the diverse biodiversity literature has been explored to engage with the biodiversity discourse.

I primarily conducted a **systematic literature review**, searching for, selecting, and synthesising relevant publications (Mengist et al., 2020). This kind of review is used to bolster the theoretical foundation of a given topic, ensuring that subsequent analyses are grounded in the most current and comprehensive knowledge available (Boell and Cecez-Kecmanovic, 2015; Chitu Okoli, 2015). The goal was to construct an interdisciplinary framework for examining biodiversity discourse's multifaceted interpretations and applications in various fields ranging from ecology and conservation biology to sociology, economics, and policy (see methods).

I searched the Web of Science platform[3], using the keyword "biodiversity," extracting over 191,181 articles from 1987 to 2021. This search was iteratively expanded until 2024 to include literature on the BBNJ (see methods). The term biodiversity, scarcely appearing in only two articles in 1987, surged to prominence, being referenced in over 1,100 articles by 1998, and continued to escalate, with an average of over 1,500 articles per year (Figure 2.1). Extending the search to include other electronic databases is essential to ensure a comprehensive and diverse review. This includes manually searching through journals, examining the references cited in selected studies, reaching out to researchers, and incorporating unpublished materials (Souza et al., 2010)However, since biodiversity is a term whose usage across the internet is too widespread, superseding even its predecessors like biological diversity (Figure 2.2), it is not easy to include all available literature. Therefore, this literature sample, analysed through various approaches (discussed below), served as a proxy for understanding the biodiversity discourse.

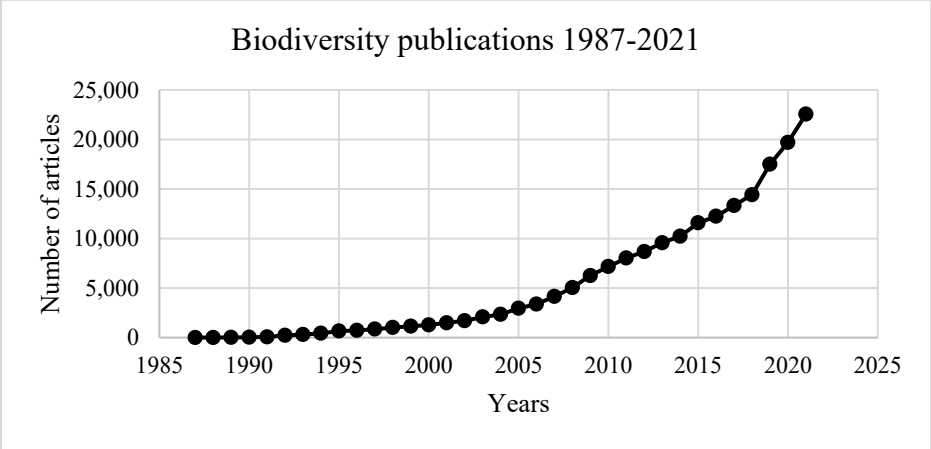

Figure 2.1: Biodiversity publications in the Web of Science database from 1987 to 2021

[3] Web of Science (WoS), originally founded in the 1960s as the Institute for Scientific Information (ISI) was acquired by Clarivate Analytics in 2016 as a selective, multidisciplinary database with specialized indexes organized by content type or theme.

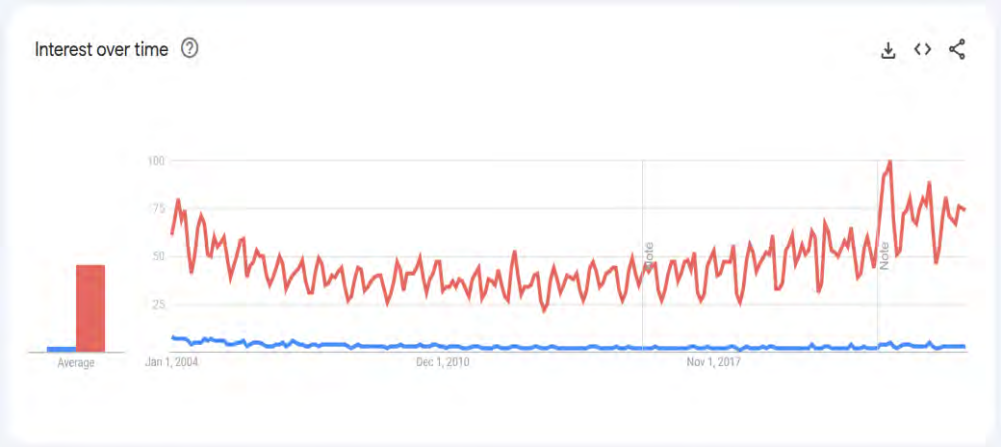

Figure 2.2: Interest over time in the terms *biodiversity* (red) and *biological diversity* (blue) worldwide from January 2004 to April 2024 obtained from the Google search engine trend algorithm. Numbers represent search interest relative to the highest point on the chart for the given region and time. A value of 100 is the peak popularity for the term. A value of 50 means that the term is half as popular. A score of 0 means there was not enough data for this term.

Conducting a proper systematic review of over 190,000 articles for a three-year thesis project with other specific objectives is not feasible. Additionally, selecting studies for systematic analysis requires assessing their quality using quality scores, but determining these scores is complex and lacks a universally accepted standard (Conn and Rantz, 2003). Furthermore, for a systematic review to be meaningful, it is essential to formulate a more precise question that can be addressed with explicit methods (Greenhalgh, 1997; Moher et al., 2009). The question of what biodiversity is, what it does, and for whom is unsuitable for explicit, systematic methods.

Semi-systematic and meta-narrative review approaches are suggested as alternatives to traditional systematic reviews, offering greater flexibility (Moher et al., 2009; Wong et al., 2013). These reviews are valuable for identifying overarching themes, theoretical perspectives, and common issues within a field (Ward et al., 2009). They are also helpful in providing historical overviews and timelines for evolving topics (Moher et al., 2009a; Wong et al., 2013). Despite their advantages, these approaches have limitations, including the potential to favour specific fields or narratives, making it difficult to achieve a comprehensive overview that spans multiple areas of research (Ward et al., 2009). Adopting a balanced approach considering various perspectives from different disciplinary sources is essential to mitigate this risk.

The approach used in this thesis is an integrative review, which combines multiple review processes (Whittemore and Knafl, 2005). Integrative reviews serve various purposes and help capture and represent complex concepts or theories (Souza et al. 2010). This approach allows for assessing, critiquing, and synthesising a wide range of literature while including marginalised perspectives (Torraco, 2005). This is especially important when dealing with complex, often debated discourses like biodiversity. Instead of strictly adhering to traditional disciplinary models, the integrative approach enables the inclusion of both dominant and marginal perspectives, requiring advanced interdisciplinary thinking and creativity (MacInnis, 2011).

I primarily relied on the Web of Science disciplinary categories to navigate the extensive dataset and capture the various disciplines addressing biodiversity. These categories, which organise research into specific fields, provide a framework to map scientific topics (Birkle et al., 2020; Pranckutė, 2021) like biodiversity. I then classified the retrieved literature using the Web of Science meso and micro citation topics (Li et al., 2021). These topical clusters are produced using *bibliographic coupling* (BC)**,** which measures the overlap of references to literature between two or more articles, first introduced by Kessler in 1963 (Kessler, 1963). Meso-citation topics encompass broader thematic areas, identifying interdisciplinary connections, while micro-citation topics focus on specialised research niches (Li et al., 2021). By using the diversity and network coherence of these topics as measures of interdisciplinarity (Rafols and Meyer, 2010), this classification helped map the structure of the biodiversity discourse, highlighting intersections between different topics and disciplines (Figures 5 and 6). This served as a foundation for deeper analysis of the scientific, intellectual land/seascape of biodiversity research.

Preliminary analysis showed that biodiversity is addressed by a wide array of fields, spanning natural and life sciences—such as biology, ecology, geophysics, geology, and medicine—as well as social sciences, including human geography, anthropology, economics, and environmental sciences. Emerging fields like artificial intelligence (AI) are also making contributions. However, at the broader disciplinary level (Web of Science meso levels 1 and 2), there is limited interaction between disciplines (**Figure 2.4** and **Figure 2.5**). Only a few meso and micro-level topics act as bridges between them. For instance, marine biology is one of the few meso topics that links the natural, social, medical, and physical sciences and management fields. Similarly, topics such as macroinvertebrates, mycotoxins, crop science, and

bacteriophages serve as critical nodes of engagement across biodiversity disciplines (**Figure 2.4** and **Figure 2.5**).

Despite this broad coverage, the biodiversity discourse remains dominated by natural science fields (**Figure 2.4**, **6** and **Figure 4.2** in Chapter 4). The primary contributors include ecology, environmental sciences, biodiversity conservation, plant sciences, marine and freshwater biology, zoology, environmental studies, evolutionary biology, and forestry (**Figure 4.2**). Many biodiversity micro-topics, like species diversity (explored further in Chapter 4), are deeply rooted in these disciplines. However, the underrepresentation of social science fields may not fully reflect their actual contributions to the biodiversity discourse. This is partly because multidisciplinary fields like environmental sciences often blend natural and social science perspectives, addressing biodiversity topics from different angles. Additionally, social sciences may use different terminology, such as "life" or "nature," to describe similar issues. Searching for "life" in the Web of Science returns over two million results, which is too broad to analyse meaningfully. This highlights the need for more strategic engagement with social science perspectives within the predominantly natural science literature, which is addressed using the theoretical framework in the following section.

There are also limitations to using large, metric-based search engines for studies like this. These databases rely on indexing from known journals, which is often expensive for researchers in lower-income regions, skewing results toward high-income countries that can afford access (Rafols et al., 2016) (**Figure 2.3**). Rafols et al. (2016) note that this underrepresentation overlooks perspectives or research topics critical to low-income countries in presumed global databases. Glänzel (2000) points out that research output by institutions or countries can predict future research potential and practices. However, as Hughes and Vadrot (2019) and Vadrot (2014) emphasise that perspectives about the natural world, especially in international contexts, are shaped by the dominant knowledge frameworks—many of which are based on Western education systems and values. For example, in a sample analysis of biodiversity research from Uganda, I found that much of the authorship attributed to this country involved co-authors from wealthier nations or projects funded by foreign institutions. As a result, I abandoned the plan to analyse literature based on specific countries, as the perspectives are often indistinguishable from the globalised narratives. A proper way of engaging country-specific perspectives on biodiversity or Indigenous knowledge, independent of the elite or Western views, is still lacking (Harding et al., 2021; Zidny et al., 2020).

Another critical issue is that the term *biodiversity* is in English, meaning only articles using this specific term were retrieved. However, the word has been translated into almost all European languages, such as *biodiversité* (French), *biodiversität* (German), *biodiversidad* (Spanish), *biodiversità* (Italian), *biodiversidade* (Portuguese), *bioróżnorodność* (Polish), and *biologisk mangfold* (Norwegian), among others. However, there is no direct translation for "biodiversity" in many non-European languages, and the concept often lacks resonance within specific cultural contexts.

For instance, the closest term in Luganda is *ebitonde ebyenjawulo*, which directly translates to "different or the variety of creations," encompassing both the living, the non-living and the dead. In consultations with colleagues from the Global South, it became clear that even when the term is translated, it may not hold any significant meaning. For example, a colleague from Micronesia and another from the IK tribes (in Uganda) noted that words are not fixed as definite nouns in their cultures but inherently carry an aspect of action or doing. For instance, in the IK, one cannot say "a dog" as a thing but rather "a dog living" or a "dog standing/sitting." In other words, there cannot be a dog within their conceptual thinking without any form of action related to it. They questioned what *biodiversity* could mean in their context if it cannot be conceptualised with a verb-like form of action (based on informal exchanges in the research notes).

Therefore, the focus on English-language scholarship and thematic analysis conducted primarily in English excludes potential contributions from articles written in other languages. The dominance of English in biodiversity research creates a power imbalance, favouring English-speaking scholars and regions that can afford to translate or publish in English (Figure 4). This marginalises research in other languages, reinforces epistemic inequality, and perpetuates a cycle that limits the introduction of new perspectives on human-nature relationships (Amano and Sutherland, 2013; Droz et al., 2023; Mufwene, 2017).

Despite these limitations, much of the global dialogue is shaped by elite perspectives, often mediated in English. However, this creates challenges when operationalising biodiversity in diverse settings, as the dominant perspectives must engage with those underrepresented in the literature.

To address these limitations and reveal the diversity of perspectives across disciplines, I sampled at least 50 articles from each meso citation topic. For fields with more than 50 articles,

I reviewed the most-cited papers and literature directly relevant to the biodiversity debate; for fields with fewer, I reviewed all available articles. I focused on keywords, abstracts, and sample readings of full articles to gain deeper insights into specific topics. Using the theoretical framework outlined in the next section, I critically analysed this sample dataset, iteratively including other literature, to uncover potential biases and subtleties in the biodiversity discourse that might be missed in traditional literature reviews.

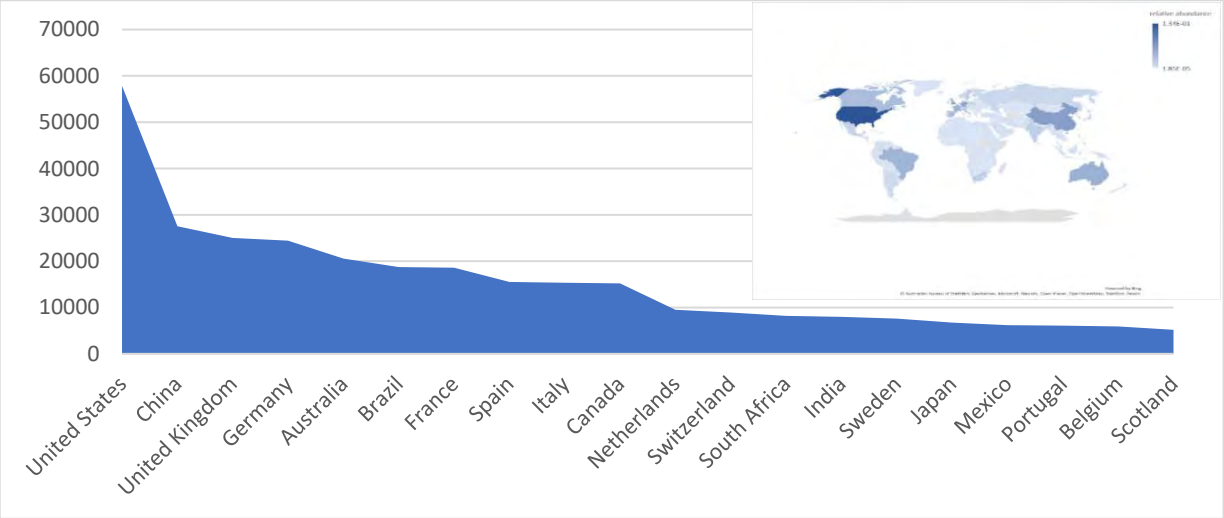

Figure 2.3: Area graph of the countries informing the biodiversity discourses in the Web of Science

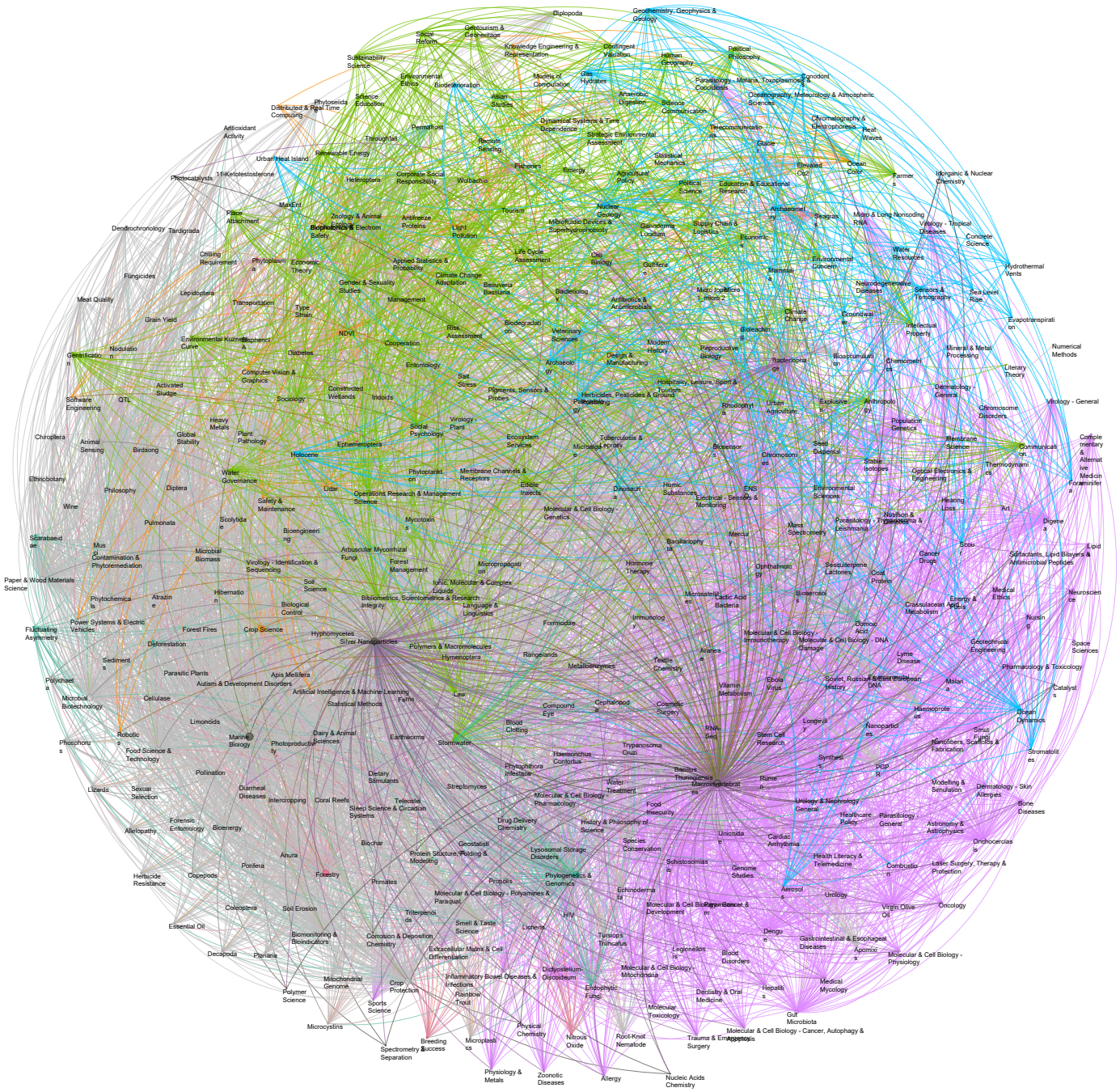

Figure 2.4: Network graph illustrating the complexity of biodiversity discourse, highlighting key Meso and Micro topics that serve as communication bridges between disciplines. This figure is shown in black and white in the print version; please refer to the PDF for a color version. This note applies to all subsequent images.

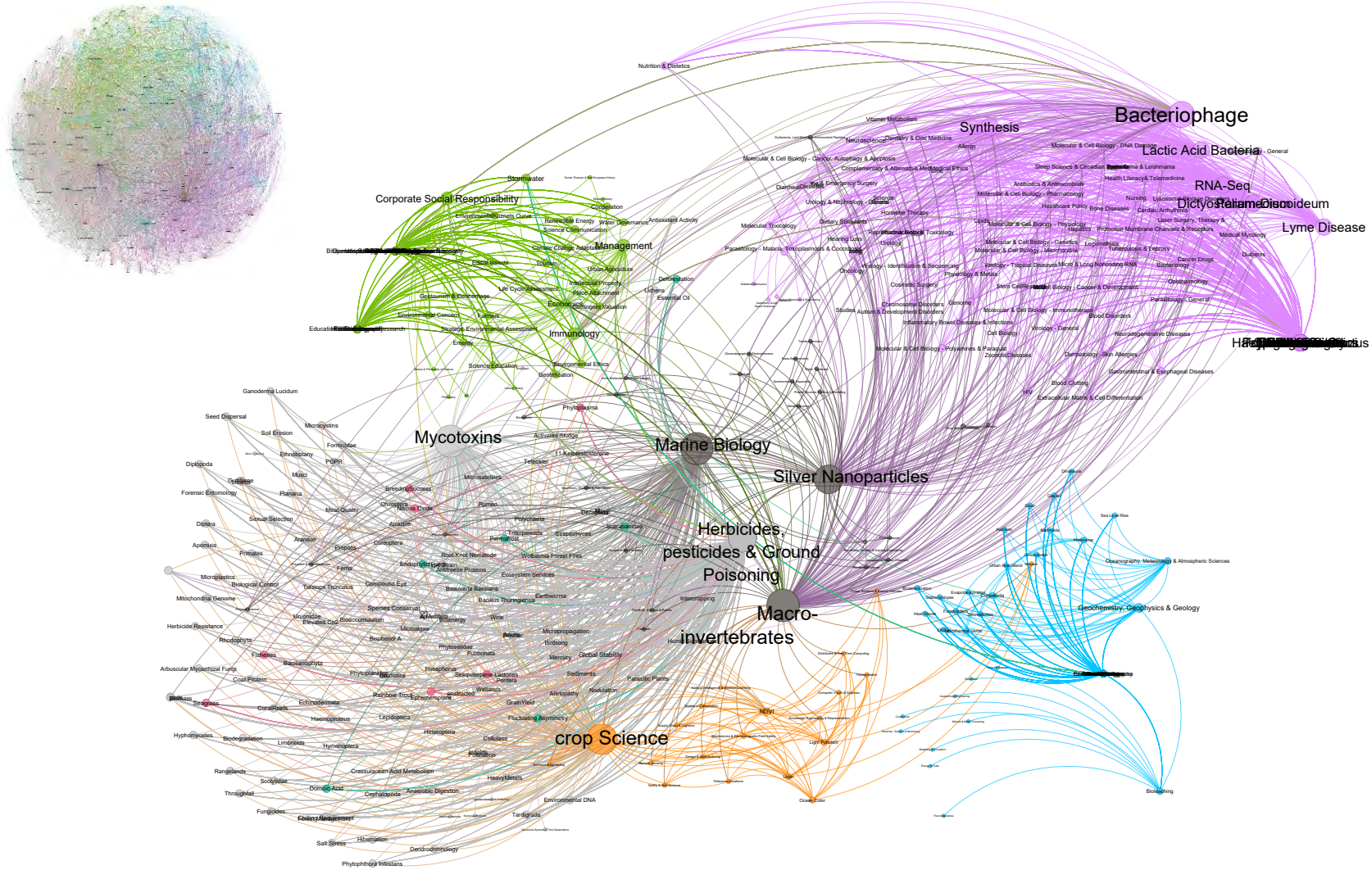

Figure 2.5: Network map revealing the fragmented communication in the biodiversity discourse among various academic disciplines based on connections between Meso and Micro topics

2.4. Theoretical framework

Analysing multifaceted discourses like biodiversity often struggles to engage effectively with various disciplines due to rigid disciplinary boundaries (Brewer, 1999; Payne, 1999). Since it is impractical to include all perspectives, **this analysis prioritises a rigorous framework over comprehensiveness. To draw meaningful conclusions—particularly in global discourses—the focus should be on critical underlying variables anchored in a clear theoretical argument, ensuring parsimony and supporting theory development (Bernauer, 1995).**

The thesis employs five interconnected analytical lenses—critical geography, political ecology, socio-legal theory, science and technology studies, and media and communication studies—to identify these underlying variables and ground biodiversity discourses. These lenses allowed for a nuanced analysis of biodiversity by examining different temporal and spatial scales, knowledge systems, and power relations that shape these discourses. The multi-dimensional approach ensures that the study captures both structural and narrative complexities.

A critical discourse analysis (CDA) framework explores how these narratives operate within specific case studies. CDA, as a broad umbrella of methods, investigates text and talk across disciplines to reveal how knowledge production interacts with social structures and processes (Gee and Handford, 2012). Rooted in critical linguistics, CDA views language use as a form of social practice, making it a highly context-sensitive approach to analysis (Jaworski and Couplandy, 1999). It carries a commitment to social justice and ethical considerations by examining obvious and hidden undertones in text and speech (Bolton and Kachru, 2006).

However, CDA has its critics. Some argue that focusing solely on language and communicative practices risks detaching discourse from the broader social contexts in which it unfolds (Breeze, 2022; Jones, 2007a). This critique warns against creating an artificial divide between language and action (Harris, 1996; Schiffrin, 1994). While this debate is complex and beyond the scope of this thesis, it is essential to acknowledge these concerns. This study bridges the gap between communicative practices and the material realities shaping biodiversity by applying the five analytical lenses to case studies. Through this approach, biodiversity discourses are grounded within specific case studies, providing a coherent framework for evaluating the arguments presented.

2.4.1. Critical geography

The first critical aspect of biodiversity discourses is space. Space is a fundamental part of human concepts (Cox, 2021; Gregory et al., 1994). Traditionally and within legal frameworks, space is an empirical, objective, and mappable container where objects occur, easily suited for mathematical analysis like the Cartesian grid (Timan et al., 2017). However, critical geography has for long challenged this notion by highlighting the relational nature of space, emphasising its meaning as it interconnects with other concepts (Mazr and Urbnek, 1983; Peters, 2023). In other words, space is a consequence of the existence and co-influence of matter, transcending a mere representation of abstract emptiness and neutrality (Cox, 2021). It embodies "the material compositions and conduct of the compositions and representations" (Dewsbury et al., 2002: 438). Its form and expression emerge through experiences, routines, intensities, movements, and interactions (Lorimer, 2005: 84). Lived spaces, also referred to as places, serve as the arenas where spatial practices and phenomenological experiences unfold (Dirlik, 2006). They encapsulate subjective experiences, passions, and meanings attributed by humans to particular objects or processes, with perceptions and subjectivities influencing the formation and representation of phenomena (Parsaee et al., 2015).

This critical geographical perspective is crucial for analysing biodiversity discourses because space is a fundamental aspect of understanding human-environmental relationships (Mitchell, 1979). Biodiversity is about the interactions of various social-cultural and natural elements such as humans, animals, vegetation, soil, mountains, and bodies of water as spatial concepts. In other words, biodiversity is not just about the physical geographical environment or the entities in it but also the relational dynamics that coexist. Arguably, the failure to understand space, theoretically, is among the biggest challenges in attempting to operationalise biodiversity. Discrepancies in biodiversity assessments, such as those related to indicators (species, ecosystem, or genetic (Ette and Geburek, 2021), taxonomic bias (Troudet et al., 2017) or biodiversity drivers and indices (Boinot and Alignier, 2023; Morris et al., 2014), all happen because spaces are social, changing, and subjective. Culture and nature work together to produce and shape spaces, whether terrestrial or marine (Oakes and Price, 2008). Biodiversity concepts then assume different scales of measurement, perceptions or practices depending on how space is seen (Chase and Leibold, 2002).

Therefore, biodiversity cannot be fixed because space is not. It is constantly changing and depends on how people and the environment interact. Yet, traditional Western philosophical

and scientific thought on which understanding biodiversity is built is based on dualities and dichotomies that "impose homogeneity and identity on the heterogeneity of the material" (Benhabib, 1996: 208). These clear divisions limit understanding knowledge formulated at indeterminate points and between spaces (Shah, 2000). This makes addressing issues like biodiversity, shaped by multifaceted factors, challenging.

Critical geography helps to examine the everyday experiences that shape human understanding of place (Brickell, 2012). It supports post-structural thinking, which values diversity, subjectivity, and the idea that knowledge and identities are not fixed but constantly evolving (Woermann, 2016). Poststructuralism challenges the big, overarching stories or metanarratives that claim to explain everything and instead encourages us to take the risk of reconstructing subjectivities and exploring individual experiences and contexts (Bordo, 1987; Bordo et al., 1992: 164). By acknowledging the subjective and contextual nature of knowledge, we can better understand the truths and realities that are specific to different people and places (Shah, 2000).

Poststructuralism also serves as a methodological tool for tracking changes in the subject (who is talking about) and object (what they are talking about) (Shah, 2000). This is particularly relevant in the quest to understand biodiversity, as the meaning of biodiversity is deeply influenced by power, knowledge, and social practices (Foucault, 1971). As discussions around biodiversity concepts take place, they shape how biodiversity concepts are understood and influence the identities and experiences of the people involved. Power structures and language are central in these debates, as they frame how reality is perceived and constructed (Mayr, 2008). Rather than being smooth or uniform, these discussions are sites of contestation, where new ways of seeing and understanding emerge (Dahlberg, 2007). This process allows for existing relationships—whether between people or between people and nature—to be challenged and reshaped (Bordo et al., 1992: 167).

Therefore, a critical geography approach helps analyse biodiversity discourses, as it recognises subjectivity and diversity, accounts for positionalities (Merrifield, 1995) and identifies the roles and affiliations tied to specific individuals or institutions (Rattansi and Westwood, 1994: 37). At the same time, it challenges existing power structures and dominant ways of thinking (Peters, 2020; Peters et al., 2023)

2.4.2. Political ecology

Political ecology emerges as another robust framework for analysing environmental issues through the lens of social and political relations (Biersack, 1999; Biersack and Greenberg, 2006;

Jason Roberts, 2020). This framework developed in the 1970s as a response to earlier approaches like ecological anthropology and cultural ecology, which were criticised for not addressing the role of power, politics, and social relationships in environmental issues (Wolf, 1972). Blaikie and Brookfield (1987/2015) popularised the approach by explaining that political ecology combines ecological concerns with a broadly defined political economy (p.17). The political economy generally addresses why some countries or places are economically more developed than others, attributing these to collective action, institutions, and political market imperfections (Gamble, 1995; Keefer, 2004). Blaikie and Brookfield (1987/2015) argued that political ecology would lose relevance if it did not address economic factors. Economic issues are central to how biodiversity is managed, as discussed in later Chapters of this thesis (e.g., Chapters 5 and 6).

Over time, political ecology has evolved to become a dynamic framework, expanding beyond its original focus on state and non-state actors (e.g., Loftus, 2020), to neo-Marxist approaches (e.g., Biersack and Greenberg, 2006). It uses feminist and poststructuralist perspectives based on non-economic and non-capitalist relations (Perreault et al., 2015), while also engaging with economic perspectives (Loftus, 2020). The framework allows examining the underlying economic structures that drive environmental change (Crouch, 1997). Moreover, it intersects with critical geopolitics, exploring how social constructs of space, place, and territory are influenced by power dynamics and discourse (Merje Kuus, 2010). It also connects with Foucault's concept of biopolitics, which investigates how States and other entities regulate populations' access to and use of natural resources (Peters, 2007).

Political ecology has transcended its landed origins applying to specific contexts like Marine Political Ecology, which focuses on marine environments (MPE, 2021)This adaptability allows the framework to analyse complex issues like biodiversity from multiple angles, ensuring that social and political dimensions are considered.

A key idea in political ecology frameworks is that environmental issues are typically *power-laden rather than politically inert* (Biersack and Greenberg, 2006: 5) (see 0Section 1.2.2. Biodiversity and power). This is crucial for understanding biodiversity because it raises questions about who defines biodiversity, how it is measured, and whose interests are prioritised. Political ecology shows that the way the environment is managed is shaped by institutions and social processes (Robbins, 2020). Biodiversity discourses must, therefore, be analysed through those institutions and processes, considering multiple scales—from local,

regional, or global—since decisions made at one level often impact others (Neumann, 1992a; Neumann, 1992b).

For instance, while local communities may have specific, context-driven understandings of biodiversity, global conservation policies often fall into the trap of crafting top-down meanings and or practices that do not align with locals (Brechin et al., 2003; Hartter and Ryan, 2010). For example, as Cline-Cole (1996) argues that biodiversity loss has been predominantly framed as a global ecological crisis, yet the crisis is perceived differently, and its management varies across local contexts. A multi-scalar approach is crucial to understanding how power is distributed across actors and networks (Allen, 2009), and how that translates into how biodiversity is understood and practised at different scales. Political ecology helps in identifying those networks, acknowledging that broader systems influence local scales while also holding immediate and local forces accountable (Robbins, 2020). These connections between the local and global allow for analysing environmental issues at and through different spatial scales (Biersack, 1999).

This framework is particularly relevant for analysing biodiversity in global contexts, as this thesis does in the case of BBNJ (Biodiversity Beyond National Jurisdiction). It examines (1) the different values linked to biodiversity, (2) the various actors involved in decision-making, (3) the spatial relationships between users, and (4) the diverse scientific understandings of biodiversity concepts. This study also addresses conflicts over resources and space and the political and management challenges involved in these conflicts across multiple scales, including state, interstate, and global governance.

2.4.3. Social-legal theories

In addition to political ecology, there is an intricate relationship between law and biodiversity discourses. The law in this context can be understood as a set of rules, principles, guidelines or norms that operate within social contexts (Creutzfeldt et al., 2016), through which biodiversity concepts are legitimised and management objectives operationalised. Social-legal theories explore the relationship between law and the broader social, political, and cultural contexts in which it operates (Tamanaha, 2014). Legal norms are influenced by and, in turn, influence societal attitudes, beliefs, and behaviours (Gunther, 2022; Moore, 2000). Rather than seeing law as a fixed, neutral set of rules, social-legal theory views law as dynamic and intertwined with societal forces (Tamanaha, 2017). In this context, law is not merely a tool for regulating

behaviour but a mechanism shaped by power relations, economic interests, cultural practices, and social struggles (Tamanaha, 2014).

Incorporating insights from critical legal theory and social thought, social-legal theory provides a more profound critique of how law functions within society (Boyle, 1984; Tamanaha, 1997; West, 1989). Critical legal theory, for instance, exposes the limitations and biases within traditional legal structures (Tamanaha, 2014). It questions how law serves to legitimise existing power structures and economic interests, often at the expense of marginalised groups (Maschke, 1997; Trubek, 1972). By connecting law to broader social consciousness, critical legal theory encourages reinterpretations of established legal norms and practices, revealing how legal systems can be delegitimised when they fail to reflect social justice or community values

When applied to biodiversity discourses, the law often formalises specific definitions and frameworks, such as the Convention on Biological Diversity (CBD). These legal frameworks, though presented as objective or technical, are often shaped by politically driven negotiation processes, which may not reflect how various stakeholders, for instance, individual States, scientists, or local communities, understand and interact with their natural environments (Schlag, 1991; Smith, 1988). Social-legal theory critiques this top-down legal formalism—the assumption that laws can be universally applicable once established—by highlighting how the creation, interpretation, and enforcement of laws are influenced by social processes and power dynamics (Levit, 2007, 2007).

For example, in biodiversity management, States often use legal frameworks to centralise control over natural resources, claiming exclusive authority and, in doing so, marginalising some communities or certain aspects of the biodiversity discourse and or completely excluding them from governance (Larson and Soto, 2008; McCarthy, 2007; Schuppert et al., 2021). This dynamic is evident in the creation of protected areas, where legal mechanisms define conservation boundaries but frequently exclude local communities from governance roles (Andrade and Rhodes, 2012; Jones, 2009b). Natural resource laws are often framed as neutral, technocratic solutions that require expert intervention rather than inclusive, participatory decision-making (Gunther, 2022). Social-legal theory, however, reveals that these laws can hide underlying political and economic agendas that prioritise actions favouring economic development, such as deep-sea mining, over environmental conservation (Seck, 2019).
By recognising that law is socially constructed, social-legal theory highlights legal pluralism—the coexistence of multiple legal systems, such as state, international, and customary law—

which often overlap in global environmental governance. Given the evolving challenges of biodiversity and the environment, this theory supports an adaptive analysis of legal systems (Tamanaha, 2022), integrating diverse knowledge frameworks and feedback loops into legal interpretations (Cosens et al., 2020).

2.4.4. Augmenting studies

Two additional lenses, Science and Technology Studies (STS) and Media and Communication Studies (MCS), are particularly vital in understanding how biodiversity is communicated, framed, and shaped in public and scientific discourses. These fields augment the core frameworks by addressing the role of technology and media in constructing and disseminating biodiversity knowledge. As biodiversity has become increasingly embedded in scientific, technological, and media narratives, these studies help uncover the underlying social, political, and technical forces.

2.4.4(a) Science and Technology Studies (STS)

Science and Technology Studies (STS), or Science, Technology, and Society, is an interdisciplinary field that emerged after World War II, primarily in the U.S. and Western Europe (Felt et al., 2017b). STS explores how scientific knowledge is created, disseminated, and shaped by political, socio-economic, and technological factors (Ankiewicz et al., 2006). In the context of this thesis, STS is particularly relevant because it distinguishes between science and technology, recognising technology as a distinct entity that is not merely an extension of science (Layton, 1988). Technological knowledge, unlike scientific knowledge, is geared toward practical application and tangible outcomes (Kostoff and Schaller, 2001). STS scholars examine how societal norms and values influence the development, adoption, and dissemination of technology, highlighting the profoundly value-laden nature of technological progress (Hess and Sovacool, 2020).

STS is crucial for understanding biodiversity discourses, as scientific and technological advancements underpin the evolution of biodiversity research and practices, such as species classification and conservation management (Casetta et al., 2019a; Wilson, 1986). Increasingly, biodiversity knowledge is built on technical tools such as databases and genetic technologies, which have transformed the traditional understanding and governance of biodiversity—from species' physical traits to molecular-level insights (Cobb et al., 2013). Advancements in genetic technologies are reshaping how biodiversity is managed, as seen in the inclusion of Marine Genetic Resources (MGR) in international agreements like the CBD (Convention on Biological

Diversity) and recently the BBNJ (biodiversity Beyond National Jurisdictions) (BBNJ Agreement, 2023; CBD, 1992; Ebert, 1990; Kate and Laird, 2019). The impact of technology on biodiversity governance is significant, influencing how policies are designed and enforced (Kingsbury, 2009; Orangias, 2022) (see also Chapter 6: Tracing Marine Biodiversity in the BBNJ dis-Agreement).

However, these advancements also raise challenges. Questions about the legitimacy of scientific practices and the differentiation between *good* and *bad* science often surface, mainly when technology serves national or political agendas. (Jaffe and Rassenfosse, 2019). Accusations of using particular metrics or generating science to promote national agendas and ideologies are increasingly common in international environmental discussions (Campbell, 2012; Edwards, 2013). This complexity is further compounded by the dynamic influence of technology on science and scientific findings. The availability of the best scientific knowledge is contingent on current technology, often produced and accessible to high-income nations (Kaplinsky and Kraemer-Mbula, 2022). High-income nations advocate for and leverage superior technologies for global biodiversity governance, while low-income nations face challenges in accessing these resources (Robinson, 2021).

This disparity contributes to the North-South divide in biodiversity expertise. The Global North is often viewed as the global centre of scientific authority, while the Global South is seen as knowledgeable only about its regions (Nakamura et al., 2023). Biodiversity knowledge is then perceived as being produced and flowing from the North to the South, with overwhelming literature from the North informing global biodiversity governance processes (Nakamura et al., 2023; Tessnow-von Wysocki and Vadrot, 2020). This imbalance is shaped by historical power dynamics that dictate how scientific knowledge should be legitimised (Hughes and Vadrot, 2019; Vadrot, 2016). Hence, it is essential to recognise and acknowledge that science and technology are often intrinsically linked to politics and often used to support and justify political decisions (O'Lear, 2020).

STS helps examine how technological and scientific practices include or exclude specific knowledge systems while addressing ethical issues and the unintended consequences of technological interventions (Felt et al., 2017a; Stehr, 2005). It highlights how scientific and technological progress shapes political interests, laws, and regulations. Therefore, the study of biodiversity and its related discourses must remain aware of and adaptable to these evolving scientific and technological contexts.

2.4.4(b) Media and Communication Studies (MCS)

Incorporating Media and Communication Studies (MCS) alongside Science and STS provides essential insights into how biodiversity is communicated, framed, and shaped in scientific and public discourse. These fields complement one another in this thesis by examining how technological and communication strategies influence the construction, dissemination, and reception of biodiversity knowledge. Effective and clear communication—whether through words or images—is crucial in organising the vast amount of information (Schuppert et al., 2021). This communication is essential in shaping how people understand biodiversity concepts and their goals (Buijs et al., 2008; SeppÄNen and VÄLiverronen, 2003). The communication occurs across diverse mediums, including traditional and digital media, cinema, visual arts, puppetry, poetry, street performances, folk music, and language itself (Iftikhar et al., 2023; Ivakhiv, 2014; Rusalić, 2009). As such, communication plays a pivotal role in shaping public understanding of biodiversity concepts and goals

Analysing how ideas are framed, and agenda-setting occurs in communication reveals underlying truths and spatial biases (Wolfe et al., 2013), such as regional or topic-based gaps in biodiversity coverage. Language and representation are essential in this process. Lévi-Strauss argues that nature is not fixed but constantly evolving alongside how we represent it (Conley, 2006). The words and concepts we use in discussions about biodiversity shape how we understand it, which makes media and communication studies crucial, especially when the term “biodiversity” itself is up for debate in negotiations.

With the theoretical framework driving this thesis set (see also **Figure 2.6** on the next page below), the focus now shifts to applying these ideas to the case studies of this thesis (objectives 2 and 3) by defining the study area and scope of the analysis.

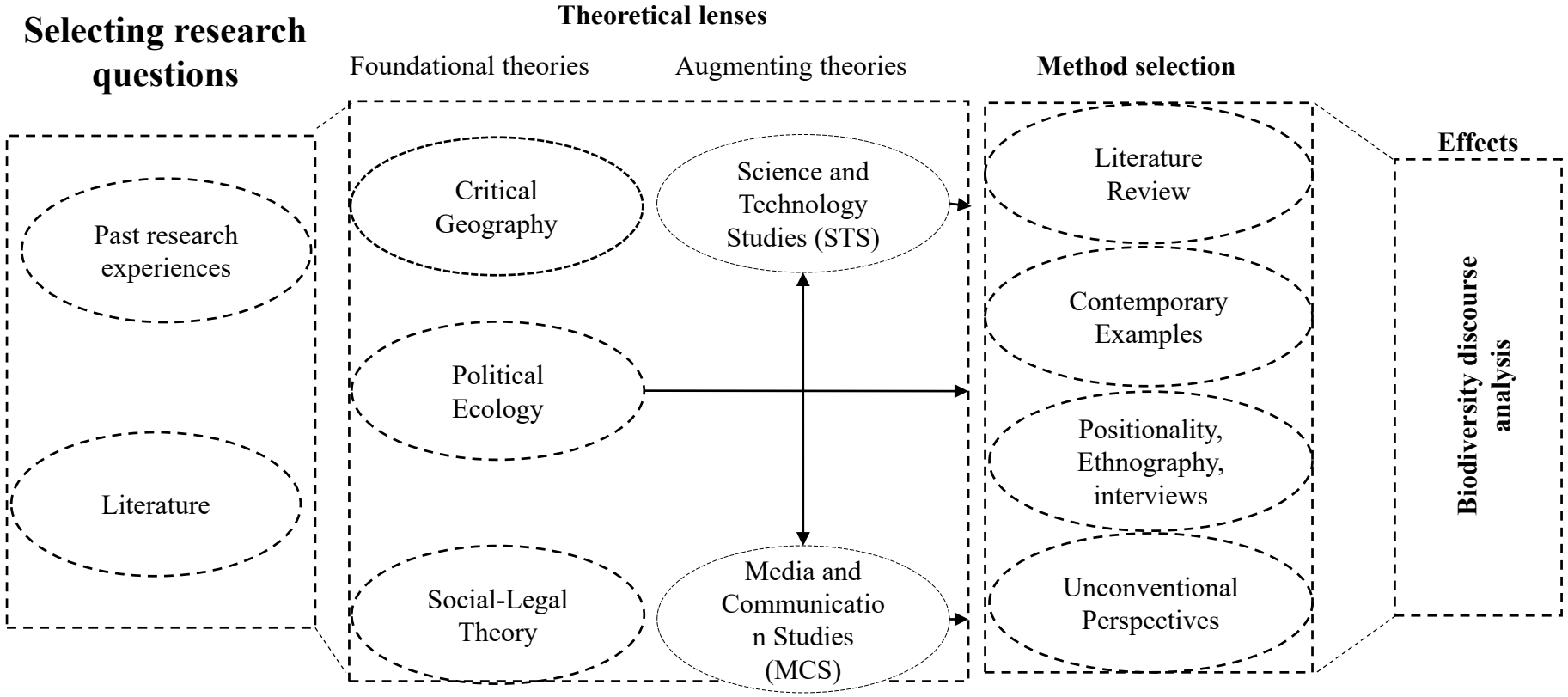

Figure 2.6: Summary of the theoretical lenses driving this study.

2.5. Situating biodiversity in contemporary case studies and contexts

Case studies are crucial in research because they connect theoretical concepts with real-world examples, offering a practical way to explore complex issues in depth (Harrison et al., 2017). By focusing on specific events, key players, and controversies—such as global biodiversity treaty-making—research can show how abstract theories have concrete impacts (Bruce H. Rowlands, 2005). Case studies also allow for the integration of multiple theories, as real-world phenomena are too complex to be understood through a single perspective (Okhuysen and Bonardi, 2011)This case study approach is used throughout the thesis to analyse biodiversity literature (e.g., Chapter 4) or examine contemporary cases like the BBNJ (Chapters 5-8).

Critical moments are essential in selecting case studies that significantly influence biodiversity discussions. In this thesis, critical moments are defined as pivotal events—such as international environmental negotiations or the publication of scientific papers (Putnam, 2004), that shape how biodiversity concepts are understood (see Chapter 4). These moments guide researchers in mapping the geographical, social, economic, political, and legal frameworks surrounding these concepts (Lynn and Dixson, 2022). As Thomson et al. (2002) note, such moments shape social inclusion and exclusion by determining which knowledge, interests, and aspects of biodiversity are valued, discussed, or prioritised (Vadrot, 2011, 2014). Identifying critical moments is essential for capturing the dynamic and evolving nature of biodiversity discourses, as many scholarly views are extensions of these critical moments (Delgado and Stefancic, 2021; Laws, 2020; Maini and Nordbec, 1973). This critical moment approach ensures that the analysis reflects the context in which the research is conducted (Laws, 2020; Putnam, 2004).

This thesis builds on the growing awareness of environmental challenges in the world's oceans, especially in Areas Beyond National Jurisdiction (ABNJ), and the negotiations surrounding the BBNJ Agreement as the critical moment. The selection of the BBNJ process as a case study was informed by the timing of this thesis during the resumption of the intergovernmental conferences (IGCs) of the BBNJ Agreement negotiations in 2021. The choice to focus on the BBNJ process as a case study was influenced by the timing of the thesis, which coincided with the resumption of intergovernmental conferences (IGCs) on the BBNJ Agreement in 2021. These IGCs were based on recommendations from a preparatory committee set up by UN resolution A/RES/69/292, which met in four sessions between 2016 and 2017. Their 2017 report provided critical elements for the UN General Assembly to consider when drafting an

international agreement to address environmental issues in the global oceans beyond national borders.

Formal negotiations held at the UN headquarters in New York began in 2018 (4-17 September), followed by a second and third session in 2019 (25 March - 5 April and 19-30 August 2019, respectively) before a temporary pause in 2020 and 2021 due to COVID 19. Only virtual, inter-sessional work was held in 2020 (23 March - 3 April). The fourth session resumed in 2022 (7-18 March) with limited attendance, leading to a fifth session in August 2022 (15-26 August) and a final session from 20 February-3 March 2023). This culminated in the adoption of the BBNJ Agreement on June 30, 2023.

The resumption of the IGCs, amid growing public concerns about potential deep seabed mining in ABNJ (Langlet et al., 2022; Nyekwere, 2020), marked a critical moment in global ocean governance. For this thesis, it was an opportunity to explore contemporary biodiversity discussions within the context of ABNJ and BBNJ as a case study.

The following section discusses ABNJ as the geographical remit of this case study.

2.5.1. Defining the geographical remit

Areas Beyond National Jurisdiction (ABNJ) cover vast regions, making studying ABNJ as a single location challenging. However, instead of treating space as empty geography, this thesis takes a critical geography view of ABNJ—as places shaped by interactions, governance processes, and relationships (see discussion above). Although ABNJ may seem too broad, it is managed by specific institutions, actors, and legal frameworks that define its boundaries and rules. This makes ABNJ not just physical spaces but evolving, socially and legally constructed areas.

This section examines Areas Beyond National Jurisdiction (ABNJ) as the primary study site for the thesis, explaining its relevance as the focus and scope of the BBNJ Agreement. By analysing ABNJ from a dynamic perspective, the thesis highlights how these areas are continually shaped by evolving governance processes. This ongoing transformation challenges and redefines biodiversity concepts and governance approaches, mainly when applied within ABNJ's unique context.

How legal frameworks and decision-making processes define spaces determines the resulting understanding and management of those spaces (Conde et al., 2022). The definition of ABNJ directly influences ocean and biodiversity governance, and this thesis, as elaborated in

subsequent chapters, The 1982 United Nations Convention on the Law of the Sea (UNCLOS) provides the framework for defining ABNJ as part of the broader system of ocean legal zones (Ball, 1996). Understanding how these zones were historically created is essential for grasping the complexities of ABNJ and the governance challenges discussed later in this thesis.

The formation of ocean zones was shaped by disputes among countries over their continental boundaries (Yalem, 1960). Coastal States often viewed (still do) the ocean as an extension of their land territories, fueling conflicts over control and access to marine space and resources (Ball, 1996; Steinberg, 1999a). These competing interests sometimes escalated into wars (Alexander, 1977; Pardo, 1970; Sohn et al., 2014). There was a need to determine maritime boundaries to address some of these conflicts. Resolving these disputes required defining maritime boundaries, but early efforts, such as the 1930 Hague Conference, were unsuccessful (Noyes, 2015). It was the series of UNCLOS negotiations—UNCLOS I (1958-1960), UNCLOS II (1960-1962), and UNCLOS III (1973-1982)—that eventually led to the modern framework for maritime zones (Steinberg, 1999a). A key outcome of these negotiations was the development of criteria for defining coastal baselines, which serve as starting points for establishing maritime boundaries.

However, as Sammler (2020b) points out, setting baselines is complicated by historical (Holocene) and current (Anthropocene) cultural, geological, and environmental factors. Baselines consider physical features, historical maritime practices, and coastal geography, all changing over time. This complexity is further compounded by the multidimensional nature of the ocean floor—characterised by irregular topography, varying depths, and shifting sedimentation patterns—which makes it challenging to determine exact points where slopes begin or end, complicating efforts to establish precise baselines (**Figure 2.7**). The UNCLOS convention defines two main types of baselines: *ambulatory* (adjustable based on prevailing conditions) and *stable* (fixed based on conditions as they existed in the 'past') (Lathrop et al., 2019). Each presents practical challenges.

For instance, ambulatory baselines present practical challenges because they shift with natural changes, such as erosion, sedimentation, or sea-level rise (Lathrop et al., 2019). This makes it challenging to maintain consistent maritime boundaries, affecting resource management and territorial claims—especially for coastal or island nations vulnerable to climate change (Schofield, 2009). On the other hand, stable baselines offer consistency but are challenging to establish. Older methods for fixing stable baselines, such as using visible landmarks or the cannon-shot rule, were deemed imprecise. Landmarks can shift, as in the case of ambulatory

baselines, but weather conditions can also affect visibility (Lathrop et al., 2019). Based on the firing range (about three nautical miles), the cannon-shot rule varied depending on the type of cannon used and quickly became obsolete with technological advances (Walker, 1945). These limitations drove the need for more reliable approaches, adopting fixed-distance baselines, which are now mapped using digital tools like Geographic Information Systems (GIS) under frameworks such as UNCLOS (Sammler, 2020b). Relevant articles from UNCLOS, such as Article 16, emphasise the importance of charting baselines using geographical coordinates (Symmons and Reed, 2010).

However, while UNCLOS provides criteria for setting (delineating) baselines, the actual delimitation of maritime boundaries—establishing clear legal jurisdictions—remains complex and contested, with long-term conflicts, particularly in regions like the Mediterranean and South China Sea (Dutton, 2011; Oanta, 2022)In other words, defining baselines is already challenging, but legally agreeing on boundaries is even more difficult. This is significant because these baselines determine the extent of all other maritime zones, including ABNJ, which is central to this thesis. Understanding how these zones are defined and established and their legal implications is essential for analysing biodiversity governance within the ABNJ geographic remit.

2.5.1(a) UNCLOS zones

The first and arguably most fundamental maritime zone described by the UNCLOS regime is the Territorial Sea (TS), extending 12 nautical miles from the coastal state's baseline according to Article 3 of UNCLOS. The determination of baselines to establish the TS involves complex considerations, including the use of a Zero-mark to measure (art. 3 UCLOS) and the distinction between normal baselines (art. 5 UNCLOS) and straight baselines (art. 7 UNCLOS) (Sweatt, 2022). These baselines are influenced by natural features such as the coast itself, fringing reefs, and other geological formations, necessitating accurate surveying and documentation (Lathrop et al., 2019). The details of the delimitation process are beyond the scope of this paper and can be revisited in works such as (Noyes, 2015).

The critical issue is that once the TS is established, UNCLOS stipulates the legal rights and responsibilities related to the TS upon which other maritime zones are accorded their rights and responsibilities. Waters on the landward side of the baseline are considered internal waters (UNCLOS Article 8(1)), where the coastal state exercises full sovereignty (Kureemun, 2023; Yang, 2006). However, this sovereignty is not absolute. UNCLOS also grants other States

certain rights, such as the right of innocent passage through internal and territorial waters (see UNCLOS Part II, Section 3 on innocent passage in the Territorial Sea and Contiguous Zone). Disputes often arise over what qualifies as innocent passage and the degree of control coastal States can exert over foreign vessels navigating their territorial waters (Rothwell, 1992; Walker, 1969; Yüksel İnan, 2001). These disputes are beyond the focus of this thesis.

Beyond the TS, UNCLOS establishes additional maritime zones, such as the Contiguous Zone (CZ), Exclusive Economic Zone (EEZ), and Continental Shelf (CS), each with diminishing levels of sovereignty as the distance from the coast increases (Sammler, 2020a). For instance, in the CZ, a coastal state can enforce laws relating to customs, immigration, and pollution but cannot impose laws on foreign vessels transiting through the zone (UNCLOS Part II, Section 4). In the EEZ, which extends up to 200 nautical miles (nm) from the baseline, the coastal state has rights over the water column and seabed resources. At the same time, other States retain freedom of navigation and overflight (UNCLOS Part V).

Two aspects warrant further emphasis at this stage.

1. Firstly, the 200 nautical miles (nm) limit, encompassing the EEZ and CS, is where most fish stocks and other resources are found (FAO, 2007; Schofield, 2018). Within these zones, coastal States have jurisdiction over resource exploration, extraction, and scientific activities.
2. The Extended Continental Shelf (CS) (discussed below) can stretch beyond the 200 nm limit, giving coastal States rights over seabed resources such as minerals. These minerals include manganese, cobalt, nickel, and rare earth elements found in nodules on the seabed (Halbach, 1988). Since these nodules are also present in ABNJ spaces, considered to belong to none but everyone, their economic potential has sparked interest in industrial extraction (Bath, 1989; Sharma, 2024). This raises governance challenges as coastal state jurisdiction creeps into the governance of ABNJ (Molenaar, 2021).

2.5.1(b) ABNJ as an abstract UNCLOS zone

Beyond the maritime zones, such as the Territorial Sea (TS), Contiguous Zone (CZ), Exclusive Economic Zone (EEZ), and Continental Shelf (CS) (**Figure 2.8**), lies Areas Beyond National Jurisdiction (ABNJ). ABNJ is a negative definition: it is everything that UNCLOS does not define as within national jurisdiction. However, article 1(2) of the BBNJ describes ABNJ as the High Seas

and the Area[4]. The High Seas, described (but not explicitly defined) in Article 86 of UNCLOS, refers to all waters beyond a coastal state's EEZ, TS, or internal waters (Oxman, 1989). Governed by the Freedom of the High Seas (FOH) principle under Article 87, this principle grants all States certain rights—such as navigation, overflight, laying submarine cables, constructing artificial islands, fishing, and conducting scientific research. However, these freedoms are subject to other provisions of UNCLOS. For instance, scientific research must comply with Parts VI (Continental Shelf) and XIII (Marine Scientific Research). Moreover, coastal States or regional bodies, such as Regional Fisheries Management Organizations (RFMOs), can impose restrictions on activities, such as prohibiting fishing or military operations in waters adjacent to their EEZ, if these activities threaten their EEZ rights (Bailey, 1997; Gleditsch et al., 1997; Rogiers, 2024; Wang and Pan, 2023).

In contrast, the Area is defined in Article 1(1) of UNCLOS as the seabed and ocean floor and subsoil thereof, beyond the limits of national jurisdiction governed by the principle of Common Heritage of Humankind (CHP) (Article 136). The principle is compounded by several other principles, including state responsibility to ensure compliance and liability for damage (Article 139), exclusive use for peaceful purposes (Article 141), and the equitable sharing of financial and other economic benefits derived from activities in the Area for the benefit of mankind (Art. 140) (see UNCLOS Section 2, articles 137-149). The rights in the Resources of the Area are vested in humankind [humankind], on whose behalf the International Seabed Authority acts (Franckx, 2010).

A crucial tension in ABNJ governance lies in the distinction between the FOH principle governing the High Seas and the CHP principle applying to the Area (Ridings, 2018)Misconceptions often arise when these principles are conflated, with some assuming that CHP extends to the entire ABNJ. However, UNCLOS treats the water column (the High Seas) and the seabed (the Area) as separate legal regimes (**Figure 2.8**), creating challenges for biodiversity governance under frameworks like the BBNJ Agreement, as explored in Chapters 6 and 7 of this thesis.

Some scholars, such as Mendenhall and Bateh (2024), have cautioned international non-governmental organisations against referring to the BBNJ Agreement as the "High Seas

[4] UNCLOS Article. 1(1); The Area is defined as 'the seabed and ocean floor and subsoil thereof, beyond the limits of national jurisdiction'

Treaty." This terminology overlooks that the Agreement covers both the High Seas and the Area, potentially overemphasising FOH while downplaying the CHP principle (Mendenhall and Bateh, 2024). Accurate terminology is essential to align the Agreement's focus on biodiversity governance across both domains.

The challenge of determining the geographic remit for the governance of ABNJ, as well as the scope of the BBNJ agreement, becomes even more pronounced due to the current overlap between the Area and extended CS. Each state has a 200 nautical mile breadth of CS from its baseline, with the inherent right, *ipso facto-ab initio*, to an extended CS, defined as the natural prolongation of the coastal States' land territory (Article 76 of UNCLOS) (McDorman, 2002). However, defining the outer limits of the extended continental shelf is challenging. It requires distinguishing between the legal definition of the CS and the physical structure of the continental margin or limits.

Physically, the limits of the continental margin are complex enough and difficult to grasp. As described by Churchill et al. (2022: 221):

> *Physically, the seabed adjacent to a typical coast is usually considered to consist of three separate sections (...). First, the section that slopes down gradually from the low-water mark to a depth averaging about 130 m, at which the angle of declination increases markedly: this is the continental shelf proper. Second, the section bordering and seaward of the shelf has a steeper slope, going down to around 1,200 to 3,500 m: this is known as the continental slope. Third, there is, in many locations, an area beyond the slope where the level of the seabed falls away more gradually, and the seabed is composed mainly of sediments washed down from the land territory, often by great rivers such as the Amazon, which push the sediment far out to sea. This third area is called the continental rise and typically descends to a depth of around 3,500 to 5,500 m. Together, these three sections form the continental margin, which constitutes about one-fifth of the sea floor.* (Churchill et al., 2022: 221):

UNCLOS Article 76, which provides a detailed and complex definition of the CS limits, complicates an already intricate geographical description. The definition of the CS under UNCLOS Article 76 is encapsulated in ten paragraphs, making it one of the most challenging provisions to interpret (Mayer et al., 2018; Mayer, 2020). This provision describes various

methodologies for establishing the outer limits of the CS, seeking to provide coastal States with flexibility while also ensuring consistency and equity in the delimitation process.

As described by Nordquist et al. (2004), one approach outlined in Article 76 (4)(a)(i) is using the Gardiner, also known as the Irish formula, which relies on the narrowing of the sediment thickness as a critical determinant of the Continental Shelf's extent (76 (4)(a)(i)). Another option is the Hedberg formula, which utilises fixed distances from specific geographic features, not more than 60 miles from the foot of the shelf's slope (76 (4)(a)(ii)). To further complicate things, States can use either or the combination of the two methods as they see fit, at any point, to maximise their extended shelf (Mayer et al., 2018). Therefore, this distance can vary, although it should not exceed (i) 350 nautical miles from the baseline or (ii) 100 miles from the 2,500-meter isobath (Article 76 (5)) (Mayer et al., 2018). Further exploration of these methods is encouraged through works like Legal and Scientific Aspects of Continental Shelf Limits (Nordquist et al., 2004).

The main takeaway point here is that delimiting the outer limits of the extended CS (which influence the extent of the Area and, therefore, ABNJ) is difficult. **This means that the true geographical scope of the ABNJ, which profoundly influences understanding marine biodiversity and objectives in the BBNJ Agreement, is yet to be determined as countries progress with delimiting their extended continental shelf.**

Only a few countries have submitted their CS coordinates (*Figure 2.9*), with even fewer possessing the scientific, technical, and technological capacity required for such delimitation (Mayer et al., 2018; Schofield and Andi Arsana, 2009). Although the original deadline for CS submissions was 10 years after ratifying or acceding to UNCLOS (Annex II, Article 4)[5], most countries have exceeded this period, leaving the timeline for delimitation open-ended.

[5] UNCLOS Annex II Article 4 Reads: "Where a coastal State intends to establish, in accordance with article 76, the outer limits of its continental shelf beyond 200 nautical miles, it shall submit particulars of such limits to the Commission along with supporting scientific and technical data as soon as possible but in any case, within 10 years of the entry into force of this Convention for that State. The coastal State shall at the same time give the names of any Commission members who have provided it with scientific and technical advice."

The challenge of delimiting CS limits is amplified in areas with closed or complex ABNJ systems, such as the Arctic, where ice sheets hinder seabed mapping and the establishment of baselines (Mayer et al., 2018). The Arctic also faces significant boundary overlaps and jurisdictional conflicts, complicating the creation of biodiversity conservation measures like Marine Protected Areas (MPAs) (Árnadóttir, 2021; Mayer et al., 2018; Smith and Jabour, 2018).

The interpretation of the jurisdictional and geographical scope of ABNJ is crucial for this thesis and its biodiversity analyses. Biodiversity governance in unmapped ABNJ areas requires navigating overlapping jurisdictions between coastal States' rights over the CS and the ABNJ's water column, which remains part of the High Seas under a distinct legal regime (**Figure 2.8**). For example, managing resources like sedentary species, which move between the seabed and water column, demands coordination between separate regulatory frameworks (Scott, 1992) (see also discussions in Chapter 8). The overlapping jurisdictions between coastal States' EEZs and CS exert a creeping jurisdiction over adjacent ABNJ, reflecting the complex interplay between national and international domains (Kaye, 2006; Molenaar, 2021; Su, 2021). This influence is further explored in Chapter 7, where I discuss how coastal States assert their interests in ABNJ governance. Whether coastal or landlocked, high-income or low-income, all States have a stake in ABNJ as the global oceanic frontier. The way States engage with ABNJ governance will shape their ability to influence marine conservation or risk being marginalised in this critical area of global ocean governance.

In the contexts of the BBNJ negotiations, which are the focus of the next section, the IUCN had recommended removing the definition of the ABNJ as the "High Seas and Area" (see BBNJ Article 1(2)) or simply defining ABNJ as areas outside national jurisdiction (IUCN, 2022). They argued that excluding airspace could create a significant gap in UNCLOS, which may require future amendments. While UNCLOS references superjacent airspace over EEZs and territorial seas, the IUCN emphasised that seabirds, atmospheric processes, and air-water interactions are integral to marine biodiversity, as atmospheric impacts on high-seas airspace can affect biodiversity in the water below (IUCN, 2022).

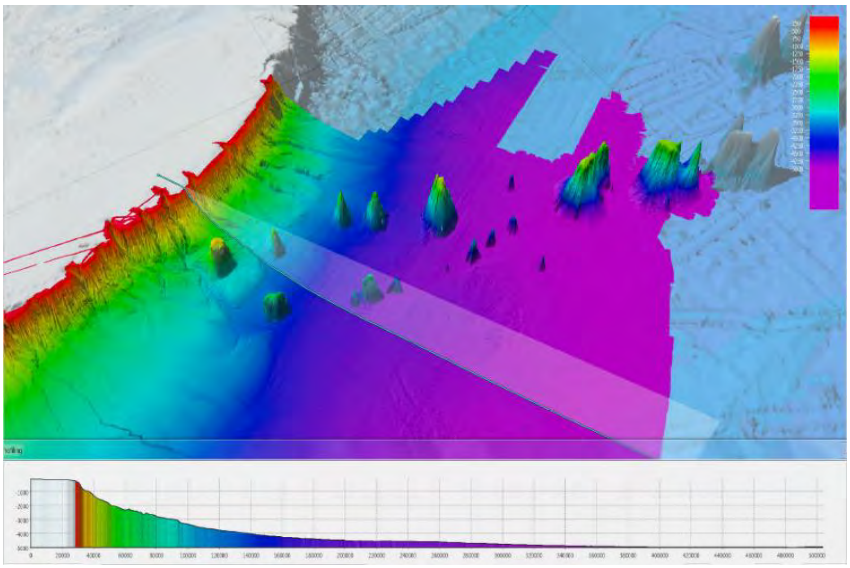

Figure 2.7: Illustration of ocean space highlighting the challenges of determining the base of the continental slope, demonstrating that it is not as straightforward as traditional 2D representations of the continental shelf (graphical image below) suggest. The image prompts the question: Where exactly is the base of the slope? (Source: Mayer, lectures at the Rhodes Academy, 2023).

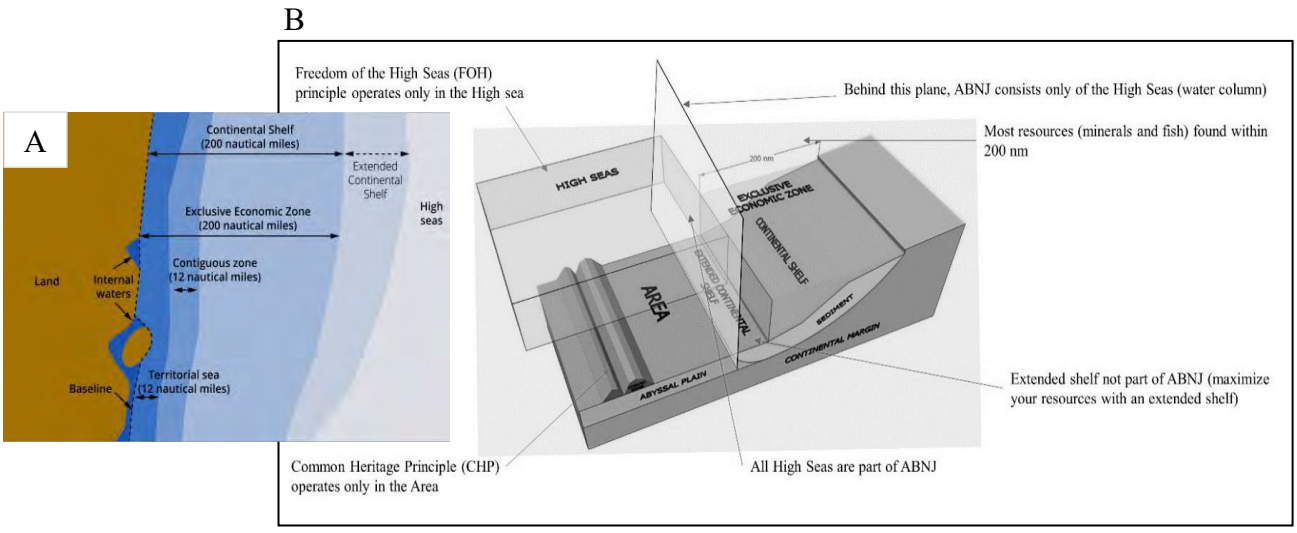

Figure 2.8: A Schematic representation of UNCLOS ocean zones (A) and the legal distinction between the High Seas and the Continental Shelf/Area (B).

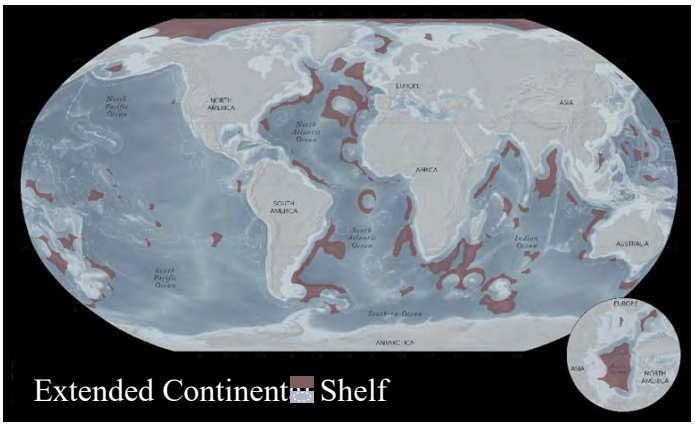

Figure 2.9: World Map from the US Department of State showing the Extended Continental Shelves so far mapped (Adapted from the U.S. Extended Continental Shelf Project)

In the following section, I return to the BBNJ negotiation processes as multilateral settings that inform a dynamic study site of this study beyond the ABNJ as a geographical remit.

2.5.2. BBNJ negotiations: Multilateral settings as study sites

Multilateral settings, such as those involved in international biodiversity negotiations, function as dynamic sites where diverse state representatives and stakeholders engage in complex discussions. These spaces are not static; instead, they evolve as arenas where interests, ideologies, and power relations intersect and shift over time (Vadrot, 2020). In these settings, rights are asserted, the status quo is challenged, and hegemonies are questioned (Hughes and Vadrot, 2023). Both historical legacies and contemporary challenges, such as colonialism, resource exploitation, and unequal access to environmental resources and burdens, shape the dynamics of multilateral processes (Ostrom, 1990; Ostrom et al., 1999a; Scott, 2008). The fluidity of these spaces mirrors the evolving nature of the negotiated issues, such as biodiversity, where knowledge systems frequently collide.

For instance, actors such as local communities or States reliant on natural resources like fish approach biodiversity as a matter of livelihood (Haas et al., 2021). In contrast, industrial States often treat biodiversity as part of broader economic or political agendas, each seeking to influence governance frameworks to their domestic advantage (MacDonald, 2010). Chapters 5, 6, and 7 further explore these competing perspectives, highlighting the complexity of environmental negotiations within multilateral settings.

As negotiations unfold, interests shift, new alliances form, and critical moments arise that shape the biodiversity discourse and influence outcomes. These processes are characterised by including and excluding certain actors and actants, reflecting broader social, political, and economic dynamics that define access and influence within these spaces (Campbell et al., 2022). For example, only country delegates or representatives of organisations with UN consultative or observer status can participate, limiting the involvement of many other institutions and individuals. Gaining observer status through the UN is highly bureaucratic and time-consuming (Mower, 1966). It often takes years, starting with provisional admittance by the relevant UN secretariat, during which access to the "Blue Zone" of the conference is restricted until the Conference of Parties (COP) grants full access. Once granted observer status, organisations can register representatives through an Online Registration System (ORS), with each representative required to create an individual account linked to the organisation's application (see additional details on United Nations Library (2024)and an example of to obtain observer status at the United Nations Framework Convention on Climate Change (UNFCC) (n.d)[6].

Achieving meaningful inclusivity in these negotiations is challenging due to these access barriers. I experienced these limitations firsthand when I sought access to the BBNJ negotiations. Despite efforts to secure access through delegations, including support from my institution director at HIFMB, Prof. Helmut Hillebrand, limited space for additional members within country delegations made this route unfeasible. Eventually, I obtained observer status through another organisation, as recommended by Dr. Alice Vadrot and other scholars active in these negotiations. Success came through membership with the International Studies Association (ISA), a U.S.-based professional association that provides members with access rights during such events (ISA, 2024). This experience highlighted the importance of resources and networks for participating in global discussions—factors central to the themes of this thesis. These experiences also offer insights for future researchers navigating similar access challenges. A complete list of organisations with consultative status that attended the BBNJ negotiations can be found in Appendix Table 17, and their respective missions and objectives are in Appendix Table 18.

[6] see website: https://unfccc.int/process-and-meetings/parties-non-party-stakeholders/non-party-stakeholders/overview/how-to-obtain-observer-status

Although the UN offers online options for the public to follow negotiation processes, these virtual spaces present challenges, including the need for stable internet access and the limitations they impose on conducting participant observations (Vadrot et al., 2021). In contrast, onsite participation offers more significant opportunities for direct engagement and access to firsthand information (Hughes and Vadrot, 2023). My role as a technical advisor during the final stages of the BBNJ negotiations emerged directly from such onsite participation. The delegation I assisted lacked technical expertise on several key issues under discussion. This lack of expertise was not unique to this delegation, as many countries, both from the Global North and South, seemed to have been caught unawares concerning the relevance of these negotiations (see Chapter 5: Inclusivity in Global Commons Governance). Drawing on my background in environmental assessments and contemporary research on ocean governance, I was appointed to fill this gap, gaining access to negotiation notes, diplomatic information, and opportunities to engage with various stakeholders.

This insider role provided valuable insights into the inner workings of state practices, negotiation blocs, and other closed sessions, revealing dynamics often absent from official accounts. My dual positionality—both as an observer interacting with other observers and as a technical advisor within a national delegation—exposed me to different layers of engagement. As an observer, I exchanged insights with other participants through informal channels, such as WhatsApp groups. However, I gained access to more exclusive dialogues and internal communications as a technical advisor. These shifting roles highlighted the complexity of research in a multilateral setting, which requires sensitivity and professionalism, especially during interviews (Fenge et al., 2019; Njeri, 2021; Secules et al., 2021). Initially, when I interviewed delegates as an external observer, their responses were cautious and aligned with official diplomatic narratives. However, once I assumed a more embedded role, I encountered more candid reflections and unspoken dynamics that were absent from earlier conversations. These experiences underscored how the narratives crafted for public consumption often obscure the nuanced realities behind negotiation processes (Buchanan and Dawson, 2007; Faizullaev and Cornut, 2017; Roederer-Rynning and Greenwood, 2021).

A similar pattern emerged during interactions with UN officials, who maintained formal neutrality in public interviews but shared more nuanced perspectives in informal settings. Ethical considerations, including the need to protect participants' anonymity, prevent full disclosure of some insights gained during these negotiations (see 3.4. Ethical considerations).

These constraints shaped the scope of this thesis, limiting it to discussions aligned with its core objectives.

These dynamics reflect a broader challenge in analysing multilateral settings: the difficulty of detecting transparency from diplomats. As I further learned through these processes, national delegates, aware of the importance of public perception, often craft specific narratives for external consumption, leaving critical nuances unexplored. Scholars capture and propagate these perceptions in academic literature and discussions, sometimes without critical examination (see Chapter 5: Inclusivity through the Scientific Discourse).

Thus, multilateral settings are dynamic, evolving not just as geographical or organisational spaces but as sites of systemic knowledge production, competing narratives, and negotiation of power dynamics. This dynamism reflects the broader challenges of governing complex, interconnected issues presented by biodiversity discourses, where inclusivity remains an aspirational goal amid deep-rooted power imbalances and structural barriers. Understanding these settings as dynamic study sites rather than static platforms is crucial for grasping the complexities of global environmental governance. The evolving nature of the BBNJ process, both in terms of its procedural intricacies and the shifting alliances within negotiations, exemplifies this broader challenge and the need for continued critical engagement with these evolving arenas.
The following section moves on to other events that contributed as study sites for this thesis.

2.5.3. Other events as data collection sites

Given the challenges and uncertainties in accessing multilateral settings (like the case of the BBNJ in New York above), other open events and stakeholder convergence sites are crucial for exploring prevailing biodiversity discourses (Cornell et al., 2013; Oliver Escobar, 2011). This thesis included attendance in over 18 international and academic events across eight countries, (with a focus on the BBNJ negotiations at the United Nations in New York (**Figure 2.10** and **Appendix Table 14**), offering real-time insights into the processes shaping biodiversity governance. The ancillary events play a crucial role in democratising participation in global discourse (Bell and Staeheli, 2001; Teti, 2012). They offer opportunities for individuals with limited access to formal negotiations, such as students and scholars, to actively engage with the nuanced discussions unfolding on a global scale (Berchin et al., 2018; Brunell, 2013; Rogers and Wynn-Moylan, 2022).

Moreover, these events can be unique as they tend to exhibit reduced geopolitical tensions and offer relatively more straightforward access, creating environments that are more conducive to open deliberations on some critical global issues (Henderson, 2015). The relaxed atmosphere allows for more fruitful discussions and collaboration among stakeholders from diverse backgrounds. Another key strength of these side events lies in their flexibility, enabling organisers to curate interdisciplinary gatherings or provide unique disciplinary perspectives (Fakunle et al., 2019). This diversity of formats expands the avenues for engaging with specific topics, catering to participants' varied interests and expertise. For instance, in the context of this thesis, events like the International Conference for Young Marine Researchers (ICYMARE, 2022, 2023) fostered a multidisciplinary exploration of issues related to marine biodiversity conservation and the BBNJ from early career professionals' perspectives.

For instance, during ICYMARE (2022), I engaged in a thought-provoking debate with a fellow PhD scholar, Lénia Da Fonseca Alexandre Rato, who presented their research on molecular techniques for studying, monitoring, and controlling invasive species. I challenged the conventional view of invasive species as organisms that must be eradicated. I particularly cited the example of the Nile Perch, an economically significant species introduced to Lake Victoria in Uganda (Aloo et al., 2017). Despite being considered one of the world's worst invasive species that has led to the extinction of most of the Cichlid fish, endemic (only found) in East Africa, its economic potential eludes eradication talks (Aloo et al., 2017; Stauffer et al., 2022; Taabu-Munyaho et al., 2016).

These discussions with this scholar led to reflecting on the ethical considerations of human intervention in managing populations of other organisms, whether as desirables or not (Larson, 2007; McLeod et al., 2015; Tiedje et al., 1989). This engagement led to a perspective article in the Eco Magazine exploring the concept of "disturbance but evolution" and the relevance of time scales in biodiversity analysis and governance (Rato et al., 2022), add to the critical perspective adopted in parts of this thesis. These scholarly engagements, some of which resulted in interviews as part of this thesis, provided insights into how molecular analyses are changing the landscape of biodiversity monitoring and management approaches.

Other deliberate engagements, such as the Rhodes Academy of Ocean Law and Policy (Rhodes Academy, 2023) and international conferences like the United Nations Ocean Conference (UNOC, 2022), provide opportunities to deepen understanding of legal frameworks and practitioner-centric viewpoints, enriching the exploration with specialised knowledge and practical insights (see Chapter 3: Methods). Involvement in my institution's internal activities, including the Marine Political Ecology (MPE) (MPE, 2021; 2022; 2023; 2024) and Marine Governance (MGG, 2022; 2023; 2024) group meetings, HIFMB Journal Club meetings, and public engagements such as talks and outreach events facilitated scientific exchange, collaboration, and engagement with diverse perspectives and stakeholders (see Figure 2.10 and Appendix Table 14 for the timeline and selected events that have directly contributed to this thesis study sites). These events and experiences served as study sites that enriched this thesis and contributed to its nuanced exploration of biodiversity discourses.

However, despite the diversity and accessibility of these platforms, tensions around inclusivity and differing interpretations of biodiversity persist. For example, access challenges resurfaced when I sought to explore biodiversity from a fishery-governance perspective by attending the Western & Central Pacific Fisheries Commission (WCPFC) meeting in the Cook Islands (WCPFC, 2023). Interviews conducted during the BBNJ negotiations and the Rhodes Academy revealed alignment and disconnects between fisheries management and marine biodiversity goals (see Chapter 6: Section 6.7. Fisheries out: our fish is not your marine biodiversity). Initially, I sought access through an Australian organisation, but their delegation was already full. I eventually obtained observer status through the World-Wide Fund (WWF), with the support of Dr. Bianca Haas and Dr. Bubba Cook. During the meeting, a WhatsApp group for observers provided real-time updates and analysis, illustrating the role

of digital platforms in facilitating knowledge-sharing during negotiations (Naeem, 2019).

These varied events, from formal conferences to informal networks, offered access to specialised knowledge and revealed the complexities of who shapes, defines, and participates in biodiversity governance. The interdisciplinary nature of these spaces fostered collaboration and new ideas, enriching this thesis with diverse perspectives on the evolving discourses around biodiversity.

2.5.4. Literature and archives

Secondary literature and key international texts pertinent to biodiversity and ocean governance, particularly UNCLOS and the BBNJ Agreement, were analysed (see data collection for all documents analysed). These documents became dynamic study sites because I treated them more than static texts; they functioned as living artefacts—sources of ongoing debate, interpretation, and influence (Clifford et al., 2016; Riles, 2006) in biodiversity governance. Although international agreements emerge from specific negotiations, their relevance extends beyond their original contexts. The texts in these documents are continuously shaped by evolving governance frameworks, political debates, and practical applications (Lemke, 2005). For instance, the inclusion of marine genetic resources (MGRs) in the BBNJ Agreement reflects not just a legal outcome but a legacy of interpretation of existing frameworks like the CBD and the ongoing tension between conservation objectives and economic interests (Kate and Laird, 2019; Raustiala and Victor, 2004; Rosendal, 2006).

In practice, these agreements were crucial points of reference during my field engagements, particularly in interviews. Practitioners frequently referred to these agreements to frame their positions and justify decisions, treating the texts as flexible instruments to support various agendas (Riles, 2006). For example, fisheries representatives at the WCPFC cited UNCLOS to argue that fish stocks should not be governed under the BBNJ framework, highlighting how UNCLOS becomes a site of contestation on the meaning and objectives of marine biodiversity (see Chapter 6). In other settings like the Rhodes Academy, participants debated these instruments' significance and future applications in a changing environment. These interactions demonstrated that these agreements are not final products but spaces where ideas and power are continuously negotiated and reinterpreted (Flick, 2014). Just as qualitative data can yield new insights with repeated analysis, these documents reveal new layers of meaning when revisited from different analytical perspectives (Peters, 2017). This interpretative flexibility

allows one to situate the same texts within multiple contexts—legal, political, and ecological—revealing nuanced insights that are not immediately apparent (Peters, 2017).

By approaching international agreements and literature as study sites, I recognised that their meaning is neither fixed nor confined to their original formulations. They evolve through engagements with various actors and contexts, like physical study sites that change based on who interacts with them (see discussion above on space in Critical Geography). This perspective enabled me to treat these documents not just as sources of information but as active arenas where governance practices, discourses, and power relations intersect dynamically over time (Clifford et al., 2016).

The next chapter will discuss how data was collected and analysed from the various study sites. However, Figures 11 and 12 below show the thesis timeline and summary of the thesis analytical framework.

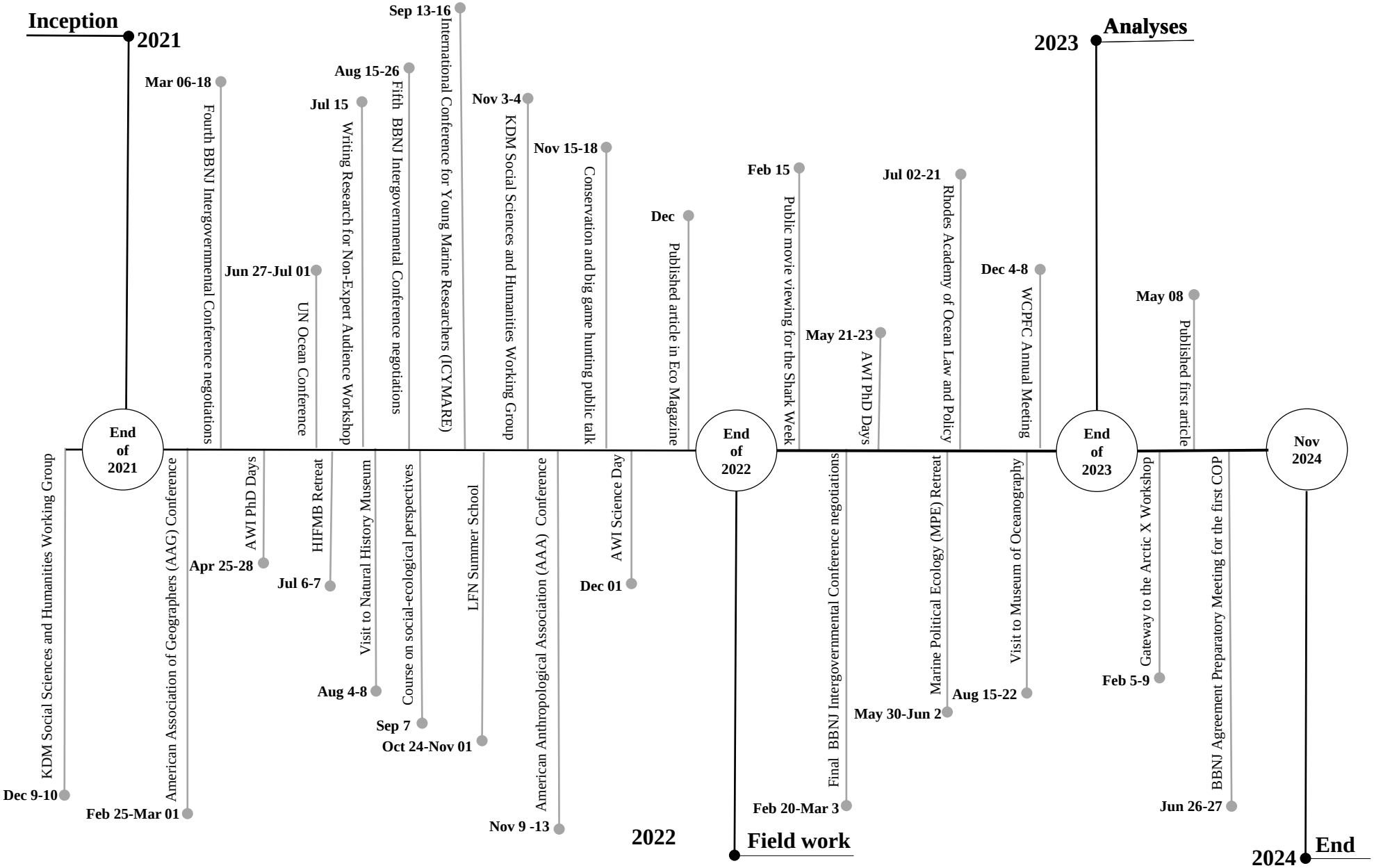

Figure 2.10: The study timeline shows key activities and events that inform the research.

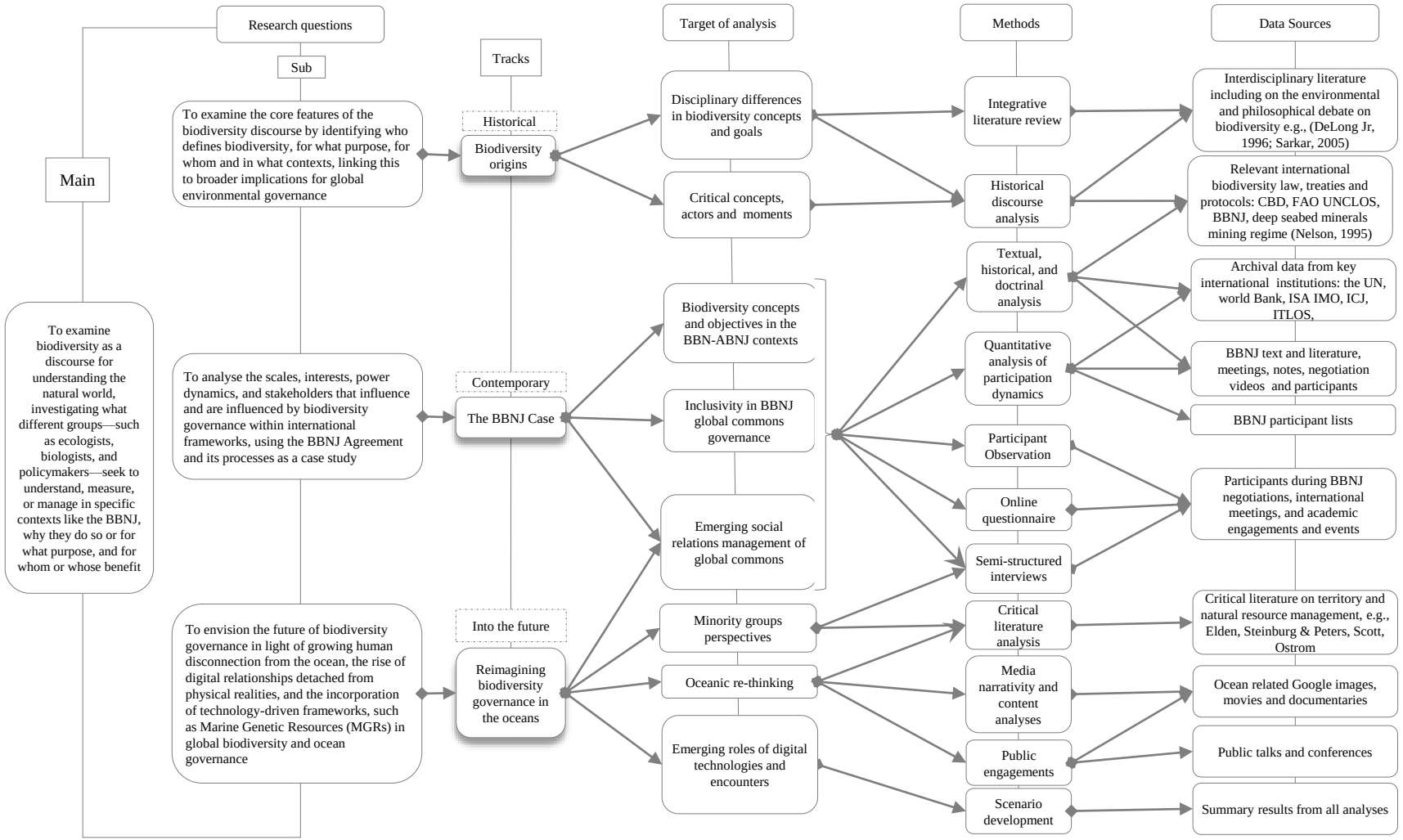

Figure 2.11: Summary of project objectives, themes that were of target during analysis, the research methods, and data sources.

Chapter 3: Methods

3.1. Introduction

Chapter Two examined the theoretical frameworks and lenses used to explore biodiversity discourses throughout this thesis. Building on that foundation, this chapter details the methods employed to achieve the research objectives outlined in Chapter 1, focusing on data collection and analysis. Specifically, Chapter Three will explain how data from the various study sites discussed in the Underlying approach and theoretical framework (Chapter 3) was collected and analysed.

This chapter is divided into three sections: Section 3.2. describes the data collection methods, including field observations, document reviews, and media analysis. Section 3.3. outlines the analytical framework, detailing how the data was coded, analysed and interpreted to identify key themes. Finally, Section 3.4. addresses ethical considerations, reflecting on the challenges of conducting research in sensitive, international contexts while adhering to ethical procedures and ensuring research integrity.

3.2. Data collection

Data collection included reviewing and synthesising relevant literature, administering online questionnaires, conducting semi-structured, non-structured and open elite interviews, written documentation of informal conversations, and engaging in participant observation and other ethnographic experiences. Key international frameworks like UNCLOS and the BBNJ Agreement were also analysed, along with other official documents from the BBNJ negotiations, such as participant lists, delegation statements, and draft texts. These methods were used to answer the research aims. The following sections elaborate on the data collection processes from these varied sources.

3.2.1. Semi-structured and open elite interviews

Interviews were conducted to elicit stakeholder perspectives, which were used to answer objectives two and three. The interview method followed a three-stage process, including selecting partners, conducting the interviews, and assessing the interviews, as elaborated in the data analysis.

3.2.1(a) Selecting interview partners

For rigorous data collection using interviews, selecting interview partners is particularly critical, as it shapes the quality and trustworthiness of the results (Adhabi and Anozie, 2017; Dipboye, 2017; Holloway, 2005). In this thesis, the selection was guided by a secondary literature review of biodiversity discourses (see Chapter 4) and ongoing analysis of participant lists, identifying critical groups of actors to engage with. Initially, five marine scientists were informally consulted during meetings at the HIFMB, where they discussed their perspectives on biodiversity and how they measure it and suggested other critical questions to explore. Additional input was gathered through internal meetings with colleagues from the Marine Political Ecology Collective (MPE, 2021; 2022; 2023; 2024) and Marine Governance Group (MGG, 2022; 2023; 2024), at HIFMB. These early reflections shaped the focus of engagements and interviews at various events.

To gather first-hand accounts and reflections during the BBNJ negotiations, offsite data may not provide (Lewin et al., 2021), interviews were conducted with 24 individuals who attended the negotiations at the UN headquarters in New York. These participants included elite members of government delegations and observers such as NGO representatives and other institutional stakeholders (see Chapter 5 on inclusivity). The sampling strategy combined both random and purposive elements. For the random approach, participants were spontaneously approached on-site to ensure a broad range of perspectives and reduce bias, while purposive sampling targeted specific individuals to capture various backgrounds and relevant experience (Campbell et al., 2020; Day, 2018; Robinson, 2014; Wagner et al., 2018). These interviews were supplemented by 11 additional interviews conducted at standalone conferences and events similarly (purposive and random), bringing the total number of interviews to 35.

The selection of interview participants varied across events for two main reasons. First, the BBNJ negotiations were the primary case study, which led to a more concentrated sampling effort during these sessions. Given the presence of key stakeholders and the dynamic discussions unfolding at the negotiations, these events provide a unique opportunity to gather a broad range of perspectives (Mikecz, 2012). Consequently, more interviews were conducted during the BBNJ negotiations than at other events treated as supplementary data sources. Interviews at these secondary events were even more selective, based on my judgment of the relevance of discussions that emerged during informal interactions.

Second, their availability and professional roles heavily influenced access to these participants. National delegates—who play a crucial role in international negotiations like the BBNJ—are often challenging to engage outside formal settings due to their official obligations and a lack of easy access outside these settings (Harvey, 2010; Mikecz, 2012; van Audenhove and Donders, 2019; van den Bulck et al., 2019). Consequently, I focused on interviewing them during the negotiations. In contrast, scholars and other experts in these negotiations are more accessible to contact outside formal events, as their professional profiles and contact details are often available through academic platforms and websites.

Notably, there is no fixed number of qualitative interviews required; the key is whether they provide sufficient insight to answer the research question (Baker et al., 2012). When gathering diverse perspectives across multiple contexts, interviewing specific individuals may not always be necessary, as views can vary widely—unless the individual serves as a gatekeeper to particular knowledge or meanings (Crowhurst and kennedy-macfoy, 2013; Swartz, 2009). In the scholarly discourse and international contexts, these gatekeepers are often the elites or experts; "a group of individuals, who hold, or have held, a privileged position in society and, as such, as far as a political scientist is concerned, are likely to have had more influence on political outcomes [here also biodiversity concepts and practices] than general members of the public" (Richards, 1996: 199). However, elites and experts are not the same: someone may be one without being the other or occupy both roles with varying degrees of influence. For example, diplomats are considered elites but may not be biodiversity or ocean governance experts. While the study intentionally included interviews with known elites and experts, engaging with non-elite, non-expert perspectives, or at least unknowns, was equally important. Their views often clash with those of elites in international settings, challenging the assumption that expert opinions alone capture the full complexity of real-world dynamics (Bogner et al., 2009).

Additionally, the study site itself can influence interview responses, necessitating a robust theoretical framework to analyse these perspectives (Lillis, 1999; Magaldi and Berler, 2020; Roulston, 2011). To mitigate these limitations, I used mixed methods, supplementing interview data with literature reviews and document analysis (see sections below), allowing continuous comparison across data sources (Cooper et al., 2024). These supplementary materials offered insights into the views of stakeholders who could not be interviewed, enhancing the contextualisation of the findings.

3.2.1(b) Conducting the interviews

Respondents who consented to be interviewed (see also discussion in ethical considerations) were typically approached during session breaks. The length of these interviews varied, lasting from eight to 30 minutes. Beyond these formal interviews, numerous other informal engagements were shorter and longer. For this thesis, I focused on conversations documented in a field notebook. Interactions where respondents either did not consent to interviews or did not permit taking notes were nonetheless valuable. These have partially been incorporated into the study through my autoethnographic experiences and participant observations to the extent that they do not breach anonymity.

Along with granting anonymity to all respondents, interviews were conducted with individual respondents. At the beginning of each event, before conducting the interviews, I revisited the objectives of my study, insights from consultations and literature review on biodiversity to provide a re-structure of the interviews and familiarise myself with a set of some standard questions I had formulated over time (**Appendix Table 15**).

This semi-structured interview approach utilises an interview guide—a set of prepared questions guiding the researcher (Adams, 2015), that from experience should ideally be memorised rather than read verbatim, as diplomats often resisted interviews that appeared too rigid or agenda-driven. The semi-structured method promotes a flexible and responsive interaction, enabling the interviewer to adapt questions based on the respondent's answers and the flow of the conversation (Roulston, 2010; Roulston and Halpin, 2022). If time permits, both the interviewer and respondent can explore specific topics in greater depth (Mihr, 2017). Semi-structured interviews are particularly effective in open-ended elite-expert events, such as the BBNJ negotiations, where opportunities to engage with individuals are often limited to a single encounter (Aberbach and Rockman, 2002; Korkea-aho and Leino, 2019; Mosley, 2013; Richards, 1996; Winham, 1979; Yamineva, 2017).

Additionally, these interviews were frequently complemented by participatory observation and informal or unstructured conversations, enriching the data collected (Mackellar, 2013). While semi-structured interviews offer flexibility, they also maintain enough structure to generate some quantifiable data, a feature more typical of structured interviews (Segal et al., 2006). This balance between flexibility and structure makes them well-suited for the complex, dynamic environment of international policy events

The interview questions focused on stakeholders' perceptions of marine biodiversity concepts, particularly within the context of the BBNJ Agreement. They were slightly tailored differently depending on the respondent's role in the setting or how they identified, e.g., if they were government delegates, NGOs, academic, or industrial representatives. For example, most respondents were queried about their understanding of marine biodiversity and barriers to achieving objectives in global legislation. At the same time, marine scientists were also asked about what scales they use in their work and barriers to measurement.

Additional inquiries explored participants' awareness of the ongoing BBNJ negotiations and their understanding of core elements such as MGR, ABMT, MPAs, EIAs, and CB&TT, including categorical questions about their familiarity with these topics. Further structured questions delved into specific concepts like MGR and fish as components of marine biodiversity, asking respondents to distinguish whether they are the same as or critical aspects of marine biodiversity, requiring a yes or no response. These two questions were asked about the BBNJ Agreement, based on insights collected during the data collection suggesting their centrality in the BBNJ processes.

During onsite negotiations, respondents were asked which sessions were most interesting and which aspects they considered critical. General questions also covered their participation in other international environmental treaty negotiations, how and when they became engaged with BBNJ issues and their perceived contributions to the BBNJ process or global environmental governance. For a detailed list of guiding questions, please refer to the **Appendix Table 15**.

Respondents were approached in a friendly and open manner, encouraging them to speak freely (Rapley, 2001). Follow-up questions were tailored to their willingness to share more information. This approach yielded data that not only expanded the scope of this thesis but also introduced new dimensions to the analysis. For instance, interactions with delegations from landlocked States revealed their grievances about the power dynamics within the negotiation process and provided further insider details. These revelations stemmed from more relaxed, conversational interactions (see section 5.4 on landlocked States in BBNJ negotiations). By fostering a conversational atmosphere, respondents shared candid insights and personal experiences, enriching the overall quality of the data collected (Rogers and Viles, 2003).

3.2.1(c) Preparing of interview transcripts

During field trips and engagements, notes were taken in a notebook or written on a laptop. To aid data analysis, interviews recorded in the field notebook were written under two significant

sections: familiarity with concepts and stakeholder perceptions, immediately bolding or underlying major themes concerning perceptions. With every interview, the respondent was immediately accorded a unique ID based on the event's location, such as AWI PhD_001, BBNJ_012, UNoC_001, etc. Supplementary data for each ID, such as interviewee type, was also recorded separately. All the notes were transcribed verbatim into digital text format. The notes were scanned, uploaded, and opened in Adobe Acrobat Pro 2020 to do this. The images of the written notes from each scan were turned into text using the scan OCR and Edit PDF tools. Edits were made where the tool could not read the handwritten text. This step ensured that the data from the field notebooks were kept safe and accurately represented in an accessible and analysable form.

The transcribed data were organised systematically by interview location for an initial read-through. This step helped me understand the content and identify any immediate patterns or noteworthy points, some of which informed subsequent engagements and analyses. For each interview, a detailed summary of key points raised by the respondent was then prepared in bullet form.

Data will be retained for 10 years post-analysis to comply with data management protocols and support potential follow-up analysis. All confidential data will be securely stored at the Alfred Wegener Institute data protection office. After these 10 years, all transcriptions and summaries will be permanently deleted to ensure confidentiality and data protection.

Table 2: Guiding questions to explore respondents' familiarity with crucial BBNJ concepts, perceptions of the BBNJ treaty and biodiversity meanings, regional influences, participation in international negotiations, and critical biodiversity issues. Each theme includes follow-up questions to encourage deeper insights into how stakeholders view biodiversity's role within the BBNJ treaty's framework.

Theme	Guiding question	Follow-up question
Familiarity with BBNJ concepts	How would you describe your familiarity with key terms/concepts such as UNCLOS, MGR, ABMT, EIAs, and CB&TT?	Which do you feel most or least knowledgeable about, and why?
	In your opinion, what role does biodiversity play in the discussions on the BBNJ treaty?	Have you seen any change in the emphasis on biodiversity throughout the negotiations?
	What concepts or terms related to marine biodiversity are critical for you when discussing the BBNJ treaty?	

Theme	Guiding question	Follow-up question
Perceptions of BBNJ treaty and biodiversity	How do you perceive the impact of the BBNJ treaty on understanding marine biodiversity or its objectives?	In your view, what should be the primary goal of the treaty regarding biodiversity?
	What does biodiversity mean for you in these BBNJ contexts?	
	What are your thoughts on the relationship between climate change and biodiversity in the context of BBNJ?	Do you think enough emphasis is placed on this relationship in current negotiations?
	Do you believe Marine Genetic Resources (MGRs) significantly impact biodiversity conservation?	How do you perceive MGRs about marine biodiversity? Do you think they are the same as or a critical aspect of marine biodiversity in these contexts? What would it be like if you were to give a yes or no answer to this question?
	How do you prioritise fish or fisheries and other marine species regarding biodiversity protection?	How do you perceive fisheries about marine biodiversity? Do you think fisheries are the same as or a critical aspect of marine biodiversity in these contexts? What would it be like if you were to give a yes or no answer to this question?
Participation and regional perspectives	How has your geographical background influenced your views on marine biodiversity?	Are specific biodiversity issues unique to your region or country that should be included in the BBNJ negotiations?
	To what extent have you been involved in BBNJ sessions or other international negotiations?	How has your participation impacted your understanding or views on biodiversity?
	How do you see the role of different stakeholders (e.g., NGOs, national representatives, observers, researchers) influencing biodiversity outcomes within BBNJ?	What role do you think each group should ideally play?
Critical issues and specific interests	What do you consider to be the most critical issues in the current BBNJ negotiations?	How does biodiversity feature in these critical issues?
	In your opinion, which concepts or issues related to biodiversity are lacking or underemphasised in current discussions?	How would you like these issues addressed in the treaty, now or in the future?
	Additional Insights: Do you have any additional remarks or experiences related to biodiversity that you would like to share?	Is there a message or point you feel is not being heard enough in the negotiations?

3.2.2. Literature and document analyses

Two kinds of literature reviews were conducted to address the specific objectives: An integrative review discussed the Underlying approach and theoretical framework, which also informed objective one, and a semi-systematic review for objective two, discussed in the following subsection. Additionally, other documents were also consulted, as discussed subsequently.

3.2.2(a) Semi-systematic literature review

A **semi-systematic literature review** was conducted for the BBNJ literature to address objectives in the BBNJ contexts. Primarily, I reviewed all studies published up to May 2024, targeting to include all journal articles published during and after the adoption of the BBNJ. The literature was searched using the Web of Science database using 13 keywords (Table 1) adopted from Tessnow-von Wysocki and Vadrot's (2020) systematic review "The Voice of Science on Marine Biodiversity Negotiations: A Systematic Literature Review."

After thoroughly screening the titles, abstracts, keywords, and full texts, I considered 304 publications obtained without duplicates for the participation analyses that directly addressed the BBNJ negotiations. However, some articles were not directly related to the BBNJ processes, e.g., Cummins et al. (2023)I found them relevant to the issue of inclusivity, especially regarding addressing ABNJ as a global commons (Chapter 5). This is not to disregard the other significant literature relevant to these discussions, but I only considered these extensions from the keywords as a framework for expanding these discussions. Moreover, various relevant literature sources concerning engagement in global commons governance are also used and cited throughout the text.

Literature was grouped by authors, affiliations, and types, such as peer-reviewed journal articles, policy papers, reports, and conference proceedings, to understand who informs the BBNJ biodiversity discourse during data analysis. This analysis was aimed at highlighting the potential biases arising from institutional priorities and inclusivity of various topics in the BBNJ discourse.

Table 3: The keywords used in the systematic literature review adopted from Tessnow-von Wysocki and Vadrot (2020) * showing search results in May 2020 and May 2024

Keywords	*2020**	*2023*
BBNJ	36	121
biodiversity beyond national jurisdiction	38	313
marine biodiversity AND ABNJ	29	112
marine biodiversity AND areas beyond national jurisdiction	52	110
marine biological diversity AND ABNJ	15	43
marine biological diversity AND areas beyond national jurisdiction	24	107
conservation and sustainable use of biological diversity in areas beyond national jurisdiction	31	69
conservation and sustainable use of biodiversity in areas beyond national jurisdiction	55	139
biodiversity AND beyond national jurisdiction	135	313
biological diversity AND beyond national jurisdiction	51	114
biodiversity AND ABNJ	50	112
biological diversity AND ABNJ	26	43
biological diversity AND beyond national jurisdiction	51	114

3.2.2(b) Mining data from other documents

In addition to the literature review, this research utilised various documents related to the BBNJ process, including participant lists, delegation statements, and the final texts and drafts from the five BBNJ Intergovernmental Conferences (IGCs). Additional legal frameworks, such as the United Nations Convention on the Law of the Sea (UNCLOS), the UN Fish Stocks Agreement (UNFSA), and the Convention on Biological Diversity (CBD), were analysed to explore socio-legal dimensions relevant to the negotiations.

Participant lists

A key component of understanding biodiversity discourses is analysing the range of actors involved in biodiversity governance and resulting perspectives. This research examined official participant lists from the five BBNJ IGCs publicly available on the UN Division for Ocean Affairs and the Law of the Sea (DOALOS) website (https://www.un.org/bbnj/). These lists serve as critical data sources for studying stakeholder diversity and participation patterns during international negotiations (Blasiak et al., 2017). The range of participants reflects the breadth of perspectives represented and offers insights into participation dynamics, such as the mix of government delegates, NGOs, and scientific experts involved.

Participants were categorised by their country (using ISO 3166-1 standard) or institutional affiliation and by the number of meetings attended. Sub-categories were created to deepen the analysis, as further discussed in the relevant Chapters.

The first category focused on **World Bank regional groupings** and **income categories** (**Figure 3.1A** and **B**). The income levels were based on the World Bank's 2022 Gross Domestic Product per Capita (GDPC) classifications. Countries like the Vatican, overseas territories, and Venezuela (which lacked recent economic data) were excluded from the income-based analysis.

The second category involved **negotiation blocs**, which offer alternative avenues for state participation beyond formal sessions. Prominent blocs in the BBNJ process include, but are not limited to, the Group of 77 & China (G77), African Group (AG), Landlocked States (LLCs), Landlocked Developing Countries (LLDCs), Small Island Developing States (SIDS), the Like-Minded Group of Developing Countries (LMDC), the Caribbean Community (CARICOM), and the European Union (EU). Organisation for Economic Cooperation and Development (OECD) members were also classified separately (see section 5.2. Analysis of inclusivity in BBNJ).

The analysis also accounted for **geographical proximity** by distinguishing between coastal and landlocked countries (Figure 13C), with comparisons also made for Small Island States (SIDs). Proximity to the sea has historically influenced participation in maritime negotiations, such as UNCLOS, where landlocked countries were sometimes marginalised (Sebuliba, 2024). This factor could similarly shape engagement levels in BBNJ negotiations.

Additionally, **maritime presence** was evaluated using the number of ships registered under the International Maritime Organization (IMO) as of 2023. This data, sourced from the Marine Vessel Tracker (https://www.marinevesseltraffic.com), is a proxy for a country's involvement in global maritime activities. Shipping reflects economic contributions and highlights ecological impacts relevant to ocean governance. Both overseas territories and contested regions—those with autonomous economies or independent treaty participation—were included in the analysis (**Figure 3.1**D).

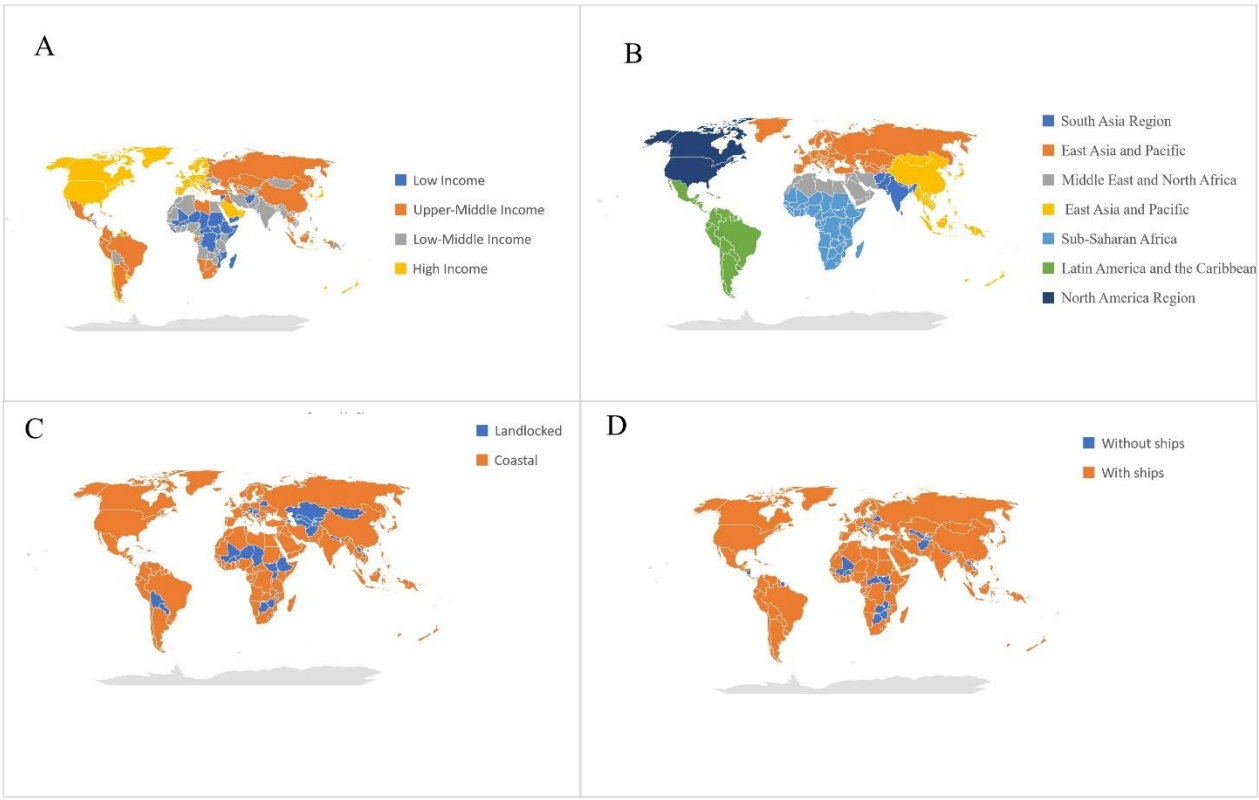

Figure 3.1: Location of World Bank regional groupings (A), income categories (B), landlocked or coastal states (C) and countries with or without ships (D).

This research also considered each country's previous engagement with ocean governance frameworks. **Ratification of critical international agreements** served as a proxy for measuring involvement in related governance. Studies suggest that prior treaty participation can influence States' engagement with new international agreements (Roberts et al., 2004). The frameworks examined include UNCLOS, UNFSA, the International Convention for the Regulation of Whaling (ICRW, 1946), and conventions under the International Maritime Organization (IMO), including the International Convention for the Prevention of Pollution from Ships (MARPOL, 1973), International Convention on Oil Pollution Preparedness, Response and Co-operation (OPRC, 1990), and the Convention on the Control of Harmful Anti-Fouling Systems on Ships (AFS, 2001). These historical contexts provide valuable insights into countries' priorities and negotiating positions. Chapter 5 provides further details.

Lastly, **observer organisations** were also examined, focusing on their missions, geographical reach, and representation across the IGCs. As Chapter 5 elaborated, these entities often play critical roles in shaping negotiations by providing expertise or representing non-state interests.

However, as demonstrated by Blasiak et al. (2017), and further discussed in the relevant chapters, relying solely on participant lists does not provide a comprehensive understanding of engagement dynamics. Additional sources—such as interviews and delegation statements—are essential for a comprehensive understanding of stakeholder engagement. The following section focuses on data collection from some of these statements and other textual proposals.

Delegation statements and textual proposals

233 statements were retrieved from the DOALOS website, representing contributions from 63 state delegations, six negotiating groups, and 23 observer organisations. To supplement these, I utilised the High Seas Alliance treaty tracker (High Seas Alliance, 2024), to access additional statements summarised by the DOALOS team during the Intergovernmental Conferences (IGCs), bringing the total to 1346 statements without duplicates. These statements were analysed to understand the contributions from various participants and coded to retrieve various themes used in the analysis (see data analysis below).

In addition to analysing the statements, I conducted a detailed review of various delegations and institutions' textual proposals submitted to DOALOS. These proposals were examined to trace the development of each article within the BBNJ Agreement, providing insights into the evolving positions and interests of the stakeholders. This methodical approach gave a more comprehensive understanding of how different interests shaped the negotiation process and the Agreement's final text.

Legal documents and BBNJ draft texts

To conduct a thorough analysis, a selection of legal documents related to international law, with an emphasis on the marine environment, were retrieved (see Table 4). The core documents used for this analysis were the BBNJ Agreement and the UNCLOS Convention. The Underlying approach and theoretical framework involved systematically identifying and scrutinising these texts to comprehensively understand their explicit provisions, rules, and frameworks concerning environmental protection and marine biodiversity. UNCLOS-related implementing Agreements, particularly UNFSA (Fish Stocks Agreement), the CBD (Convention on

Biological Diversity) and its Nagoya protocol as biodiversity frameworks, were often consulted on specific topics such as MGR and Fisheries.

In addition to the primary texts, sub-perspectives were drawn from the other documents listed in Table 4, offering a broader context for the analysis. For instance, the Vienna Convention on the Law of Treaties (VCLT, 1969), was used as a crucial reference for interpreting treaty texts, providing essential guidance on understanding the language and intent of these legal instruments.

Furthermore, draft versions of the BBNJ Agreement were reviewed to track changes in the development of various provisions. This comprehensive approach ensured a deep and nuanced understanding of the BBNJ Agreement concerning existing frameworks and processes.

3.2.2(c) Online survey

From the analysis of the various datasets above, it became evident that stakeholders perceived the BBNJ Agreement as focusing on specific attributes of marine biodiversity rather than addressing it comprehensively. This observation was supported by analyses from textual analysis and coding (see section 3.3.1(a)). To further investigate these perceptions, an online survey was conducted using JotForm, an online platform that supports conditional formatting to create customised survey experiences (Jotform, Inc., 2024).

Online surveys offer several advantages, including broad accessibility, flexibility, and the ability to collect data efficiently from geographically dispersed participants (Braun et al., 2021; van Selm and Jankowski, 2006). The survey was administered shortly after the adoption of the BBNJ Agreement. It incorporated word clouds (Figure 6.5) generated from the critical texts of major international ocean biodiversity/ environmental treaties. These included UNCLOS, the BBNJ, UNFSA, ICRW, the United Nations Framework Convention on Climate Change (UNFCCC), the Convention on the Conservation of Migratory Species of Wild Animals (CMS), the CBD and its Nagoya Protocol on access to genetic resources and the fair and equitable sharing of benefits arising from their utilisation.

Word clouds are a visual tool often used in survey research to present the relative frequency of terms, with more prominent words representing more frequent occurrences (Heimerl et al., 2014). This textual-visual design enables using words as a cognitive prompt (deNoyelles and Reyes-Foster, 2015), allowing participants to engage more intuitively with the text. In this context, the word clouds were generated using Gephi, highlighting the 100 most used words

and key themes from each treaty. Common stop words such as *is, of,* and *in* were excluded, while action-oriented words such as *shall* and *article* were deliberately retained to reflect the legal nature of the documents. As words reflect concepts and actions with real-world consequences (*Text as matter, concept, and action*, 1991), this method provided meaningful insights into the thematic focus of each treaty.

The survey was completed by 14 marine scientists, who were asked to review the word clouds and identify which treaty most closely aligned with the BBNJ Agreement based on the themes presented (**Figure 3.2**; see also Chapter 6: Analysis of Word Clouds). At the start of the survey, participants could access an optional summary of the BBNJ Agreement and its key elements to familiarise themselves with its content. Participants were encouraged to explain their choices and note any surprising themes or gaps in the word clouds that could reveal the BBNJ Agreement's strengths and limitations. This open-ended feedback complemented the word cloud analysis, providing additional qualitative insights.

Figure 3.2: A snippet of the first page of the online word cloud survey, designed by the Author to gather respondents' perspectives on the aspects related to marine biodiversity and the BBNJ agreement. see also Chapter 6: Analysis of Word Clouds.

Table 4: Legal frameworks analysed or consulted in the thesis

Acronym	Full Name	The primary purpose for analysis or consulting
*BBNJ**	Biodiversity Beyond National Jurisdiction Agreement (2023)	The main object of analysis for the entire thesis
*UNCLOS**	United Nations Convention on the Law of the Sea (1982)	The main object of analysis is establishing the legal framework for BBNJ, including the rights and responsibilities of States in oceans
*CBD**	Convention on Biological Diversity (1992) and its 2014	The main object on general conservation and sustainable use of biological diversity, and MGR and benefit-sharing mechanisms
*Nagoya protocol**	Nagoya protocol 2014	Consulted on MGR and benefit-sharing mechanisms
*UNFSA**	United Nations Fish Stocks Agreement (1995)	Consulted on fisheries provisions and management, connected with RFMOs
CCAMLR	Commission for the Conservation of Antarctic Marine Living Resources (1980)	Consulted on establishing MPAs in the Southern Ocean, part of ABNJ.
CITES	Convention on International Trade in Endangered Species (1973)	Consulted as a reference to the *South China Sea*, Arbitral Award
*CMS**	Convention on the Conservation of Migratory Species of Wild Animals	Used in Word Cloud
*UNFCCC**	United Nations Framework Convention on Climate Change	Used to draw parallels to climate change
*ICRW**	International Convention for the Regulation of Whaling (1946)	Consulted on Japan's case and regulation of whaling
IMO	International Maritime Organization (1948)	Consulted on shipping activities, analysed as an institution in BBNJ negotiations
MARPOL	International Convention for the Prevention of Pollution from Ships (1973)	Consulted provisions on pollution by ships, including oil, chemicals, and harmful substances.
Mining Code	International Seabed Authority Mining Code (Ongoing since 2000)	Consulted for procedures and standards for the exploration and exploitation of mineral resources in the international seabed area
VCLT	Vienna Convention on the Law of Treaties (1969)	Interpretation of treaties

*Also used in word cloud analysis

3.3. Data analysis

All collected data were analysed to examine the institutions, stakeholders, and dynamics involved in framing biodiversity abstractions and objectives in various contexts, particularly the **BBNJ** negotiations. The case study analysis aimed to trace the development of these abstractions and objectives throughout the BBNJ processes and to elucidate the tensions arising from varying perspectives**.**

3.3.1(a) Textual analysis and coding

The primary method for analysing interviews, literature, documents, and field notes was textual analysis, a widely used approach in environmental discourse analysis (Hajer and Versteeg, 2005; Leipold et al., 2019)**.** Textual analysis is the process of converting large amounts of (un)structured text, such as articles, reports, or social media content, into structured data for analysis, often using techniques from machine learning, statistics, and linguistics to identify hidden trends (Li et al., 2019). In this case, it was instrumental in revealing recurring themes in the BBNJ negotiations and broader biodiversity discourse

The collected data was coded using ATLAS.ti (version 24.1.1)(ATLAS.ti Scientific Software Development GmbH, 2024) to tag text with codes representing themes or topics. This iterative process, based on grounded theory[7] (Charmaz, 2015), ensured that the coding evolved as new themes emerged. The K-J method, commonly used for grouping ideas into hierarchical categories, was employed to organise the resulting themes into small, middle, and large categories. This structured approach also allowed a social network analysis and representation of matrixes related to the themes, as discussed in the following sections.

Key themes from the biodiversity literature

In the biodiversity literature, eight initial topics were identified through word frequency counts and sample readings, including:

1. The value and importance of biodiversity
2. Threats to biodiversity

[7] Grounded theory is a research method used to develop theories based on data collected during a study. Instead of starting with a predefined theory, researchers using grounded theory gather and analyze data first, allowing patterns, themes, and concepts to emerge naturally. see Charmaz (2015).

3. Scientific approaches and indicators of biodiversity
4. Biodiversity research, monitoring, conservation, and management strategies
5. Biodiversity in specific ecosystems (focused on marine)
6. Socio-economic and cultural aspects of biodiversity
7. Biodiversity as a discipline (e.g., biotechnology)
8. Biodiversity policies, legislation, and international conventions

These topics reflected two overarching categories frequently discussed in the literature (Takacs, 1996): biodiversity as an objective concept for science and biodiversity as a crisis concept. The analysis also revealed a cyclic pattern in the term's usage, influenced by significant events such as international conferences and reports, also visible in *Google Trends* (Figure 2.2). *Google Trends* is a tool used to analyse the frequency and popularity of specific search terms over time, providing insights into shifts in research focus on the worldwide (Jun et al., 2018; Mavragani and Ochoa, 2019; Nuti et al., 2014). While this tool has its biases, including search results influenced by specific algorithms (Peters, 2017), it contributes to identifying another important aspect: biodiversity as an evolving concept shaped by critical moments. Therefore, the discussion in Chapter 4 will also reflect on these three main themes—biodiversity as an objective concept, biodiversity as a crisis concept, and biodiversity's evolving nature—aiming to address the first objective.

Themes from BBNJ texts

For the BBNJ-related texts, the analysis focused on key themes such as Marine Genetic Resources (MGR) and Benefit-Sharing, Area-Based Management Tools (ABMT), including Marine Protected Areas (MPAs), Environmental Impact Assessments (EIAs), Capacity Building and Technology Transfer (CB&TT), governance and legal frameworks, and stakeholder participation. These themes were informed by the documents and the researcher's participant observations and personal field notes, reflecting the reflexive underlying approach and theoretical framework adopted throughout the thesis.

Phrases such as "agree," "align with," or "endorse" were used as proxies for broader stakeholder attitudes, following Blasiak et al.'s (2017) approach to identifying alignment between actors in environmental governance. Each code's frequency, or groundedness (Charmaz, 2015), in the dataset, provided a measure of its significance, helping to identify dominant themes in the BBNJ negotiations. This frequency-based coding, commonly used in content analysis, allows for more precise detection and understanding of which topics are most

salient in shaping the discussions and outcomes (Carley, 1993; Vourvachis and Woodward, 2015).

3.3.1(b) Doctrinal and socio-legal analyses

Following the Underlying approach and theoretical framework strategy, the doctrinal analysis integrated socio-political insights to emphasise the interplay between legal formalism and the socio-economic, political, and environmental realities that shape governance structures (Miola and Picciotto, 2022; Zumbansen, 2008). This approach moves beyond the traditional reading of legal texts by situating them within broader governance contexts, reflecting the interdisciplinary nature of biodiversity governance (Boyle & Chinkin, 2007).

Legal texts related to marine biodiversity governance were systematically coded and analysed alongside other qualitative data sources to identify core principles, legal obligations, and policy implications embedded within these frameworks. Rather than treating laws as isolated instruments, the analysis explored how legal norms are shaped and contested by socio-economic and political forces, consistent with the transnational legal orders framework (Halliday & Shaffer, 2015).

3.3.1(c) Quantitative analysis of BBNJ participation

Quantitative analyses were performed to visualise the themes and highlight some significant patterns. The analysis included counting the frequency of identified themes within the dataset to provide a quantitative overview of trends. Additionally, the analysis was employed to collect participation data from the BBNJ negotiation rounds (Intergovernmental Conferences or IGCs). Descriptive statistics, such as means, medians, and standard deviations, were calculated to summarise participation levels across countries and stakeholder groups. Participation data were analysed using mathematical formulas to calculate the likelihood of participation for individual countries and groups, providing a comparative view of engagement trends across negotiation rounds (**Appendix Table 16**).

A **Principal Component Analysis (PCA)** was conducted using PAST software to explore relationships between categories further. This analysis focused on variables related to participation levels, thematic engagement, and country characteristics, with variations tested to reduce noise, such as excluding certain flags of convenience. The PCA helped to reveal underlying patterns in state participation and thematic focus across the negotiation processes

3.3.1(d) Network analysis, visualisation, and summary

Using the various data, e.g., from biodiversity and BBNJ (Biodiversity Beyond National Jurisdiction) literature, a network analysis was conducted to identify the interconnections between disciplines, topics, and actors involved in these discourses. Network analysis enables the visualisation of relational data in matrix form, where nodes represent specific topics, institutions, or countries, and edges (lines) between nodes denote connections—such as co-mentions or shared discussions. The weight of connections reflects the frequency of mentions between nodes, providing a measure not only of the existence but also of the strength of those connections. This framework facilitated a comprehensive understanding of how different disciplines and actors engage in these scientific conversations.

In the biodiversity discourse, nodes represented Meso-level topics, with micro-topics forming edges that linked them. Similarly, in the BBNJ context, state groups or institutions acted as nodes, with their interactions visualised as edges between them. In the online image analysis, the domain corresponding to institutions or image sources acted as the nodes, while the various themes from the paths acted as the edges. Gephi software was utilised to plot these networks, employing the Force Atlas 2 algorithm to spatially arrange nodes based on their proximity and influence relative to others. This spatial arrangement revealed patterns of authority between categories. At the same time, a modularity algorithm identified clusters of nodes (or communities) that were more densely connected, helping to isolate critical thematic areas or active stakeholder groups. These clusters were colour-coded to enhance clarity and emphasise community structures.

Other visualisation tools were essential in summarising complex datasets and providing meaningful insights into the relationships between actors, themes, and trends across different contexts. Heat maps created with Paleontological Statistics Software (PAST) 4.03) (Hammer and Harper, 2001), which displayed the intensity and distribution of themes among various States or clusters of States, revealing correlations and patterns that might not have been apparent otherwise. Sankey diagrams were produced using ATLAS.ti, mapped relationships between States, stakeholder groups, and themes to show how these elements evolved and intersected over time. These diagrams illustrated the flow and interconnectedness between actors, helping to identify recurring connections and shifting alliances during the BBNJ negotiations.

To further explore participation trends in the BBNJ negotiations, box plots and scatter plots were generated using the ggplot2 package (Wickham, 2016) in R software version 4.3.2 (R

Core Team, 2023). These plots offered quantitative insights into the distribution and variability of country participation. Country heat maps, created with Microsoft Excel, provided a spatial overview of participation by region, underscoring which countries or groups played more active roles.

Together, these visualisation methods offered both qualitative and quantitative perspectives, helping to uncover hidden dynamics within the data. Sankey diagrams, heat maps, principal component analysis (PCA) plots, box plots, and scatter plots enabled a deeper exploration of relationships between themes, stakeholders, and States. These tools were instrumental in clarifying engagement patterns and participation in biodiversity and BBNJ-related negotiations. By integrating these visualisations with network analysis, the study provided a holistic view of the interactions, showing the presence of relationships and their evolution over time. This network and bibliometric analysis synthesis allowed for a clearer understanding of the interconnected dynamics shaping these biodiversity discourses.

3.4. Ethical considerations

3.4.1(a) Engaging participants

At the beginning of this thesis, I obtained ethical approval from the University of Oldenburg to ensure adherence to standard ethical procedures, including consent, transparency, and voluntary participation. Ethical guidelines serve as a foundation to protect participants, mitigate risks, and maintain the integrity of research (Kyngäs et al., 2020; Pietilä et al., 2020; Robishaw et al., 2020). In line with the principles of transparency and informed consent, respondents during interviews were first informed about the aims of the research, how the information collected would be used, and the expected outputs (Beskow and Dean, 2008; Nusbaum et al., 2017). Respondents were then asked to sign a consent form agreeing to be interviewed and allowing their data to be used in the thesis analysis.

At off-site locations like marine events and conferences, participants provided consent at the start of interviews. Where written forms were unavailable, a written note confirming consent was given. However, obtaining interviews and consent during onsite BBNJ negotiations at the UN headquarters in New York was challenging. Only seven participants—three NGO representatives [also researchers] and four country delegates—provided recorded oral or written consent at the beginning of interviews. Some national delegates initially expressed willingness but withdrew when formal consent was requested. Repeated attempts to engage

these groups revealed that some participants actively avoided further contact, indicating discomfort with the existing consent process. Nairn et al. (2020) highlight the limits of formal consent processes in fluid contexts, as informed consent often requires building relationships over time (Nijhawan et al., 2013).

Diplomatic and politically sensitive settings require a more adaptive approach to consent (Gentile, 2013). When formal consent processes caused discomfort, I adapted the process by seeking consent during or afterwards, promoting open dialogue. This aligns with processual ethics, which emphasises flexible, ongoing negotiation of consent rather than a one-time agreement (Dawson, 1997). In some cases, to foster a more open environment, I shifted from formal, semi-structured interviews to informal, conversational exchanges as needed. This flexibility builds trust and rapport, encouraging participants to share candid insights (Mikecz, 2012).

Despite the adaptive approach, some participants still declined to provide written and oral consent, even though they were permitted to use their views. Others granted consent but insisted on stringent conditions to protect their anonymity. For instance, two delegates requested that their identities not be signed or written down; instead, they preferred written consent in a coded manner, such as a delegate from country xx provided their consent.

This cautiousness surprised me, as I initially assumed that biodiversity was a topic of general knowledge that should not provoke significant sensitivity. However, a deeper understanding emerged during the negotiations due to my insider role as an advisor to the delegation. In these diplomatic settings, every word is laden with potential implications. Diplomats and state officials often have dual positionalities but are bound by institutional roles, often limiting their ability to share personal views (Vark, 2003). Official statements are rarely individual reflections but performative acts of representation (Villadsen, 2008). Aware of the high stakes of diplomatic negotiations, diplomats often exhibit caution to avoid reputational risks (Haugevik and Neumann, 2021; Sechser, 2018). This reluctance to participate underscores the tension between transparency and discretion in international diplomacy, where unintended disclosures can have diplomatic consequences (Garsten and Sörbom, 2023; Roberts, 2004). The preference for general narratives and avoidance of specifics mirrors the concept of impression management, where participants control how they present themselves to align with institutional expectations and minimise risks (Elsbach and Sutton, 1992; McDonnell and King, 2013; Schlenker and Pontari, 2000; Tesser et al., 2000). Consequently, delegates seem to resort to vague and broad statements, avoiding specific details or personal opinions that could be traced

back to them or their governments. Strategic ambiguity, the use of general narratives to avoid unintended political implications (see also discussion in Section 6.3.1. Strategic ambiguity), seems like a protective measure, ensuring that nothing they say could be used against them in future diplomatic engagements or be misconstrued in a way that might complicate their government's position. The insistence on general narratives is a deliberate choice to navigate the delicate balance of diplomacy.

Consequently, many nuances of the negotiations will never be revealed. For instance, some participants from UN agencies and the BBNJ secretariat staff involved in the process explained that they could not be interviewed and, should they be required, would only offer neutral opinions. Outside these formal settings, through establishing personal networks and having informal, candid conversations, some of these UN participants provided critical insights about the negotiation process, and the critical issues were often left unspoken and required further investigation. The dilemma of adhering to standard ethical considerations (Nii Laryeafio and Ogbewe, 2023), makes it challenging to uncover such nuances. If consent is not given or withdrawn, even if the respondent makes deeply interesting or disturbing revelations, such information cannot be reported without their permission, leaving the researcher with the burden of sensitive information (Alexander et al., 2018; Quinn and Malgieri, 2021).

Navigating these ethical challenges in sensitive research environments is essential to avoid the often same too-generalized findings that miss critical nuances. Standard research methods—such as formal interviews with rigid consent procedures—are often insufficient for capturing the complexities of diplomatic processes. Participants are often reluctant to share candid insights, requiring researchers to adapt their approaches to build trust and foster openness. In this study, I employed a combination of formal interviews, informal conversations, autoethnographic insights, literature reviews, and document analyses to address these challenges. This blend of methods provided access to both explicit perspectives and subtle, unspoken dynamics often absent from formal interactions.

The following section discusses the ethical considerations of analysing the various documents from such settings.

3.4.1(b) Ethics on documents

When analysing secondary data from sensitive environments like the UN BBNJ negotiations, working with publicly available documents and ethnographic notes can present challenges related to privacy, consent, representation, and researcher positionality (Corti et al., 2000;

Gliniecka, 2023; Wilbanks, 2014; Wilkinson and Thelwall, 2011). Scholars emphasise the need to navigate these challenges carefully to maintain research integrity (Armond et al., 2021).

Public records, such as participant lists from UN delegations, highlight an ethical dilemma: although public, these lists contain personal data—names, affiliations, and roles—that may expose individuals to risks (Federman et al., 2003). Gliniecka (2023) points out that public availability does not eliminate privacy concerns. The ethical challenge lies in recognising the boundaries between public and private information, especially when public data is repurposed for research (Kisselburgh and Beever, 2022; Knijnenburg et al., 2022; Ravn et al., 2020). Notably, public documents are not neutral artefacts but products of broader social dynamics (Cook, 2001; Russell, 1986). Misrepresenting or selectively quoting official statements could skew their meaning, posing both analytical and ethical risks (Craig, 2007; Killenberg and Anderson, 1993)In this thesis, I avoided attributing personal identities to specific statements to mitigate any risk of exposure or reputational damage. Furthermore, I exercised caution by using aggregated data and focusing on patterns or themes rather than individual positions in these documents. The aim was to understand how the biodiversity discourse was shaped within the negotiations, not critique individual actors or nations. However, I also sometimes used direct quotations to ensure transparency and traceability of documentation.

Another significant ethical consideration arises when combining data types— public delegation statements and private ethnographic notes. Scholars caution that integrating disparate data sources may unintentionally create new meanings or reveal sensitive information (Kraemer et al., 2003). Ethnographic notes in this research sometimes included personal observations or informal conversations, raising potential tensions between public and private data. Scholars have warned against exposing participants to detailed contextual descriptions (Pacheco-Vega and Parizeau, 2018; Phillippi and Lauderdale, 2018; Reyes, 2018), I took care to anonymise sensitive data and cautiously used informal insights.

The reflexive practice helped me maintain a critical distance from the data, ensuring that I neither over-identified with particular stances nor privileged specific perspectives. Finlay (2002) argues that reflexivity is not just acknowledging bias but actively managing how engagement influences the research (McCabe and Holmes, 2009). In this thesis, reflexivity functioned both as a methodological tool and an ethical safeguard, ensuring interpretations remained balanced and respectful.

3.5. Chapter 3 conclusion

In conclusion, Chapter 3 underscores the value of using mixed methods to grasp the complexities of biodiversity discourses. By combining interviews—both formal and informal—participant observation, online questionnaires, document analysis, media analysis, and literature reviews, this research demonstrates that no single method can fully capture the nuanced interactions and multiple perspectives within this field. Each method contributes unique insights, enriching the understanding by addressing different dimensions of biodiversity-related issues.

A key takeaway from this chapter is the importance of reflexivity—the continuous reflection on how researchers' positionality, background, and biases shape the research process. This reflexive approach ensures more ethical engagement with participants and sharpens analytical rigour by acknowledging how subjective viewpoints influence research design, topic selection, and interpretation of findings. Integrating diverse literature further mitigates bias, allowing for broader perspectives and reducing the risk of perpetuating preconceived narratives.

The chapter emphasises contextualising biodiversity debates within specific political, institutional, and disciplinary frameworks, which is essential for practical analysis. Efforts to homogenise biodiversity concepts across contexts have proven challenging, underscoring the need for thoughtful theoretical and methodological alignment with the research context. Researchers must carefully assess which methods and theories are most suitable to the situation, as these decisions profoundly impact the quality and relevance of the findings.

Ultimately, mixed methods, combined with careful reflexivity and context-aware analysis, provide a robust framework for navigating the complexity of biodiversity discourses. These approaches empower researchers to move beyond simplistic narratives and address the intricate relationships between ecological, social, and political dimensions, contributing to more informed and nuanced understandings of biodiversity management and policy.

The following chapters will address the specific objectives of this thesis using the methods explored in this chapter. Immediately following this chapter on the methods is chapter four, which addresses objective one of the thesis, exploring biodiversity discourse using literature to answer the question, "Who defines biodiversity, for what purposes, on whose behalf, and in which contexts?"

Chapter 4: Biodiversity contested, critical concepts and moments

4.1. Introduction

Two major environmental discourses of our time—climate change and biodiversity loss—mark a critical juncture and significant threshold in the human-environment relationship as these interactions approach or have already reached tipping points (Castree, 2015). Both climate change and biodiversity present complex and interrelated challenges, often described as malign problems of the Anthropocene—too intricate to comprehend fully (Andresen and Rosendal, 2017; Perry, 2015). Addressing these challenges requires significant changes in human behaviour and critical sectors such as transport, energy, agriculture, biotechnology, chemicals, and pharmaceuticals (World Health Organization, 2015).

This thesis, however, focuses on biodiversity, a discourse that has become elusive in global discussions of this Anthropogenic timeline. As Noel Castree's concept of the Anthropo(s)cene illustrates, biodiversity evokes images or moments in human-environment interactions that are difficult to understand or define within specific geographic areas, places, or management frameworks (Castree, 2015). Much of the debate around biodiversity treats it as if its meaning and significance are clear and have remained static, overlooking the evolving networks, institutions, and individuals that shape how we think about human-environmental relationships.

This chapter aims to answer objective one by tracing the evolution of historical ideas, concepts, key moments, influential actors, and practices that have influenced the current understanding and operationalisation.

While both climate change and biodiversity are complex, the climate change narrative has evolved into a more straightforward timeline: human activities, mainly burning fossil fuels, lead to increased greenhouse gas emissions, which cause global warming and related climate disruptions (Bushell et al., 2017; Daniels and Endfield, 2009; Fløttum and Gjerstad, 2017; Pancost, 2017; Randall, 2009). Though this is an oversimplification, the seemingly straight storyline has been adopted in many papers. It has allowed climate change to be quantified using specific metrics, making it a central focus in policy discussions, corporate strategies, and business decisions (Bennett, 2017). On reviewing reviews of the climate change debate literature (Barnes and Dove, 2020; Dewulf, 2013; Goodwin and Dahlstrom, 2014; Orlove et al., 2020), the terms climate and change also seem to be generally understood. While there are some discussions about the severity of the impacts, there is overwhelming scientific consensus that

climate change is harmful and primarily driven by anthropogenic (human) activities (Barnes and Dove, 2020; Dewulf, 2013; Goodwin and Dahlstrom, 2014; Orlove et al., 2020). This relative clarity has contributed to climate change gaining sustained public attention and dominating academic research, often overshadowing biodiversity discourses (Perrings et al., 1992; Perrings et al., 1995; Perrings, 1995).

In contrast, despite its significance, biodiversity lacks a similarly straightforward and accessible narrative in both academic literature and policy discussions (DeLong Jr, 1996; Sarkar, 1999, 2008, 2019, 2021). Scholars suggest that one reason biodiversity discourses receive less public attention is that economists have not emphasised the biodiversity importance to the same extent as they have for climate change (Bennett, 2017; Tschirhart, 2009). Issues that lack strong connections to economic or financial concerns often struggle to gain traction in policy and decision-making processes (Chenet, 2024). This economic dimension will be explored later in this Chapter.

A critical yet often overlooked issue lies in the conceptual and semantic complexity of the term biodiversity. Unlike climate, which benefits from quantifiable metrics of change (e.g., temperature rise), biodiversity lacks a similarly straightforward framework, making integrating into policy and public discourse challenging. Fundamental questions arise: *What constitutes life in biodiversity, and how should its variety be understood? Who defines this, and for whom? What point in time?* These questions become particularly prominent within biodiversity studies (Casetta et al., 2019b; DeLong Jr, 1996; Meinard et al., 2019; Sarkar, 1999, 2008, 2019, 2021), even though parallel inquiries have also been raised in climate discourse (Beck, 2016; Caseldine, 2015; Rosen and Young, 2018).

Moreover, biodiversity discourses only take on meaning when conceptualised in specific contexts. For instance, the discourse frequently revolves around the concept of *loss*—particularly biodiversity loss, which has become one of the most recognisable frames within this field, as subsequent sections will discuss. Similar questions arise when biodiversity is framed through loss: *What exactly is being lost? What counts as a significant loss? Which losses matter enough to demand action? Who or what is responsible for these losses?* Typically, the conversation centres on species decline (e.g., Butchart et al., 2010). However, biodiversity discourse extends well beyond species (see, e.g., Casetta et al., 2019a), and even defining what constitutes a species is fraught with complexity (Mayr, 1949; Simpson, 1951). These ambiguities challenge efforts to establish metrics or clear objectives. Increasingly, *biodiversity*

change is proposed as an alternative to *biodiversity loss* (Hillebrand et al., 2018; Hillebrand et al., 2023; Lamb et al., 2009) but can struggle with the same inquiries: *What exactly is changing? What counts as a significant change? Which changes matter enough to demand action? Who or what is responsible for these changes?*

For meaningful discussion, biodiversity change—like biodiversity loss—must be defined within a normative framework. A normative framework refers to a set of values, principles, or standards that guide how concepts are defined, evaluated, and acted upon in various spaces (Deneulin and Shahani, 2009; Smelser and Baltes, 2001; Taekema, 2018). In the context of biodiversity, such a framework establishes what is considered reasonable, desirable, or necessary regarding biodiversity (Lubbe, 2014; Vaissière and Meinard, 2021). It shapes how people interpret biodiversity change or loss and helps answer some critical ethical or policy questions, as mentioned above.

For example, biodiversity loss or change based on species decline or change, respectively, may only be considered problematic if it reduces or negatively affects ecosystem services (like clean water or food production) that benefit humans—a utilitarian, anthropocentric perspective (Jax et al., 2013; Salles, 2011). Alternatively, a normative framework might emphasise the intrinsic value of biodiversity, arguing that all species and or ecosystems should be preserved regardless of their usefulness to humans (Batavia and Nelson, 2017; Schröter et al., 2014). This difference reflects contrasting worldviews: one focused on instrumental value and the other on intrinsic value (Arias-Arévalo et al., 2017; Stålhammar and Thorén, 2019). These world views also influenced the setting of the BBNJ Agreement objectives, as explored in Chapters 6 and 7.

The contextual nature of biodiversity is so broad, extending across multiple dimensions, from biodiversity loss or change to cultural (Mariani et al., 2022), soil (Brussaard et al., 2007; Wagg et al., 2014), forest (Lindenmayer, 2013; Noss, 1999), marine (Costello et al., 2010; Sala and Knowlton, 2006), and terrestrial biodiversity (Colwell and Coddington, 1994; Newbold et al., 2015). It also includes more complex or emerging areas, such as extraterrestrial biodiversity (Johnson, 2019; Wilkinson, 2003), or marine biodiversity in areas beyond national jurisdiction (ABNJ)—the primary focus of this thesis. The more complex the context, the more nuanced and complicated biodiversity becomes as a discourse, requiring careful contextualisation to inform effective policy and management.

For instance, understanding marine biodiversity in ABNJ requires knowledge of what constitutes marine spaces and ABNJ (see Chapter 2: 2.4.1. Critical geography and 2.5.1(b)

ABNJ as an abstract UNCLOS zone). Without this contextual knowledge, establishing clear management objectives becomes highly challenging. Thus, defining biodiversity alone is insufficient; it is also essential to understand how different stakeholders interpret and operationalise the concept in various contexts

In other words, biodiversity is not just a static scientific term or concept—it has evolved over decades through scientific inquiry, political negotiations, and cultural framing. This Chapter examines the key moments, actors, and power dynamics that have shaped these biodiversity discourses, moving beyond the broad, often ambiguous discussions common in biodiversity literature. This exploration seeks to understand *what biodiversity means* and *why* it has come to mean what it does. What groups are attempting to measure or manage biodiversity, and for whom? Addressing these questions offers a more nuanced understanding of biodiversity as a contested and evolving discourse.

Situating this analysis within the *history of science* and *knowledge politics*, this Chapter adopts an interdisciplinary approach, integrating biological, social, political, and cultural perspectives to examine how biodiversity discourses have developed. Drawing on historical-constructivist methodologies (Carvalho et al., 2021), the thesis traces the development of biodiversity concepts over time. However, the process of identifying relevant concepts, actors and histories is inherently shaped by bias (Diaz-Leon, 2015), as the thesis must rely on the existing body of published scientific literature and academic debates. This reliance presents a dilemma: the frameworks that shape academic knowledge also define what is considered relevant. Despite these limitations, the academic literature plays a crucial role in shaping practical understandings and informing international policymaking (Vadrot, 2014), which remains the main focus of this thesis.

To ground these theoretical discussions, the Chapter presents several case studies illustrating key moments, influential actors, and pivotal controversies in the history of biodiversity debates. These examples highlight the real-world impacts of how biodiversity has been conceptualised and managed, demonstrating how these debates shape global environmental policy and practice. Through this approach, the Chapter emphasises the dual nature of biodiversity as both a *scientific* and a *social construct*, evolving through the interplay between environmental knowledge, politics, and practice.

The Chapter is divided into five sections. The first section provides historical and contextual foundations in three subsections:

1. **Before biodiversity** examines the historical context preceding the formalisation of the concept of biodiversity. It focuses on early scientific works and key figures who shaped the understanding of biodiversity-related ideas, such as species classification, in academic discourse.
2. **Ecology as a catalyst for environmental movements** explores international developments that led to the coining of *biodiversity* and positioned it within global environmental debates.
3. **Instating biodiversity** discusses the early development of biodiversity discourses, focusing on the initial debates and conceptual frameworks that emerged during this formative period.

The following sections address three central themes of the biodiversity discourse: Who defines or measures biodiversity? For whom and for what purpose? What have been the critical concepts and moments in the history of biodiversity debates?

These discussions examine how biodiversity has been framed as an objective feature of nature, a crisis concept, and a tool for economic, social, and political purposes. The Chapter also highlights how biodiversity has evolved from a scientific concept to a flexible and contested idea used across different contexts to serve varying agendas.

Finally, the conclusion considers how biodiversity discourses deviate from concepts or contexts, which leads to the next part of the main case study of this thesis. By breaking down the biodiversity discourse in this way, this chapter offers a nuanced analysis of biodiversity as both a scientific and social construct, emphasising how its meaning has developed in response to changing environmental, social, political, economic, and intellectual context

4.2. Before biodiversity

The term biodiversity is so prominent and pervasive that it creates an illusion of a concept with no roots. However, long before biodiversity entered the scientific or public lexicon, various frameworks and ideas for understanding life and human-environment relationships were rooted in centuries of philosophical, religious, cultural, and scientific exploration (Park, 1995). Some view life as a natural kind or property with inherent, objective attributes (Meinard et al., 2019), while others see it as a more arbitrary concept shaped by context and interpretation (Mariscal and Doolittle, 2020). Life has also been personified and imbued with social values, leading to diverse perspectives on its meaning across different cultures (Diener et al., 2013). Because this

thesis cannot address the full range of these interpretations, the focus remains on biodiversity within the sciences, where life is typically defined and measured using markers or properties such as thermodynamics, genetics, and physiology.

For instance, as early as the 17th century in Western philosophy, life was viewed as embodied in organic, anatomical forms (Cosans, 1998; Toepfer, 2011), later evolving to encompass mechanistic processes and dynamic forces (Bertalanffy, 1934; Lenoir, 1989, 1982). Haller (1732), for example, explored life through physiological systems such as irritability and sensitivity, while other markers—reproduction, stimulus-response, and self-determination—were used to define living systems as self-producing and self-maintaining entities (Delafield-Butt, 2007; Steinke and Berridge, 2005). These foundational theories became the basis for understanding life in modern fields like biology and ecology—viewing life as collections of individuals with observable and quantifiable processes (Damiano and Luisi, 2010)Deviations from these normal States are interpreted as signs of disorder or even death. However, while useful for scientific study, these markers do not capture the full complexity of life.

One of the most prominent historical frameworks used to encapsulate this complexity is the Tree of Life, which has mythological, religious, and philosophical significance (Benton, 2016). The tree represents the interconnectedness of all life, often placing humans at the pinnacle of creation (Durand, 2021; Flood, 2019; Grant, 2008; Hellström, 2012; Park, 1995). In modern science, the tree of life is translated into the field of phylogeny, the history and hierarchical standing of nature in groups, their ranking, delimitation and relationships (Mayr, 1965). The ultimate goal of phylogeny is to map and categorise all lifeforms into a comprehensive lineage (Hinchliff et al., 2015), to better understand the processes of life and predict the impacts of global change (Cavender-Bares et al., 2009; Fox et al., 1980).

Early ecological thought emphasised the diversity of life within the phylogenetic tree, conceptualising ecosystems as tending toward equilibrium when undisturbed (La Tour, 1956; Pitman, 1953; Szaro et al., 1999). This “balance of nature” idea remains central to biodiversity discussions today, challenging scientists to consider how natural or human-induced disruptions affect ecosystems and, ultimately, phylogeny. Questions persist about whether disturbances contribute to complexity or instability and whether ecosystems are inherently resilient (Chu and Karr, 2017; DeAngelis and Waterhouse, 1987; Mori, 2011).

The construction of phylogenetic trees to represent the diversity and complexity of life has been a scientific pursuit for centuries. In 1735, Carl Linnaeus introduced a taxonomic system that

organised organisms into hierarchical categories, from kingdoms to species (Linnaeus, 1758). The concept of *species,* a central unit in biodiversity studies, was later refined by figures such as Charles Darwin and Alfred Russel Wallace during the 18th and 19th centuries (Darwin, 1859; Kohn, 1981; Petronievics, 1925).

Charles Darwin's specimen collections and seminal work, On the *Origin of Species* (1859), laid the foundation for evolutionary biology by demonstrating that species are not fixed but dynamic entities shaped by natural selection. The discussion on species as evolving units continues in the following sections. His collections of plant and animal specimens were crucial in developing the early phylogenetic trees and advancing ecological thought (Hoßfeld et al., 2017). For instance, Earnst Haeckel (1866), expanded Darwin's phylogenetic tree beyond a purely visual representation (Figure 4.1A) to a version that emphasised ecological relationships between organisms (Figure 4.1B) (Hoßfeld et al., 2017). Haeckel also coined the term *ecology* and advanced evolutionary thought through his detailed illustrations and classification (Levit and Hossfeld, 2019).

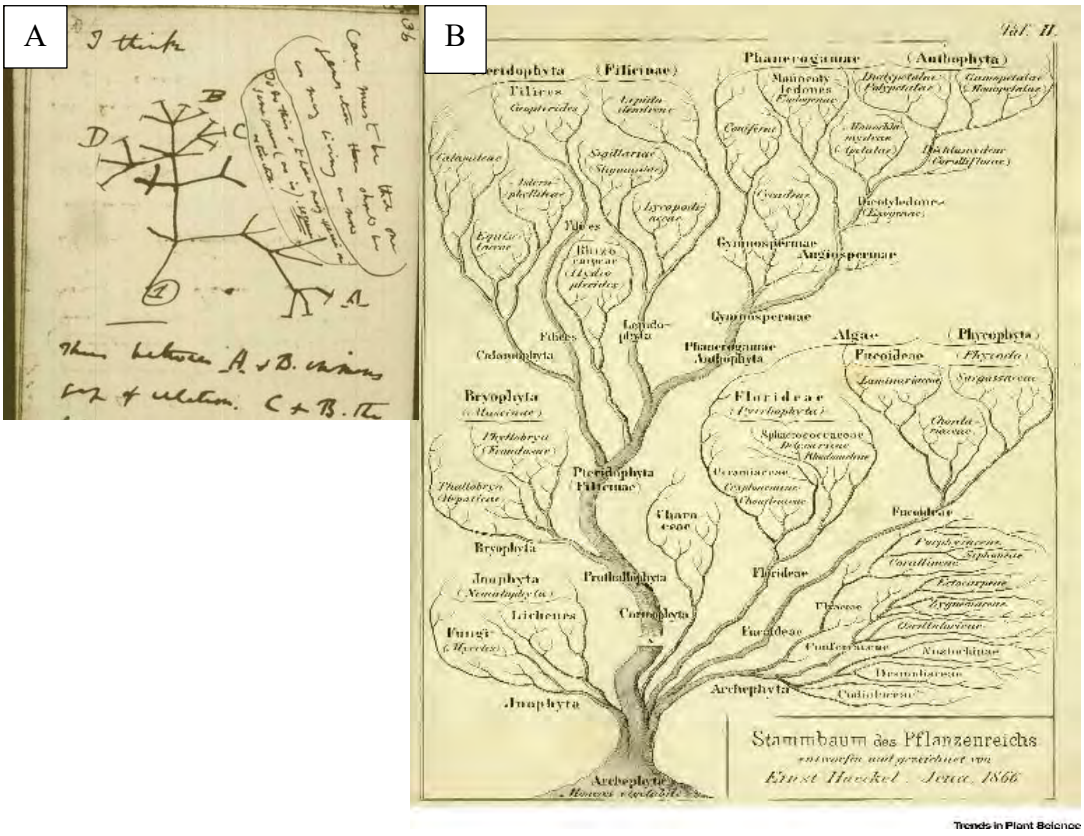

Figure 4.1: A page from Darwin's notebook showing his sketch of the Tree of Life (A), which was expanded later on by Ernst Haeckel (B) (Image by Heritage Art/Heritage Images via Getty Images).

Therefore, collections mostly of dead plants and animals provided the first systematic organisation and targeted order of the natural world for science, creating hierarchies and boundaries to present nature's identity and structure (e.g., Darwin, 1859; Larson and Brauer, 2009; Sulloway, 1982). These collections are still used to typify nature through *type collections*, where a *typus* is an individual used by a scientist to characterise an unknown species, separate it from other species, and describe it for science (Béthoux, 2007; Frizzell, 1933). Without type collections[8], species are arguably undefined in science (Eickhölter, 1997; Niederegger et al., 2017).

Darwin's approach to species classification relied heavily on the detailed measurement of morphological traits—such as skull sizes, beak shapes, or limb proportions—from preserved specimens. He reasoned that these variations gave value to each species. In a joint assertion, he argues that:

> *...it appears that white sheep and pigs are differently affected by coloured individuals by certain vegetable poisons. Hairless dogs have imperfect teeth; long-haired and coarse-haired animals are apt to have, as is asserted, long or many horns; pigeons with feathered feet have skin between their outer toes; pigeons with short beaks have small feet, and those with long beaks and large feet* (Darwin, 1859: 204).

The variation narrative, which arguably underpins *diversity* in biodiversity, was challenging to develop due to sometimes differing morphological characteristics of offspring of the same organisms or from their parents, showing that inherited variations could also differ due to adaptation to various changes in their environments (Darwin, 1859). Nevertheless, the Darwinian era succeeded in establishing the species based on the physical appearances of organisms within the scientific inquiry. Many collections of dead plants and animals that had started as mere cabinets of curiosity evolved into natural history museums for defining,

[8] Other types of type specimens include holotypes, paratypes/syntypes, and lectotypes. A holotype is the representative individual used for species description, maintaining this status even if a "better individual" is discovered. Paratypes (zoological) or Syntypes (botanical) are individuals from the same sampling series as the Holotype, with the same characteristics and locality. Lectotypes/Neotypes are materials designated as references for a species after the holotype is lost. Every specimen collected thereafter is linked back to these type collections.

classifying, and representing nature and cornerstones of scientific data (Kottler, 1978; Simmons, 2016).

Darwin's work received much recognition from the Western scientific community (Ellegård, 1990). However, his ideas about species, evolution, and natural selection did not emerge in isolation but were shaped by his time's intellectual and social currents. Similar theories were independently developed by Alfred Russel Wallace, illustrating that Darwin's conclusions were part of a broader scientific conversation (Hesketh, 2020; Shermer, 2002). However, Darwin's name became most closely associated with the theory of evolution, partly because his ideas resonated with that period's social and political ideologies (Rozzi, 1999). The emphasis on competition in Darwin's theory of natural selection—where advantageous traits enable some individuals to survive and reproduce while others perish (Darwin, 1859; Mayr, 1961)— aligned with the competitive ethos of emerging capitalist societies (van der Bergh and Kemp, 1871). Herbert Spencer (1852), reading Darwin's work, later coined the phrase *survival of the fittest*, further reinforcing that success and survival were rewards for those best suited to thrive. In other words, competition is crucial for survival; otherwise, extinction is inevitable (Claeys, 2000).

This interpretation of Darwin's theory gave rise to social Darwinism, which argued that human societies, like species, should be organised around competition. The application of Darwinism to humans has allowed a radical socio-evolutionary perspective that fuels inequality, colonialism, and even eugenics, promoting the idea that some groups are inherently superior and more fit to survive (Bayraktar, 2023; Denise Cummins, 2015; Heinz, 1998; Klein, 2003), as also seen in Nazi policies or Apartheid in South Africa (Gilbert, 2010; O'Mathúna, 2006). These perspectives also underpin necro politics, where those in power control their populations by determining who or which aspects receive privilege, protection, and the right to live versus the marginalised, oppressed, or deemed disposable and subject to death, including through violent means, oppression, and exclusion (Mbembe, 2008). This political framework also influences managing ecologies by classifying what is essential and or dominant and needs protection or nuisances (like the case of so-called invasive species) that deserve eradication (Dobson et al., 2013). The loss of specific groups of organisms or their habitats ceases to be a mere factor of natural selection but also a reflection of how power proliferates, produces and transforms life and environments (Mitchell, 2016). This transformation is powerful enough that it informs environmental discourses.

Not all interpretations of evolution focused on competition, however. Pyotr Kropotkin (1896) offered an alternative view, emphasising cooperation and mutual aid as equally important factors for survival, particularly in environments with limited resources (Paleo, 2012). Kropotkin's ideas aligned more closely with socialist and anarchist ideals, advocating for cooperation, collective ownership, and equitable resource distribution in human societies (Kropotkin, 1896; Zenker, 1898). His interpretation posed a challenge to the competitive framework advanced by Darwin's followers, suggesting that collaboration among organisms could play a vital role in evolution. This perspective significantly influenced socialist political theory, illustrating that survival depends not only on competition but also on cooperation and shared resources (Peacock, 2011). In Darwin's view, cooperation presents an evolutionary dilemma. Darwin noted that *natural selection cannot possibly produce any modification in any one species exclusively for the good of another species* (Darwin, 1859: 288). Discussions on evolution, resource use, and biodiversity continue to grapple with these competing narratives, showing that survival and evolution are shaped by a complex interplay of competition, cooperation, adaptation, and environmental factors (Grime and Pierce, 2012; Johansson, 2008).

In other words, the competing narratives of evolution—whether focused on competition or cooperation—have shaped scientific debates on biodiversity and influenced political ideologies, some with troubling outcomes when applied to human societies. The way Darwin's ideas have been co-opted shows that scientific concepts, even those developed with empirical aims, can be (mis)used to justify and reinforce social and political power structures. Although Darwin did not explicitly apply his evolutionary principles to human society, some scholars suggest he tacitly allowed the extension of these ideas to *Homo sapiens* (Cartwright, 2001, 2000; Claeys, 2000).

The implications of these narratives extend to environmental management and conservation decisions. For instance, framing *Homo sapiens* as just another species in the hierarchy of life, dominating ecosystems, can be used to excuse ecological harm as a natural consequence of evolution, absolving humans of responsibility (Cudworth and Hobden, 2014; Hudson, 2018). On the other hand, framing *Homo sapiens* as a species merely striving for survival shifts responsibility away from individuals or specific groups, distributing the blame across all of humanity (Bloomfield, 2019). These views have influenced how conservation priorities are set, with decisions about which species or habitats to protect often shaped by human values and power dynamics rather than ecological needs (Dobson et al., 2013).

4.3. Ecology as a catalyst for environmental movements

The intersection of the above evolutionary concepts and environmental management becomes even more evident in the rise of modern environmental movements. What appears to be purely scientific contributions from actors like Linnaeus, Darwin, Russell, or Kropotkin laid the foundation for early conservation efforts. Increasingly, environmental activists tied nature conservation to social justice, recognising that marginalised communities were disproportionately affected by environmental degradation (Giugni and Grasso, 2015; Rachel, 1962). This merging of ecological science, environmental awareness, and social justice fueled the rise of organised environmentalism (Penn, 2003), especially as the environmental consequences of industrialisation became undeniable (Rachel, 1962).

Between the 1860s and late 1980s, environmental movements responded to the ecological damage caused by industrial expansion, resource overuse, and pollution, reinforcing the role of science in environmental discourse (Rootes, 2014). This period marked the formalisation of modern environmental thought, which revolved around the limits of growth and sustainability (Brundtland, 1987). The post-World War II industrial boom amplified these concerns, resulting in landmark contributions like Rachel Carson's *Silent Spring* (1962), which exposed the dangers of chemical pesticides. These developments set the stage for the growing influence of ecological science in public policy and paved the way for international environmental negotiations (Dunlap and Mertig, 1991; Milbrath and Fisher, 1984; Oldfield and Alcorn, 1987; Rootes, 2014; Snow, 2007).

From the 1970s onwards, various intergovernmental negotiations were held culminating in some of the significant multilateral biodiversity-related treaties and their guiding principles since the end of the First and Second World wars (Caminos and Molitor, 1985; UNEP-WCMC, 2012).

Notable examples of these Agreements include the Ramsar Convention for Wetland Protection, established in 1971 (Ramsar Convention, 1971). In 1972, the United Nations Conference on the Human Environment was held with the motto Only One Earth and attended by 113 nations (UNGA, 1972). Some considered it the start of modern international environmental policy (Hook and Jones, 2012; Joos, 2023). The experts from the One Earth Conference emphasised the limits to economic growth, calling for checking the increasing world population, industrialisation, pollution, food production, and resource depletion (Dodds et al., 2012; Ekins, 1993). Informed by the One Earth Conference, the UN Environment Programme (UNEP), the

foundation for the UN's active role in global environmental protection, was established In the Kenyan capital, Nairobi (Ivanova, 2010; see also UN's role in global governance Chapter 5: Section 5.1.2(a)). Subsequently, many countries have set up national environmental agencies aligned with the UN's global agenda.

Other international environmental treaties continued to emerge in various domains (land and sea) covering different topics. Examples include the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES, 1973) and the Convention on the Conservation of Migratory Species of Wild Animals (CMS, 1979). In 1982, the United Nations Convention on the Law of the Sea (UNCLOS) covered some environmental aspects of oceans (UNCLOS, 1982). In the same year, the International Whaling Commission (IWC) established a ban on commercial whaling (Anable, 1993). In 1987, the Brundtland Report (Brundtland, 1987) marked another pivotal shift, embedding the principle of sustainable development into global environmental policy. This report highlighted the interdependence of ecological health, social equity, and economic development, which continue to shape the biodiversity discourse (Barkemeyer et al., 2014; Sneddon et al., 2006).

Importantly, each of these treaties had a specific agenda within the broad environmental discourse, informed by experts and triggered by social, economic, and political factors of that time. For instance, as fossil fuel-driven industrialisation led to environmental degradation, scientists warned governments about the rising dangers of climate change (Ewing, 1964; Gilewska, 1964; Landsberg, 1970; Turnock, 1970). However, these warnings were often ignored until geopolitical events, such as the 1973 oil crisis, highlighted the vulnerability of fossil-fuel-dependent economies (Rustow, 1974). The soaring oil prices shook industrialised countries following the Organization of the Petroleum-Exporting Countries **(OPEC, 2024),** cutting off oil supply to Western countries due to the Yom Kippur War (Rustow, 1974). The details of the war are beyond the scope of this thesis and can be read in other works (Handel, 1977; Rabinovich, 2017). However, the effect was that these industrialised countries began the search for alternative sources of energy, including renewable sources such as nuclear power, solar and wind power, and new sources of oil, gas and coal (LaBelle, 2023; Schumacher, 1985). Interestingly, in 1979, the World Meteorological Organization (WMO) held the first world climate conference in Geneva, highlighting that fossil fuel use increases atmospheric CO2, exacerbating the greenhouse effect that contributes to climate change (Bekiashev and Serebriakov, 1981; Bruce, 1995).

The link between fossil fuels and climate change is now well-established in international discourse, notably driven by expert advice and international organisations like the Intergovernmental Panel on Climate Change (IPCC), established in 1988 (IPCC, 1990, 1995, 2001, 2007, 2014) and the United Nations Framework Convention on Climate Change (UNFCC) in 1992 (United Nations Framework Convention on Climate Change, 1992, 2005, 2006a, 2006b, 2006c, 2007a, 2007b, 2007c, 2007d, 2008a, 2008b, 2008c, 2009a, 2009b, 2009c, 2010a, 2010b, 2010c, 2011a, 2011b, 2011c)**.**

Just as with the climate change debate, biodiversity conservation is imbued with geopolitical scepticism (Painter and Ashe, 2012; Ruiu, 2021). Framed in terms of political ecology and economy**,** biodiversity conservation is also entangled with issues of resource access, national interests, and the economic benefits derived from fossil fuel industries (Dalby, 2015; Sovacool, 2021). Arguably, some governments, industries, and political actors are often slow to accept the science on climate change or biodiversity loss/change, not because the science is uncertain but because addressing these issues has significant geopolitical and economic consequences (Dahlquist, 2017; Dahlquist and Hellstrand, 2017; Muttitt and Kartha, 2020; Overland et al., 2022). The realisation that transitioning away from the status quo disrupts power structures, economic interests, and energy access leads to scepticism and reluctance to embrace biodiversity action advice (Painter and Ashe, 2012).

Thus, biodiversity, like other environmental discourses, must be understood within a broader political, economic, and geopolitical context. It is not merely about addressing environmental issues but also about navigating the complex negotiations over resource control, economic power, and global governance (James, 2011; Tocci, 2022). This context shapes how biodiversity is framed and acted upon, making it clear that environmental discourse is not just scientific but profoundly political and contested.

The following section will explore the emergence of biodiversity as a distinct term and concept, examining how it evolved from this complex interplay of environmental science, policy, and socio-political considerations.

4.4. Instating biodiversity: A dialogue

As explored in the previous sections, concepts do not emerge in isolation but are developed through a dynamic dialogue between scientists, policymakers, and the broader societal context of environmental awareness. Events like the 1986 National Forum on BioDiversity in

Washington, DC, exemplify this exchange. According to Wilson (1986), Walter G. Rosen coined the term *biodiversity* during a planning meeting for this conference as a neologism and a contraction of *biological diversity*. Wilson credits him as its originator (Wilson, 1986).

The term *biological diversity* itself had scantly appeared in literature as a concept used to study the diversity of humans (Dobzhansky, 1950; Hiernaux, 1966; Rightmire, 1976) and the various forms of life, such as plants, animals, species, and even molecules (Cairns et al., 1968; Clarke, 1975; Hammer, 1978; Harper, 1977; Harris, 1916; Hughes, 1964; Levin, 1979; Tanzer, 1978). Diversity was increasingly used with many reincarnated concepts such as conservation. As Moore (1969: 201) argues, "conservation of diversity should become the primary aim of conservation."

However, Thomas Lovejoy is often attributed to reintroducing *biological diversity* in a practical sense to a broader audience. Thomas asserted that the reduction in the *biological diversity* of the planet is the most fundamental issue of our time (Karr et al., 1981). Through his research in the Amazon, Lovejoy (1980) highlighted the critical role *biological diversity* played in maintaining healthy ecosystems, emphasising its importance for the well-being of humanity as a whole (Lovejoy and Padua, 1980). Paul Ehrlich (1982) suggested that the depletion of Earth's non-renewable resource—biological diversity—could trigger a catastrophic decline in human populations, potentially leading to the collapse of industrial civilisation (Ehrlich, 1982). Biological diversity became the term describing how human activities were rapidly degrading the biosphere, threatening the planet's overall life and the preservation of its genetic resources (Myers and Sayensu, 1983). Defining *biological diversity* became critical in the years that followed. Norse and McManus (1980) described *biological diversity* as comprising two key concepts: genetic and ecological diversity. In their definition, genetic diversity refers to the variability of genes within a species, whether it consists of one population or multiple populations, breeds, or subspecies. Ecological diversity, or species richness, is the number of species in a community. Both forms of diversity are essential for the functioning of ecological systems (Norse and McManus, 1980). Norse (1989) defines *biological diversity* as the variety of life and notes that ecologists generally focus on three levels: genetic, species, and ecosystem diversity. Species diversity is the most familiar level and refers to the variety of species, which can vary widely across different locations. In contrast, genetic diversity involves the variation within each species, encompassing the genetic differences among individuals within the same species. Finally, ecosystem diversity encompasses the distinct communities of species found in

various physical settings, highlighting the diversity of ecosystems themselves (Norse et al., 1986).

However, according to Wilson (1986), it was Lovejoy's *biological diversity* that Walter G. Rosen ultimately shortened to conceive *biodiversity*. Wilson suggests that *biodiversity* was the term that could capture the vast array of topics and perspectives covered during the Washington forum (Wilson, 1988). The first appearance of the term *biodiversity* in print was then attributed to the publication of the proceedings of the Bio Diversity Conference (Hawksworth, 1995).

However, recent scholarship complicates this narrative. Sarkar (2021) contends that Rosen may not have been the first to use biodiversity, contesting the sole attribution of the term biodiversity to Rosen and the Bio Diversity Conference (Sarkar, 2021). Sarkar, argues that individuals like Laura Tangley, in her 1985 report to the US Congress on conserving biological diversity in developing nations, and Robert L. Peters, in his 1986 response to a comment on a previous article about global warming, used the term biodiversity intuitively before Rosen's deliberate usage (Sarkar, 2021). This raises critical questions about how scientific terms emerge and how the attribution of discovery often centres on individuals, prioritising competition over collaboration. The term biodiversity's emergence from multiple sources underscores the complexity of scientific discourse, where knowledge production involves many contributors working simultaneously across different contexts. The fact that Rosen's use became dominant reflects broader power structures within scientific and policy communities. As Vadrot (2016) notes, specific actors, terms, or ideas become dominant not necessarily due to their inherent value but because they align with normative power structures that govern scientific and environmental discourses. Why Rosen's usage gained prominence over others highlights how authority within these spaces shapes which narratives become mainstream. Thus, the history of biodiversity as a concept exemplifies not just scientific progress but also the politics of knowledge production, where certain voices and ideas gain traction over others due to institutional authority, visibility, and access to networks of influence (Vadrot, 2016).

Biological diversity and biodiversity are used interchangeably, though with subtle distinctions. Biological diversity is more frequently found in biological-focused disciplines and legal texts, arguably confined to expert discussions. Its formal tone lends itself to ecological and legal frameworks, where legitimacy from expert views is critical. Especially in legal contexts, biological diversity is more than just a phrase. It is a precise term that aligns with the niche expertise of biologists and ecologists, giving it legitimacy in legal documents. On the other

hand, biodiversity has gained widespread traction beyond scientific circles. Its broad, accessible nature invites engagement from various disciplines and stakeholders, from ecologists to policymakers to activists. As Rosen mentioned in an interview, he coined the term *biodiversity* to encapsulate *the very stuff of life*, shedding the *logic* [the expert] out of the *biological*, thus infusing biodiversity with *spirit* and *emotion* that its predecessor *biological diversity* could not (Burke, 2019). Adding in another interview in 1997, Rosen noted that:

> *Biological diversity is a mouthful, especially if one is organising a conference on the topic and must use the term countless times every day for weeks on end. And so, early in the planning for that forum, I condensed and combined. Biodiversity rolls much more easily off the tongue, conveying the same meaning in a third fewer syllables. Mr Wilson's reservations notwithstanding, the term quickly caught on.* (Rosen, 1997, New York Times, 23. Feb. 1997)

Indeed, biodiversity has become a conceptual tool for science communication (Bargheer, 2024). One wonders whether this removal of the logic from the biological is what underscores some of the innate complexities of the biodiversity concept for management. Notably, Wilson had rejected the use of the term biodiversity instead of biological diversity, seeing the term biodiversity as too glitzy and explicit to a political event, but later came to accept its value (Takacs, 1996: 37). As he explains in his memoir:

> *When Rosen and other NAS staff members approached me to serve as editor of the proceedings, I argued for biological diversity, the term I and others favoured at the time. Biodiversity, I said, is too catchy; it lacks dignity. However, Rosen and his colleagues persisted. Biodiversity is simpler and more distinctive, they insisted, so the public will remember it more easily. The subject surely needs all the attention we can attract to it, and as quickly as possible. I relented. I am not sure now why I resisted the word at all in view of the quickness with which it acquired both dignity and influence.* (Takacs, 1996: 37).

Some argue that *biodiversity* has become overly vague, often used as a catch-all phrase for various concepts of life and nature (Casetta et al., 2019b). While many people associate *biodiversity* with some form of natural variety and assume it has a clear scientific definition—

likely within conservation biology—this is a misunderstanding. In practice, it carries specific meanings and distinctions in any given context (Sarkar, 1999; Vadrot, 2011). The ambiguity of biodiversity as a term and concept can be helpful for practitioners. It allows them to advocate for the protection of anything by categorising it under this umbrella term, whether it is chicken, viruses, or even stones. Biodiversity, in this sense, can seem all-inclusive.

Notably, the discourse of biodiversity has been shaped by specific key figures or actors[9], predominantly working or raised within Western scientific and philosophical frameworks.

In academic discourse, for example, the term biodiversity gained prominence through Edward Wilson's 1986 book *Biodiversity* (Wilson, 1986). As an ecologist, Wilson defined biodiversity as the totality of a region's genes, species, and ecosystems. He also emphasised the threats posed by human activity to species and ecosystems, highlighting the deep connection between humans and nature through his concept of biophilia—the innate human affinity for other living beings (Wilson, 1986). This *biophilia* concept has since shaped discussions around the intrinsic, utilitarian, and ethical values of biodiversity (Rockwood and Stewart, 2008; van Dyke and Lamb, 2020).

Coinciding with Wilson's work, the United Nations Environment Programme (UNEP) convened the Ad Hoc Working Group of Experts on Biological Diversity in November 1988 to explore the need for an international convention on biological diversity (Le Prestre, 2017). The use of the term biological diversity was a notable shift from past global environmental Agreements that had used generic terms like *nature* (e.g., the Conference on Protection of Nature (IUCN, 1949)) or *environment* (e.g., the United Nations Conference on the Human Environment (UNGA, 1972)), to address similar topics. Biological diversity was a new term that presented a new era of international environmental governance, as elaborated in subsequent discussions. The UNEP's working group laid the groundwork for the negotiation of the Convention on Biological Diversity (CBD)[10], adopted in 1992 in Rio de Janeiro and entered into force on 29 December 1993, currently ratified by 196 countries (Le Prestre, 2017). The CBD *(1992: Article 2)* included a definition of biodiversity as:

[9] see Chapter 1 definition of an actor

[10] The Convention on Biological Diversity of 5 June 1992 (*1760 U.N.T.S. 69*)

The variability among living organisms from all sources, including, inter alia, terrestrial, marine, and other aquatic ecosystems and the ecological complexes of which they are part, includes diversity within species, between species, and of ecosystems.

The three objectives of the CBD are the conservation of biological diversity, the sustainable use of its components, and the fair and equitable sharing of benefits from using genetic resources (CBD, 1992). These goals emerged from complex negotiations among countries, reflecting a balance between national interests, the influence of specific constituencies like the Group of 77, and differing interpretations of the CBD's purpose (LePrestre, 2002). The CBD is often hailed as a pioneering treaty in sustainable development because it addresses the relationship between humans and nature, international cooperation, and the redistribution of political power within countries, influencing how resources are managed and shared (Koester, 1997). Despite its broad acceptance, the CBD has faced significant implementation challenges, partly due to the conceptual issues it adopted. Coming into force barely eighteen months after its adoption, the speed of the negotiations left several delegations, particularly from the United States, concerned that the process was too rushed (LePrestre, 2002). These delegations argued that the final text contained numerous conceptual and drafting deficiencies (LePrestre, 2002). One critical conceptual deficiency is the definition and understanding of *biodiversity*, which has been widely debated in literature since the CBD's adoption.

Sparked by the CBD definition and Wilson's 1988 book *Biodiversity*, the definitions and modes of biodiversity measurement quickly became the subject of great debate (DeLong Jr, 1996). By 1996, a meta-review by Delong of *biodiversity* definitions had over 100 definitions cited from notable works between 1990 and 1996, such as Noss (1990), Landres (1992), Dasmann (1991), Pimentel et al. (1992), (Caughley, 1994) and (Hunter, 1996), among others. DeLong Jr. (1996) examined these different biodiversity-related definitions, highlighting the various interpretations based on derivation, classification, characteristics, properties, qualities, and parts and through comparison, contrast, and operational definition. The details in these categories are beyond the scope of this argument. However, this shows the contested nature of biodiversity discussions.

One of the notable points Delong makes concerning the definitions by comparison and contrast is that they are consistent with standard biological concepts from which biodiversity was derived (ibid. p6). This included species richness and ecological diversity, which he called the

original standard delimiters of the biodiversity concept that do not include abiotic components and processes (ibid. p6). He concluded that this limits the scope of biodiversity to biological disciplines and invites miscommunication and controversy among other disciplines (DeLong Jr, 1996). Furthermore, DeLong asserts that the definition of biodiversity varies according to the users, their audience, and the context (pg 745). He argues that this lack of a unified definition results in ambiguity, posing significant challenges for scientists and policymakers who require a clear and consistent framework. DeLong Jr (1996: 745) proposes a definition adaptable to context, aligning with the original meanings of biological and diversity, stating:

> *Biodiversity is a state or attribute of a site or area and specifically refers to the variety within and among living organisms, assemblages of living organisms, biotic communities, and biotic processes, whether naturally occurring or modified by humans. Biodiversity can be measured in terms of genetic diversity and the identity and number of different types of species, assemblages of species, biotic communities, and biotic processes, and the amount (e.g., abundance, biomass, cover, rate) and structure of each. It can be observed and measured at any spatial scale, ranging from microsites and habitat patches to the entire biosphere.* (DeLong, 1996: 745).

Since DeLong's time, new proposals on defining biodiversity have emerged, leading to repeated revisions of the concept, as seen in Sarkar's various works (1999, 2001, 2002, 2019). A robust definition of biodiversity needs to encompass all aspects and values of nature (Norton, 2008). The absence of precise meanings for many concepts, some of which are pretty vague, adds complexity to this rapidly evolving field of study (Casetta et al., 2019b). This has spurred extensive examination and discussion within philosophical, scientific, and other forms of literature.

Scholars such as Sarkar (1999, 2008, 2021) examine the term's philosophical roots that contribute to its conceptual ambiguity. Sarkar argues that different philosophical perspectives lead to various interpretations of what biodiversity encompasses (Garson et al., 2019). This philosophical debate often touches on epistemological issues, questioning how knowledge about biodiversity concepts is constructed, validated, and used in any context (Vadrot, 2011, 2016). By examining these philosophical roots, scholars highlight how the term biodiversity cannot be pinned down to a single, universally accepted definition (Meinard et al., 2019).

Instead, it is shaped by several conceptual frameworks, each bringing its own set of assumptions, values, and implications (Sarkar, 2008).

Other scholars suggest that the conceptual confusion stems from using biodiversity terms and concepts in differing contexts, each time with different interpretations and objectives (Norberg et al., 2022). A review of literature that employs the term biodiversity highlights this inconsistency, showing that its meaning often shifts based on the discipline or purpose. For instance, biodiversity is often framed differently in ecology and economics, each discipline emphasising distinct aspects, as explored in the subsequent sections. Moreover, not all disciplines exert equal influence on the biodiversity discourse. Specific fields, such as ecology and conservation biology, dominate the conversation (**Figure 4.2**), shaping how biodiversity is understood and prioritised. These fields sometimes engage with other disciplines, such as economics or social sciences, but typically do so from their specialised perspective. As a result, interdisciplinary collaboration seems to exist, but biodiversity objectives are primarily driven by the specific priorities and frameworks of the fields from which the biodiversity concepts are operationalised.

Some scholars argue that there are practical implications for various interpretations of biodiversity, including for scientific understanding and management (e.g., Hillebrand and Matthiessen (2009), Lindenmayer et al. (2014; 2015; 2007; 2010)), policy formulation (e.g., Vadrot (2011), Hodapp et al. (2014), and other applications Casetta et al. (2019b) and Garson et al. (2019). For example, Vadrot (2011) and Hodapp et al. (2014), highlight how biodiversity is framed differently in policy contexts, often to fit political agendas or economic goals, which can complicate efforts to develop cohesive environmental policies. These are among other issues addressed in the subsequent sections.

These differences have sparked debates about whether the concept of biodiversity itself needs to be thoroughly re-examined (Casetta et al., 2019b). The question of whether such a re-examination would offer any practical value for decision-making suggests that the complexity and contested nature of biodiversity may not be fully resolved through redefinition (Cochrane et al., 2016; Maclaurin and Sterelny, 2013). I argue that a re-examination of biodiversity may be helpful if it focuses on four core aspects of the discourse, which are: ***who*** is defining biodiversity, **what** is being defined or measured (e.g., species richness, genetic diversity, functional diversity), the **why** (reasons) behind these measurements (e.g., ecological understanding, conservation management), and **for whom or** the intended beneficiaries or users

of this knowledge (e.g., scientists, policymakers, local communities). These three questions have also informed the explorations in this Chapter thus far.

Additionally, the disciplinary analysis of biodiversity literature and its disciplinary categories (see Figures 4, 5, and 6 in the Underlying approach and theoretical framework) reveals that the term biodiversity encompasses a wide range of meanings that vary significantly depending on the specific discipline in which it is applied (see also discussions in following sections). This variability suggests that different academic fields interpret and utilise the concept of biodiversity according to their unique emphases and objectives. The citation practices identified in this analysis further indicate a lack of robust interdisciplinary communication within the biodiversity discourse. Most disciplines appear to operate in silos, with only a few meso-citation topics, such as marine biology, serving as bridges connecting various fields (refer to Figures 5 and 6 in the Underlying approach and theoretical framework). Interestingly, the forestry discipline demonstrates more intra-discipline citations (see Figure 1), yet it does not establish substantial links or impacts with other meso topics. This suggests that while forestry researchers are actively engaging with each other work, they may be missing opportunities for collaboration and integration with broader biodiversity research.

Furthermore, most micro-topic citation clusters are concentrated among a small number of taxonomic groups, indicating a tendency towards specialisation rather than a holistic approach. This taxonomic approach is also discussed in the subsequent sections. Notably, even widely advocated concepts, such as ecosystem services—which emphasise integrative and holistic frameworks—form tightly knit clusters in citation practices (**Figure 4.2**). This may reflect a broader trend in the literature where entrenched disciplinary boundaries challenge interdisciplinary approaches.

In the next section, I will delve deeper into these inquiries and examine the challenges surrounding biodiversity discourses' who, what, why, and for *whom*. Understanding these dynamics is essential, especially considering the term evolution and its increasing prominence in environmental discussions since it entered the environmental lexicon.

4.5. Which biodiversity is being defined or measured, and for what purpose?

Who is defining biodiversity can be traced across various disciplines, including ecologists, microbiologists, medical professionals, engineers, political scientists, lawyers, and managers. However, biodiversity is more nuanced, particularly in how it is understood and applied as an

objective feature. In several disciplines, particularly those with fewer publications (**Figure 4.2**), biodiversity is often viewed on a microbial scale, focusing on the variety of microorganisms in a given place. This perspective is shared in parasitology, virology, gastroenterology, molecular biology, engineering, corrosion chemistry, and biotechnology, where biodiversity is primarily operationalised through microbial scales.

However, biodiversity is predominantly based on a species for most of the discourse, including ecology and other environmental sciences. The species is the most iconic unit of biodiversity (Agapow et al., 2004), whether related to species diversity, ecosystem diversity, or functional diversity, as explored in the next section. This focus on species raises an important question: What exactly are species, and do microbes—the focus of many other disciplines—not count as species? The answer to this question is complex, as I will explore in the next section. However, it is a crucial question because it shapes much of the critical inquiry into biodiversity, helping to address the *why* and *for whom* in this broader exploration.

Table 5: Taxonomic and research focus of the biodiversity discourse through the citation topics

Taxonomic group/category	**Micro citation topic**
Mollusca	Unionidae (Freshwater mussels)
Plantae	Phytoplankton, Seagrass, Lichens
Arthropoda	Diplopoda (Millipedes), Coleoptera (Beetles), Decapoda (Crabs, lobsters, shrimp), Formicidae (Ants), Araneae (Spiders)
Chordata	Teleostei (Bony fish), Lizards, Anura (Frogs and toads), Chiroptera (Bats)
Fungi	Arbuscular Mycorrhizal Fungi
Plantae (Algae)	Rhodophyta (Red algae)
Annelida	Polychaeta (Segmented worms)
Other Groups	Conodonts (Extinct jawless vertebrates), Digenea (Parasitic flatworms)
Ecological and Biological Concepts	Pollination, Coral Reefs, Macroinvertebrates, Ecosystem Services, Species Conservation, Deforestation, Breeding Success, Microcystins, Holocene, Place Attachment, Rangelands, Permafrost
Research Methods and Concepts	Environmental DNA, QTL (Quantitative Trait Loci), Type Strain, Microbial Biomass, Dendrochronology, Microsatellites, MaxEnt (Maximum Entropy Modeling)

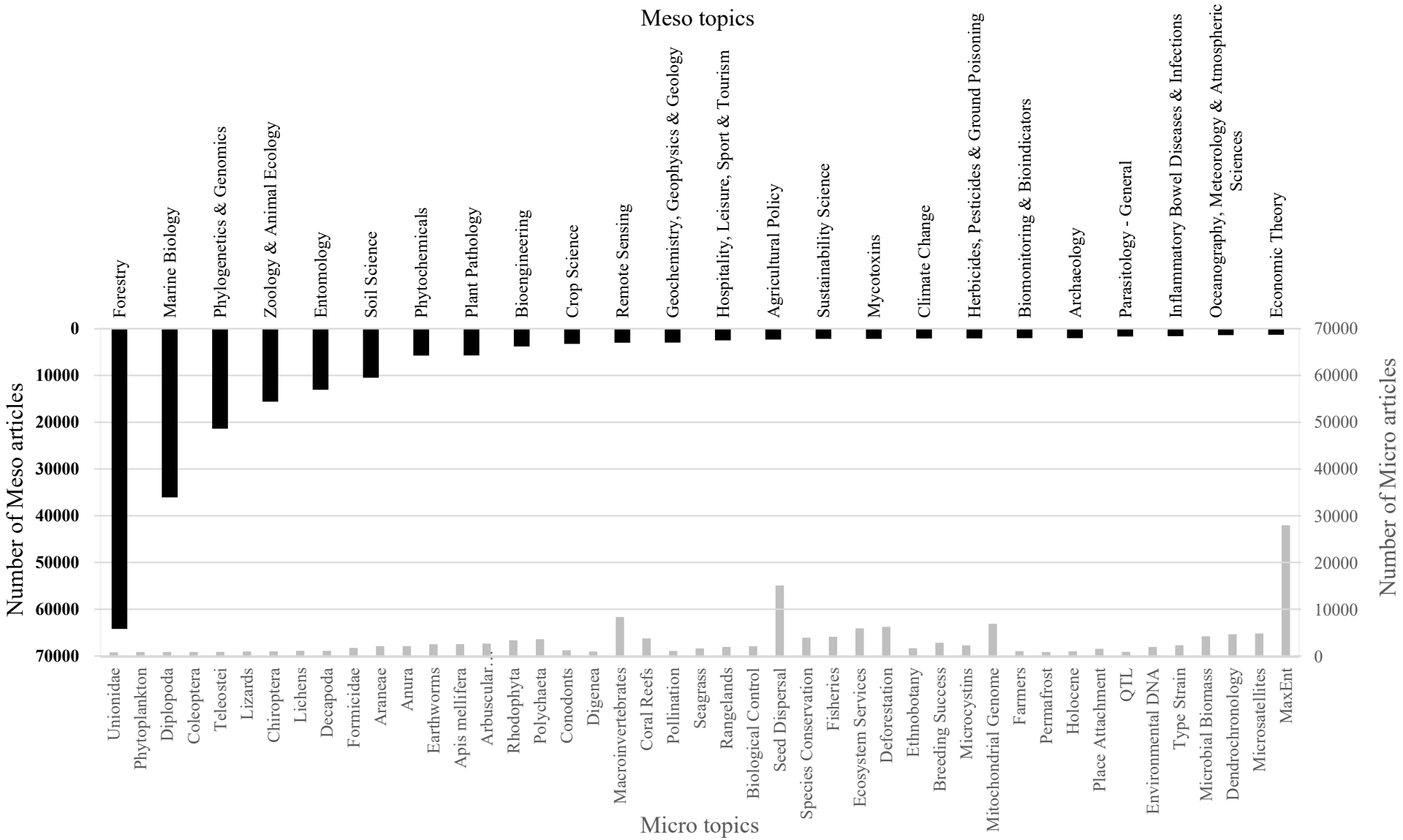

Figure 4.2: Distribution of the number of articles in each of the Meso and Micro topics through which the word biodiversity is cited in the literature on Web of Science

4.5.1. The species concept is treated as an objective feature of biodiversity

From a scientific standpoint, and for many people, biodiversity is a thing —something tangible, visible, and quantifiable, whether in the number of plants, animals, genes, or ecosystems. From the exploration, I argue that if biodiversity is a thing, it is a counting of differences through species. However, if there is no species, is there biodiversity? As Wilson (1999: 322), remarks in his book *Consilience*:

> *Why do we need so many species... especially since the majority are bugs, weeds, and fungi? It is easy to dismiss the creepy-crawlies of the world, forgetting that less than a century ago, native birds and mammals around the world were treated with the same callous indifference. Now, the value of the little things* [scale] *in the natural world has become compellingly clear.*
> (Wilson, 1999: 322).

Wilson, an ecologist and a key figure in the biodiversity discourse, underscores a critical aspect in understanding biodiversity, emphasising the importance of the variety of species as objective entities of the natural world. However, given the sheer number of species—many of which remain undescribed or unknown—what is biodiversity without this knowledge? It is crucial to first engage with the concept of species to answer this question.

Early debates from evolutionary biologists and ecologists were concerned with whether species is a *fiction* or an *objective* (Burma and Mayr, 1949; Mayr, 1949). The fiction perspective is not fictional in a strict sense but primarily informed by early palaeontological studies of species based on fossil record (Allmon, 2013; Jeletzky, 1950). Since palaeontologists often do not have living organisms and thus cannot examine extinct organisms' behaviour, genetic data, or reproductive capabilities, they rely on morphological characteristics from skeletal remains, making the species fictional. In this concept, species are defined based on continuity and distinctiveness in morphological attributes found in the fossil record (Allmon, 2013; Allmon and Yacobucci, 2016).

In contrast, from an objective perspective, the species is considered a natural entity that exists independently of human cognition or scales of measurement (Kitcher, 1984). The focus is on understanding the species as a being with its inherent, intrinsic values and being. In this objective sense, a species is seen as a group of organisms with a fundamental essence or set of properties, such as common ancestry, genetic makeup, or ecological niche (Mayr, 1949). From

this *essentialist* or *realist* perspective, species become accurate, natural, or objective features of biodiversity, with inherent properties that define them beyond just being arbitrary labels humans use for classification (Okasha, 2002; Slater, 2013a, 2013b). Nonetheless, both perspectives rely on physical evidence to make these objective claims about species. As Arkell (1950: 354) notes from a paleontological taxonomist perspective: "Theoretically, at least, the number of species named reflects the number of forms, so it is more or less an objective matter."

Therefore, the difference is whether one focuses only on morphological features or includes other aspects like genetics, behaviour, and ecology. Since both rely on physical evidence, it is arguable that they both treat species as accurate, objective components of biodiversity, highlighting that the challenge may be in the limitations of available evidence rather than in the conceptual status of species themselves. One could argue that a layperson's understanding of species has always been based on *morphotypes*, meaning that non-experts typically identify species based on visible physical characteristics, such as shape, size, and colour. The only critical aspect of scientific taxonomy is that there must be many representative *morphotypes* to conclude and attribute specificity to a species. Hence, my confusion about bats as a child being birds was based on insufficient physical evidence and keen observations (see Chapter 2: Section 2.2. Finding the researcher within the discourse: acknowledging my positionality).

However, even taxonomists face similar challenges, partly due to inadequate and inconsistent sampling, which is critical for systematic taxonomy (Engel et al., 2021; Forey et al., 2004; Petrović, 2022). This is compounded by the different methods and approaches of collecting samples that can result in different taxonomic standards (Jackson and Johnson, 2001). Moreover, classification based on the morphological difference in collections alone is impractical, as highlighted through Darwin's observations (see discussions above). Organisms can show similar or divergent features due to their environments (Darwin, 1859). This calls for more neontological approaches—methods that go beyond morphometric taxonomy based only on specimens, incorporating other attributes of populations, such as genetic, behavioural, and ecological data, as discussed in the next paragraph. And yet taxonomists suggest that from time to time, classification should be morphological (Forey et al., 2004; Padial et al., 2010), partly because physical characteristics are how most humans comprehend differences and similarities, aka diversity.

Moving on to more neotological approaches, species get defined more elaborately. According to eukaryotic systematists, who classify organisms based on multicellularity, a species is a

group of organisms sharing a common ecological niche and held together by cohesive forces, with limited variations that become irreversible upon divergence (Dacks et al., 2008; Ereshefsky et al., 1992; Walker et al., 2011). A principle distinction from morphological approaches is that eukaryotic systematists begin with populations, not individual specimens, to infer species boundaries (Jeletzky, 1950). Biological significance is often emphasised in interbreeding and reproductive isolation (Mayr, 1949, 1988, 1992, 2007). As Mayr (1949: 120) notes, "species are a group of actually or potentially interbreeding natural populations which are reproductively isolated from other such groups."

However, interbreeding is also not definitive. Related local populations may not interbreed over time, yet retain the potential to do so (Bear et al., 1987; Pettersson, 1985; van Tienderen and van Noordwijk, 1988). Similarly, organisms reproducing asexually or exhibiting extensive hybridisation may still display genetic or morphological uniqueness despite being classified as the same species (Queiroz, 2007). Chimeric organisms—those formed by the fusion of distinct genetic materials—pose further challenges to species classification (Green et al., 1991; Rinkevich and Weissman, 1992; Wilson et al., 1993). This is not fiction, as the image in **Figure 4.3** is, but an explored scientific phenomenon. For instance, most mutualistic organisms with tightly integrated relationships, such as lichens and corals, can easily be seen as single entities that form Chimeras (Boon, 2019). Mutualistic organisms like lichens or corals appear as single entities but are revealed through molecular analysis to consist of multiple genomes, complicating the concept of individuality (Boon, 2019). In red algae, multiple spores may coalesce into a polyploid structure, resulting in a chimeric state where different genomes interact to shape an ever-shifting phenotype (Monro and Poore, 2004)This dynamic interaction makes it difficult to classify these organisms as stable, distinct species as their identities evolve.

On microbial scales, traditional morphological traits are insufficient for species classification because bacteria and viruses exhibit simple, often similar physical forms (Lawrence et al., 2002). Molecular techniques, such as gene sequencing, are essential for microbial taxonomy (Das et al., 2014; Rajendhran and Gunasekaran, 2011). However, even advanced genetic tools encounter limitations. Microbes can exchange genetic material through horizontal gene transfer, introducing significant genetic diversity within what might be considered a single species (Soucy et al., 2015; Staley and Konopka, 1985; Thomas and Nielsen, 2005; Wiedenbeck and Cohan, 2011). Viruses present further complications. Their rapidly evolving genomes and frequent recombination events make it difficult to delineate species boundaries (Pérez-Losada et al., 2015). High mutation rates through antigenic drift— gradual changes in viral genes that

occur over time, leading to new virus strains, and antigenic shift abrupt— significant changes in viral genes, often resulting from the recombination of genetic material from different viral strains, giving rise to new strains that do not fit neatly into existing species frameworks (Kim et al., 2018). Viral species classification often relies on genetic sequence data, host range, and pathogenic properties, but these categories must be continuously revised to keep pace with viral evolution (Milne, 1985; van Regenmortel, 1989; van Regenmortel et al., 1991). Critical functions may not reside within a single microbial species but instead emerge from gene networks distributed across unrelated taxa (Boon, 2019). This complicates efforts to assign specific traits to individual microbial species, as these traits are often shared across the community (Murray et al., 1990; Woese et al., 1990).

Figure 4.3: A drawing of a chimera, dated between 1590 and 1610 and attributed to Jacopo Ligozzi (Source: wiktionary.org). According to Greek mythology, the Chimera is a monstrous fire-breathing hybrid creature from Lycia, Asia Minor, composed of different animal parts.

These examples highlight the difficulties of defining species in systems where genetic material is fluid and frequently exchanged. The challenge extends beyond classification, affecting our understanding of ecological and evolutionary processes and complicating conservation objectives. New criteria for defining species—such as genetics, ecology, and behaviour—offer valuable insights but also introduce limitations.

For instance, introducing ecological criteria for species classification assumes that species align strictly with their ecological niches (Wiens, 2011). This perspective is tied to the competitive

exclusion principle, first articulated by Russian ecologist Georgii Gause in the 1930s. The principle posits that two species competing for the same limited resource cannot coexist indefinitely; eventually, one will outcompete and displace the other (Gause, 1932). However, this framework oversimplifies biological interactions. In reality, organisms often adapt and coexist through niche differentiation and resource partitioning, challenging the exclusivity of competitive interactions (Evans et al., 2012; Hardin, 1960; Proulx, 2007; Tibell and Harms, 2017). For example, closely related species may share similar resource needs, meaning competition alone cannot explain their existence as separate species (Elton, 1946).

Every attempt to refine the species concept, whether based on ecological, genetic, or reproductive criteria, introduces explanatory models that still have limitations (Pocheville, 2015). Scholars such as Wheeler and Meier (2000) and Queiroz (2007), continue to explore the debate on what constitutes a species. However, even among biologists, the concept remains contentious, with multiple, sometimes incompatible definitions (Ghiselin, 1974; Ghiselin, 2002; Mallet, 2010). When criteria are too broad, it leads to excessive species classification, whereas too narrow a scope risks excluding biologically relevant diversity (Queiroz, 2005). Adding additional factors—like niche occupancy, habitat use, dietary patterns, or genetic composition—does not fully resolve these issues (Vandermeer, 1972).

This ongoing debate raises fundamental questions about whether species are objective entities with inherent properties or human constructs shaped by cultural and scientific practices (Donoghue, 1985; Hull, 1976; Kokko, 2017; Wachs, 2017). While scientific methods aim for objectivity, many scientific concepts are context-dependent, requiring consensus among researchers and shaped by specific observational tools and assumptions (Gelman and Hennig, 2017; Hillebrand et al., 2018). The notion that scientific concepts can be socially constructed faces resistance from traditional scientists, who maintain that scientific knowledge aims to uncover objective truths about the natural world (Hacking, 2003; Longino, 1990). Despite the philosophical disagreements on what constitutes a species, scientists across disciplines—taxonomists, evolutionary biologists, and ecologists—tend to coalesce around practical criteria like reproductive isolation or genetic markers. This helps establish consensus and enables species to function as objective units in scientific inquiry, conservation, and biodiversity management (Atran, 1999; Caplan, 1981).

Nevertheless, some critical biologists and social scientists challenge deterministic approaches, warning that rigid definitions may perpetuate reductionist thinking (Hulme, 2011; Segerstråle,

1992). Such frameworks, they argue, reinforce existing knowledge structures that can exclude alternative viewpoints and limit the exploration of novel concepts about life (Nielsen, 1990). Instead, critical thinkers emphasise ideas like hybridity, fluidity, and the complexity of biological identity—concepts that challenge fixed species boundaries (White et al., 2016).

Transparency about assumptions and interdisciplinary openness is crucial, as disciplinary isolation can hinder productive collaboration (Dawn Youngblood, 2007; Gardner, 2014). Scientific progress in understanding species or using them in practice requires crossing these intellectual boundaries, recognising that no single field has a monopoly on defining life's complexities (Glasgow, 2017). As Gould (2002) notes that life is not a linear progression but a tapestry of cohesion and discontinuity. Sexual and asexual reproduction unite organisms within species, while processes like lateral gene transfer and hybridity interconnect life across species boundaries (Hermida, 2016). As is the case in microbial ecosystems, DNA can exist freely or be incorporated into organisms, illustrating the fluidity of genetic material (Coombs and Barkay, 2004).

Even the distinction between biological and non-biological life forms can blur. For example, viruses challenge the conventional definitions of life, as they exist on the boundary between biological and computational entities (Koonin and Starokadomskyy, 2016). Similarly, as mentioned earlier, chimeric organisms, which embody multiple genomes, complicate species classification and raise fundamental questions about what it means to be a distinct life form (Mariscal and Doolittle, 2020). No single characteristic reliably distinguishes all forms of life from non-life, underscoring the difficulty of defining life, species, or biodiversity in absolute terms.

Despite these conceptual challenges, the concept of species remains essential to understanding biodiversity. Whether measuring genes, ecosystems, ecological services, or evolutionary functions, species serve as critical reference points for organising biological knowledge (Agapow et al., 2004; deLaplante and Picasso, 2011; Hillebrand and Matthiessen, 2009; Maclaurin and Sterelny, 2013)Indeed, species diversity forms the foundation of traditional biodiversity metrics, linking ecological and evolutionary processes with conservation efforts. As explored in the next section, the operationalisation of biodiversity depends on accurate measurement, and species-level diversity has remained central to these assessments.

4.5.2. Biodiversity as a measurement

Species' contested yet central role in biodiversity discussions raises essential questions about how or why biodiversity is measured. Measuring biodiversity has long been a subject of extensive ecological debate, as it is not always clear what exactly is being measured and for what purpose (Colwell, 2009; DeFries et al., 2010; Duelli and Obrist, 2003; Helmus et al., 2007; Hengeveld, 1996; Hillebrand and Matthiessen, 2009; Levin et al., 2009; Pavoine and Bonsall, 2011; Petrovskaya et al., 2006; Purvis and Hector, 2000; Rapidel, 2011; Stevens and Tello, 2014; Tzoulas and James, 2010; Williams et al., 1991). Mostly, ecologists have posed fundamental questions about the criteria and indices used to measure biodiversity: If biodiversity includes more than species, how should it be measured? Do some species contribute more to biodiversity than others? Are there indicators of exceptionally high biodiversity areas? Can extrapolation reliably estimate biodiversity (Harper and Hawksworth, 1994)?

These questions underscore the complexity of defining biodiversity and determining what aspects to prioritize. For example, the concept of "keystone species," which disproportionately affects ecosystems, challenges how biodiversity assessments are conducted. Should these species be weighted more heavily in biodiversity measurements? This reflects broader concerns about how value judgments influence biodiversity objectives and management decisions (Arponen, 2012; Wilson et al., 2009)**.** It also brings back attention to the role of biodiversity indicators—such as keystone species—as proxies for biodiversity practices (Caro and Girling, 2010; Failing and Gregory, 2003).

Biodiversity indicators, as tools, are used to standardise biodiversity assessments (McGeoch et al., 2006). However, the distinction between biodiversity and broader ecological or environmental indicators remains unclear. Arguably, biodiversity indicators often focus on biotic elements, particularly species, whereas ecological indicators may also include abiotic (non-living) factors (Coll et al., 2016; Ludwig et al., 2004; Niemi and McDonald, 2004; Soberón et al., 2000; Wang et al., 2021). The challenge is that biodiversity spans multiple levels—genes, species, ecosystems—and is deeply connected to abiotic factors and ecological processes (Noss, 1990), making it difficult to define precise indicators.

Moreover, the words *biodiversity* and *indicators* are used ambiguously in the literature, often conflating descriptive and normative uses (DeLong Jr, 1996; Gao et al., 2015; Heink and Kowarik, 2010; Sluys, 1999). For instance, while the Shannon Index is commonly used to

quantify biodiversity, it faces criticism when applied normatively to assess biodiversity values (Rodda, 1993). This criticism arises because the Shannon Index focuses on statistical diversity, not on the ecological or functional importance of the species present (Barrantes and Sandoval, 2009). It treats all species equally important, regardless of their ecological roles, rarity, or potential contributions to ecosystem services. In reality, ecosystems may have low species richness but still function well if certain species thrive (Goswami et al., 2017). Conversely, a high Shannon Index score may suggest high diversity, but the ecosystem could still be degraded (Schleuter et al., 2010). Thus, the normative use of the Shannon Index can oversimplify complex ecosystems by equating more diversity with better ecological health without accounting for the actual quality, function, or conservation status of the species involved. The debate on whether to use species diversity or functional diversity as a measure of biodiversity is briefly elaborated in the following sections. This debate raises an ongoing dilemma: should biodiversity indicators be purely descriptive, or should they guide value-based judgments and management objectives (Failing and Gregory, 2003; Heink and Kowarik, 2010; Laurila-Pant et al., 2015; Mace and Baillie, 2007).

The literature clearly shows that many ecologists agree that biodiversity indicators are, in some form, species-based. Halffter (1998) suggests that the ideal groups for these indicators should be species-rich, functionally crucial in their ecosystems, well-understood, and easy to sample without threatening their conservation. Furthermore, these (species-rich) indicators should provide valuable data across both undisturbed and human-impacted areas and have broad spatial-temporal distribution (Halffter, 1998). This process of selecting biodiversity indicators involves transforming complex ecological concepts into manageable, logical frameworks for practical use (Pfenning, 1996).

Drawing from Hegelian philosophy (Georg Wilhelm Friedrich Hegel, 1821/1896), which posits that concepts are dynamic and evolving rather than static (Brandom, 2014), biodiversity is expected to be a dynamic discourse. However, as John Dewey (1971) notes that change inherently brings plurality and diversity, fostering division and conflict. Thus, environmental change inadvertently brings about divisions, reflected, for example, in how species need to be categorised to inform scientific and managerial approaches to biodiversity. With this backdrop, this section adopts a minimalist approach, focusing on two key questions: *What aspects of biodiversity are being measured, and for what purpose*? Why measure species, genetic, functional, or microbial diversity? This line of questioning shifts attention away from technicalities and towards the broader goals behind biodiversity measurement.

4.5.2(a) Species diversity

For a long time, when scientists measured biodiversity, they often referred to species diversity, particularly species richness (Agapow et al., 2004), unless terms like phylogenetic diversity, microbial diversity, or functional biodiversity are/were explicitly used. In its simplicity, species richness refers to counting the number of species in an area or considering their taxonomic differences at higher levels (e.g., genera or families) (Clarke and Warwick, 1998). In contrast, measures such as phylogenetic diversity account for evolutionary relationships between species by measuring the total branch length of an evolutionary tree (Helmus et al., 2007; Kembel et al., 2010; Paradis et al., 2004; Tyler, 2003a). This approach reflects not just the amount of evolutionary history but also the abundance and evenness of species within an ecosystem (Helmus et al., 2007; Tucker and Cadotte, 2013). Although distinct, phylogenetic diversity includes an abundance-based metric, such as phylogenetic richness. These species count-based metrics are appealing for biodiversity monitoring because a change in the abundance of one or more species may lead to a change, whether for a community, region, biome, or continent (MacArthur and Wilson, 2001).

Species richness has historically been a central metric for studying human impacts on nature through estimates of local species loss (McKinney and Lockwood, 1999), and for identifying regions rich in genetic resources (as species) for conservation (Maitre-Ekern, 2019). By pinpointing regions with high species richness, researchers aim to locate organisms or ecosystems for conservation and resource management (Waske et al., 1800). However, measuring species richness requires careful attention to scale (e.g., local, regional or global), sampling effort, species detectability, and population dynamics (Dorazio et al., 2006; Whittaker et al., 2001). Sampling efforts must be sufficient to represent species abundance accurately, and this often involves reaching the asymptote in species accumulation curves, where additional sampling reveals fewer new species (Chao et al., 2009; Zou et al., 2023). If this point is not reached, there is a risk of misinterpreting changes in species numbers because an area might seem to have low diversity due to low sampling effort (Chao and Chiu, 2005). Inadequate sampling can misrepresent species richness (Chao and Chiu, 2005). Similarly, species detectability—how likely it is to observe a species—also influences results, particularly for cryptic or rare species (Fišer et al., 2018; Refsnider et al., 2011; Vine et al., 2009).

Another critical factor is population abundance fluctuation, where changes in one species' abundance might cause shifts in others (McGill et al., 2007; Santini et al., 2017). Population

dynamics can be influenced by environmental factors or reproductive cycles, leading to distortions in species trends (Sæther et al., 2004; Saether et al., 2013). Populations of some species, like microbes, invertebrates, and plants, often experience large fluctuations due to reproductive cycles or weather events (Bernhardt et al., 2020). These fluctuations can distort temporal trends when arithmetic mean abundance is used, as such species may dominate during outbreaks or be overly common (Santini et al., 2017).

Determining an appropriate baseline for comparing changes in the number of species adds further complexity. Baselines are often subjective, influenced by both known and unknown anthropogenic factors (Aronson et al., 2014; Cardinale et al., 2018; Francis and Goodman, 2010; Rey Benayas et al., 2009). As such, scientists may rely on models and incomplete historical records to infer past biodiversity due to a lack of appropriate species reference data (Bokulich, 2021; Hortal et al., 2015). Time-series data tracking species over time has become more common in biodiversity studies (Cardinale et al., 2018; Dornelas et al., 2013; Dornelas et al., 2014; Hillebrand et al., 2018; Lamb et al., 2009; Loh et al., 2005; Waide et al., 1999). However, findings often vary based on the geographical scale or type of ecosystem (forest, lakes, marshes, deserts, oceans, etc.). (Bennett, 1997; Brown et al., 1996; Ceballos and Brown, 1995; Waide et al., 1999). Local species richness may remain stable, while longer-term or larger-scale studies reveal different trends (Cardinale et al., 2018; Hillebrand et al., 2018).

The realisation that local species richness might not be declining as previously assumed has sparked debate (Ceballos et al., 2015; Rey Benayas et al., 2009; Vellend et al., 2017b; Vellend et al., 2017a). It challenges long-held beliefs about global biodiversity loss (Hillebrand et al., 2018; Hillebrand and Matthiessen, 2009), which is a central rallying discourse for biodiversity operationalisation, as explored in the following sections. Instead of focusing solely on biodiversity loss, the goal may need to evolve toward understanding biodiversity change and incorporating systems approaches to grasp the dynamic nature of ecosystems (Brose and Hillebrand, 2016; Fisher et al., 2024; Hillebrand et al., 2023; Meyer et al., 2018). This shift also raises questions about the appropriate scale for biodiversity analysis: Should it focus on local (alpha), inter-ecosystem (beta), or regional (gamma) diversity?

Biodiversity is scale-dependent, and no single model can fully capture patterns across all scales (Crawley and Harral, 2001; Enquist et al., 1995; Lomolino, 2000; Meyer et al., 2018). Local and regional trends may conflict, with stable alpha diversity masking declines in beta or gamma diversity due to habitat homogenisation (Gálvez et al., 2023)Attempts to aggregate biodiversity

across scales can lead to oversimplification, making global biodiversity an abstract concept rather than a meaningful entity.

In response, some ecologists advocate shifting focus from species-based studies to functional biodiversity and ecosystem-level analysis (Hillebrand et al., 2018; Hillebrand and Matthiessen, 2009; Hodapp et al., 2014). By focusing on ecosystem processes such as nutrient cycling and water purification, they aim to understand biodiversity from a systems perspective (Diniz-Filho et al., 2013; Franklin, 1993; Hillebrand and Matthiessen, 2009). While promising, these approaches require extensive data and monitoring efforts (Hillebrand et al., 2020).

The following section explores functional and ecosystem-based approaches as alternatives to species-centric studies, delving into their benefits and specific insights into understanding and operationalising biodiversity concepts.

4.5.2(b) Functional diversity and ecosystem functioning

Functional diversity, as defined by Tilman (2001) encompasses those components of biodiversity that directly influence ecosystem processes and functioning. The concept traces its origins to early botanical systematics, where plants were classified into functional groups based on traits like height and stem density (Raunkiaer, 1934; Weiher et al., 1999). These traits were crucial for understanding how species responded to environmental factors and how they, in turn, influenced ecosystem processes (Cummins, 1974). In the strict ecological sense, ecosystem functions generally pertain to natural processes like carbon storage, energy flow, decomposition, and water and nutrient cycling (Coleman et al; Díaz et al., 2007; Martinez, 1996). This contrasts with ecosystem services, which focus on human needs and preferences (Feng et al., 2009). The shift toward emphasising functional diversity over species diversity arose from concerns about how species loss affects ecosystem functioning, not just the number of species lost (Tilman and Downing, 1994). Functional diversity is now viewed as a critical determinant of ecosystem performance, influencing processes like resource use and resilience (Tilman, 2001).

Theoretical models suggest that increased functional diversity can enhance ecosystem efficiency, particularly in heterogeneous environments (Díaz and Cabido, 2001; Loreau, 1998; Pacala and Kinzig, 2002; Petchey and Gaston, 2006). These ideas are rooted in niche theory, which argues that species coexistence is facilitated by niche differentiation, reducing competition for similar resources (Aarssen, 1984; Pocheville, 2015). Rather than species,

functional traits are seen as the drivers of ecosystem interactions and resource use. However, despite this focus on traits, species diversity remains relevant. Studies show that ecosystems often lack redundancy, meaning the loss of a few species can significantly impact functional diversity (Petchey and Gaston, 2006). Greater species richness tends to bring a broader range of functional traits, allowing for more efficient resource use (Petchey, 2000). While the relationship between species and functional diversity is complex, functional diversity is generally seen as less sensitive to the loss of individual species, as traits can vary significantly within and between species (Cadotte et al., 2011; Díaz et al., 2013; Gonçalves-Souza et al., 2023; Laureto et al., 2015; Messier et al., 2010). Consequently, functional diversity is considered a more reliable predictor of ecosystem functioning since it captures variations across communities (Griffin et al., 2009).

However, like species diversity, functional diversity is also faced with the challenges of scale and time. Space and time are critical factors, especially considering that ecosystems change over time, yet they are often assumed constant, stable, or balanced and studied at short time scales. Functional diversity, like species diversity, is not static and needs to be understood as evolving, as it does in response to ecological processes, environmental changes, and species interactions. At shorter time scales, functional diversity is influenced by immediate ecological factors such as species interactions, resource availability, and disturbances like wildfires or storms (Alaina and Edwards, 2019; Kumar et al., 2022; Petchey and Gaston, 2006). Over more extended periods, changes such as climate shifts and habitat fragmentation can lead to more permanent shifts in functional traits, with some species declining or going extinct while others adapt and thrive (Gonzalez et al., 2020; Grime and Pierce, 2012; Loreau, 1998). Evolutionary time scales further complicate the picture as species evolve new traits in response to environmental pressures, potentially increasing or decreasing functional diversity depending on whether trait convergence or divergence occurs (Reich et al., 2003; Winemiller et al., 2015).

Many researchers agree that functional diversity is most effective at predicting ecosystem functioning on shorter, local scales, where its direct impact on processes is clearer (Hillebrand and Matthiessen, 2009; Loreau, 1998). However, on a global scale, assessing functional diversity often requires filtering out traits to create manageable datasets (Maire et al., 2015). This filtering can result in a bias toward certain dominant traits, potentially skewing the scientific understanding of biodiversity. Studies have shown that species with particular traits are more vulnerable to extinction, while others, better adapted to environmental changes, thrive

(McKinney and Lockwood, 1999; Thomas and Gillingham, 2015). Prioritising certain traits over others in conservation and management can create "winners" and "losers," leading to non-random extinctions (Bengtsson, 1998).

This brings us to a critical question: Why focus on functional diversity over species diversity or measure biodiversity? The answer lies in the objectives of scientific inquiry, particularly within Western science (Iso-Ahola, 2020). Ecologists, for instance, seek to understand how ecosystems function and predict their responses to future changes, such as species loss or climate change (Evans, 2012). Ultimately, it is a quest for insight into the future of the Anthropocene—what is possible, what is desirable, and how to achieve it (Bai et al., 2016; Fazey et al., 2020; Folke et al., 2021; Mensah, 2019).

While ecologists and biologists are primarily concerned with biodiversity's role in ecosystem functioning, other disciplines approach biodiversity with different goals. In the next section, I will highlight some of these perspectives, drawing on literature from various disciplines and the previous sections to answer the question: for whom and for what purpose?

4.5.2(c) Other disciplinary perspectives

Understanding why biodiversity is such a contested discourse requires exploring beyond disciplinary boundaries. Arguably, ecologists and evolutionary biologists provide foundational data about species and ecosystems. However, the rise of biodiversity as a global issue stems from the intertwining of socio-cultural, political, and legal dimensions. Biodiversity is framed and understood differently in various disciplines and sectors, each driven by its objectives and constraints. This diversity of perspectives informs how biodiversity is managed and governed, often resulting in debates that influence conservation strategies, scientific research, and broader environmental policy.

In the life sciences, the primary aim is not always to conserve biodiversity but rather to control certain life forms, especially in fields like parasitology and virology. For example, *microbiota biodiversity* is sometimes seen as something that needs protection from an ecological perspective (Gómez and Nichols, 2013; Roossinck, 2012), yet certain species must be controlled or eradicated if they pose risks to human, animal, or plant health (Barfield et al., 2006). Even animals like bats, now recognised as reservoir hosts for emerging viruses, face the threat of population control or eradication (Hayman et al., 2013; Tuttle, 2017; Wang et al.,

2011). Barfield et al. (2006) stress the urgent need to limit the proliferation of a wide variety of species, reflecting the idea that there is "good" and "bad" biodiversity, particularly when excessive microbial diversity becomes problematic. For instance, while parasites may help monitor ecosystems, they are often excluded from discussions of biodiversity itself (Gardner and Campbell, 1992). In this context, biodiversity's role shifts from protection to control, highlighting the need to manage what aspects of biodiversity are preserved or regulated.

In fields like gastroenterology, biodiversity is viewed through a different lens. A diverse microbial ecosystem is critical for human health, but there is a delicate balance between beneficial and harmful microbes (Comito et al., 2014; Landete et al., 2017). This is especially relevant in tropical regions, where the existence of "good" *biodiversity* seems to be correlated with a wide variety of life forms that are essential for health and those that pose serious risks, such as bacteria and viruses (Brown, 2014; Dávila et al., 2004; Morand et al., 2012; Vourc'h et al., 2012). This balance between "helpful" and "harmful" biodiversity requires careful, context-specific management.

The notion of *good* and *bad* biodiversity also appears in agricultural discourse, where biodiversity is managed to optimise productivity. Species that enhance crop yields and soil health are encouraged (Teng et al., 2024), while those considered invasive, pests and weeds that threaten agricultural output are controlled or eradicated (Hameed et al., 2024; Paini et al., 2016). Invasion ecology, tied closely to agriculture, often views human intervention as necessary to protect productivity from harmful species (Elton, 2020). Some argue that with this invasion logic, humans themselves can be seen as an invasive species due to their significant impact on ecosystems and other species (Marean, 2015).

As biodiversity considerations extend into the food industry, managing good and bad biodiversity becomes even more critical. In food preservation, microbial contamination is tightly controlled to prevent spoilage and illness (Marriott et al., 2018a, 2018b)However, in processes like fermentation, selected microbial biodiversity is essential for product quality. The challenge is balancing biodiversity to ensure safety and enhance the culinary process, while unintended contamination remains a significant cause of foodborne disease.

In biotechnology, biodiversity is often seen as a resource for innovation, where organisms are studied for their potential industrial application (Dobrowolski et al., 2017; Vero et al., 2019; Ziegler et al., 2022). However, economic factors heavily influence which species are

researched, as funding often prioritises species with commercial relevance (Adams et al., 2019; Hortal et al., 2015; Lopes-Lima et al., 2021; Melo Pereira et al., 2018; Senior et al., 2024). A 2023 interview with a microbiologist revealed that funding constraints limit biodiversity research to species with an established research base or economic value (Microbiologist at HIFMB[11] in discussion with the author, April 2023). This highlights how economic, technological, and scientific objectives selectively shape the scope of biodiversity studies.

Cultural perspectives further illustrate the complexity of biodiversity. Indigenous cultures often view biodiversity as an interconnected web of relationships between humans, animals, plants, and the spiritual world (Salmón, 2000). In Māori culture, for instance, the kauri tree and the whale are considered to share a common ancestor, symbolising a sacred connection (Sammler, 2020a). From a Western scientific perspective, these species are typically categorised based on their physical traits and habitats, but for the Māori, they are part of the same genealogical network, embodying the concept of *whakapapa*—the idea that all living things are connected through a shared genealogy that extends beyond immediate biological or environmental boundaries (Sammler, 2020a; Williams, 2022). This Indigenous ecological way of being, belonging, and knowing has developed over millennia, closely tied to the well-being of all living things and survival practices (Nature, 2024; Rameka, 2018; Sammler, 2020a).

This contrasts with what is increasingly considered Western ecological approaches, which often compartmentalise biodiversity into discrete categories like species, ecosystems, or habitats (Dahlberg, 2015; Jones, 2009c). In these Western conservation frameworks, biodiversity is often valued for its instrumental benefits, such as ecosystem services or genetic resources (Bock, 2004; Randall, 1991), although many scholars also emphasise the intrinsic value of biodiversity, advocating for preservation regardless of human use (Justus et al., 2009). Indigenous worldviews, however, stress the interconnectedness of all living things, suggesting that the health of one species directly impacts the health of the entire system.

In conservation science, locked-in debates over biodiversity management are also common (Norberg et al., 2022). For instance, the SLOSS debate (Single Large or Several Small) reflects disagreement over the best strategy to preserve biodiversity. Should resources be allocated to large reserves or protected areas, or is it better to establish several smaller ones (Lindenmayer

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et al., 2015; Liu et al., 2022; McCarthy et al., 2011; Tjørve, 2010)? These decisions involve factors beyond science, including political, cultural, and economic considerations (Jones, 2001; Whittaker et al., 2005). The choice of reserve size and location often hinges on how such decisions affect local communities (Prendergast et al., 1999), underscoring the multifaceted considerations for setting biodiversity objectives.

Prioritisation of specific conservation actions is an inherent challenge for biodiversity discussions (Martin et al., 2020; Ricciardi et al., 2021). For instance, charismatic species like pandas or whales often attract significant conservation resources (Ghosh-Harihar et al., 2019; Jepson and Barua, 2015; Vacar, 2021), while less glamorous but ecologically important species, such as microbes, are overlooked (Brussaard, 1997; Gómez and Nichols, 2013; O. I. et al., 2020; Vibha and Neelam, 2012). It is a cost-benefit calculation of what efforts yield the maximum benefit for some determined outcome or value (Auerbach et al., 2014), determining which species or ecosystems are protected and which are neglected.

Ethical questions quickly arise in these debates, particularly concerning extinction and the moral responsibility of human societies to protect biodiversity. The framing of biodiversity loss as a crisis reflects not only an environmental emergency but also a moral one, calling for urgent action to preserve ecological systems and species (Garson et al., 2019). This crisis narrative expands the conversation to include environmental ethics, raising questions about humanity's responsibility to future generations and the need to protect the natural world.

The following section will delve deeper into **biodiversity as a crisis**, exploring its ethical dimensions and implications for understanding biodiversity and setting management objectives.

4.6. Biodiversity as a crisis concept

Wilson (1980), one of the critical actors in the biodiversity discourse, famously stated in an interview that:

> *The worst thing that can happen will happen is not energy depletion, economic collapse, limited nuclear war, or conquest by a totalitarian government. As terrible as these catastrophes would be for us, they can be repaired within a few generations. The one process ongoing in the 1980s that will take millions of years to correct is the loss of genetic and species*

> *diversity by the destruction of natural habitats. This is the folly our descendants are least likely to forgive us* (Coles et al., 1980: 23)

This statement underscores the framing of biodiversity as a crisis, implying a catastrophic situation that demands urgent action. Over time, its advocates deliberately shaped biodiversity as a crisis concept despite its broad definitions, as explored above. Instead of evoking images of the richness and diversity of life, the term biodiversity more commonly brings to mind concerns about its decline. This framing can be understood as reverse psychology, where attention is drawn to the loss rather than the abundance of biodiversity to highlight the issue's urgency.

In this context, reverse psychology refers to advocating for a counterintuitive perspective to a concept's generic meaning (MacDonald et al., 2011; Nail et al., 2013). By its simplest definition, biodiversity refers to the variety of life. One might expect that this term should naturally conjure images of abundant wildlife, vibrant plant life, and thriving ecosystems. However, in practice, discussions around biodiversity often centre on decline or loss, and not variety or change (Cardinale et al., 2018; Hillebrand et al., 2018)This shift in focus is not accidental but reflects a deliberate choice in framing the biodiversity discourse, as discussed shortly.

The psychology of crisis communication is the way concepts are communicated and explored (Heath and O'Hair, 2020; Rycker and Don, 2013)Rosen tacitly used the same psychological approach when coining the word biodiversity (see discussion above: Rosen intentionally distorted the logic behind the biological terminology to make room for a more emotional appeal). The critical question is why biodiversity is deliberately framed as a crisis.

To begin with, a crisis is generally understood as an immediate threat to essential values or life-sustaining systems, as perceived by a community—whether an organisation, a town, or even a nation. It demands urgent action, often in the face of uncertainty (Rosenthal, Boin, & Comfort, 2001). Values such as safety, security, health, and fairness become fragile or threatened during times of crisis (Heath and O'Hair, 2020). The more central these values are to the lives of individuals or communities, the deeper the sense of crisis becomes (Boin and Hart, 2007). In the realm of policy-making, crises are viewed as threats to the core structures, values, or norms of a system (Rodríguez et al., 2007). These situations often arise under intense time pressure and with significant uncertainty, necessitating critical decisions (Rosenthal, Charles, & t Hart, 1989). Natural disasters like floods, earthquakes, hurricanes, and extreme weather conditions

evoke potent feelings of crisis because they directly threaten life and well-being, violating the deeply ingrained human values of safety and security (Raphael and Wilson, 1993).

While crises are typically viewed as periods of danger and uncertainty, they can also be seen as significant opportunities for growth, change, and innovation (Mars and Weir, 2019). For example, the COVID-19 crisis spurred the rapid advancement of digital technologies, reshaping how people interact online and even transforming aspects of healthcare systems (Hantrais et al., 2021). Significant reforms in economics, governance, and international cooperation have historically been undertaken in response to crises (Kahler, 2013). For example, as explored in this thesis concerning the BBNJ Agreement, the need for the Agreement arose due to the environmental crisis in ABNJ, cited as climate change, habitat loss, and overfishing, as well as tensions arising from prospects of deep-sea mining in the common heritage of humankind (see Chapter 1).

Building on this foundation, one can understand why Wilson's 1994 assertion, "The worst thing that can happen, will happen," references a variety of threats that touch the core values of humans to draw attention to species loss as a crisis. Species loss, synonymous with biodiversity loss, underpins most discussions about biodiversity in the literature. The loss of species is framed as a crisis because it fundamentally alters the natural systems that sustain life on Earth. As such, biodiversity loss evokes an urgent need for action (Olson et al., 2002; Takacs, 1996)). In the scientific community, particularly within ecological and environmental sciences, this has accelerated efforts to assess biodiversity metrics and increased pressure for knowledge-building. As the threats of species extinction, habitat destruction, and ecosystem collapse become more evident, there is growing momentum for conservation efforts, increased research funding, and policy changes.

For instance, since biodiversity is framed as a crisis, it has become a rallying point for national and international environmental policies. Governments are more responsive to crises because they create a sense of urgency, demanding immediate action under public pressure (Boin et al., 2016). Abstract concepts, like biodiversity, may otherwise be deprioritised or delayed. Framing biodiversity as a crisis, it triggers public concern, political pressure, and media attention, driving governments to implement policies, allocate funding, and form international agreements to address the perceived threat (Buscher and Fletcher, 2018; Driscoll et al., 2018; Novacek, 2008; Oksanen and Pietarinen, 2004).

For example, these crisis concerns have driven significant milestones in the last few decades. These include the 1992 Convention on Biological Diversity (CBD), the 2000 Cartagena Protocol on Biosafety, the 2001 and 2005 Millennium Ecosystem Assessments, the 2010 Nagoya Protocol and Aichi Targets, the European Union Biodiversity Strategy for 2030, and the 2015 Sustainable Development Goals (SDGs), particularly goals 14 and 15. The common thread across these initiatives is the framing of biodiversity as a crisis at specific periods (see section on biodiversity as a critical moment). Public and private funding for biodiversity initiatives is also significant (Arlaud et al., 2018; Leal Filho et al., 2018). On average, low-income countries spend around US$45 million annually, middle-income countries invest approximately US$600 million, and high-income countries contribute over US$1.2 billion yearly (Seidl et al., 2020). The OECD (2020) estimates that global biodiversity financing amounted to US$78-91 billion per year between 2016 and 2018, with US$67.8 billion coming from public domestic spending. Global investment in biodiversity initiatives is expected to continue growing. This investment and attention arise because biodiversity is framed as a crisis, and crises demand solutions.

Biodiversity as a crisis also presents opportunities for funding other research initiatives. This is because the broadness of the biodiversity concept allows many issues to be linked to it. However, if biodiversity were no longer perceived as a crisis, there is a risk that research and conservation initiatives would decline. Thus, biodiversity remains framed as a crisis because it denotes a genuine problem and because this framing sustains funding and attention that might otherwise fade.

However, framing biodiversity as a crisis also poses challenges. One is that the crisis can feel overwhelming, leading to a sense of hopelessness (Kennedy-Woodard et al., 2022). This reflects a form of nihilism: if the problem seems too big to solve, people may question whether efforts are worthwhile (Feferman, 2006; Machina, 1987; Nishitani, 1990; Ohlsson, 2012). Emerging communication literature calls for a shift from framing environmental issues as crises to more positive messaging (Lange et al., 2022), arguing that messages evoking positive emotions can inspire long-term engagement and counteract the despair often associated with crisis communication (Kennedy-Woodard et al., 2022; Park et al., 2020). Note that thinking outside the box can sometimes work against the box, leading to disengagement or disinterest, in this context, concerning biodiversity discussions (Kennedy, 2002).

Additionally, biodiversity is now deeply embedded in political, economic, and legal frameworks, making it harder to challenge its current status or reframe the issue. This leads to the next section, which highlights the use of biodiversity as a political, economic, and legal tool.

4.6.1. Biodiversity as a political, economic, and legal tool

For many scholars and scientists, biodiversity remains fundamentally a scientific concept central to their research, as previously discussed. However, in recent decades, biodiversity has expanded into a social, political, economic, and legal tool which plays a significant role in managing human-environment interactions and broader societal issues. A pivotal moment in this evolution was the launch of the TEEB (The Economics of Ecosystems and Biodiversity) initiative (Sukhdev and Kumar, 2008) during the global financial crisis of 2007-2008 (Helleiner, 2011). The financial downturn emphasised the political economy as crucial in global discourses, as well as biodiversity discourses.

Led by economist Pavan Sukhdev, the TEEB initiative highlighted the economic value of ecosystems and biodiversity, emphasising how environmental degradation imposes hidden costs on economies (Sukhdev and Kumar, 2008). For example, the loss of ecosystem services such as pollination, water purification, and carbon sequestration was shown to have direct economic consequences, particularly for developing nations that heavily rely on natural resources (TEEB, 2010). By assigning monetary value to nature, TEEB sought to influence policymakers to integrate biodiversity into economic decision-making, significantly when economic priorities often overshadowed environmental concerns. Although TEEB was not the first effort to monetise nature (Castle and Nesary, 1995; Roush, 1997), it built upon previous initiatives, such as the CBD, which emphasised economics and development (Steinberg, 1999b). Many conservation biologists at the time of negotiating CBD believed that using economic instruments would be more effective in halting biodiversity loss than, for instance, policies centred on creating protected areas, such as national parks (Rodríguez-Labajos and Martínez-Alier, 2013). Other efforts, like the System of Environmental-Economic Accounting (SEEA), developed under the UN's guidance in 1993, provided similar perspectives and are still evolving, with recent revisions focusing on accounting for biodiversity (Hein et al., 2020). However, the TEEB initiative launched amidst a global economic crisis, arguably amplified these efforts (Declaration, 2012; Hansjürgens et al., 2016; Parker and Cranford, 2010; Ring et

al., 2010). This is evidenced by a significant increase in publications addressing the economic valuation of biodiversity around 2009, as illustrated in Figure 4.4.

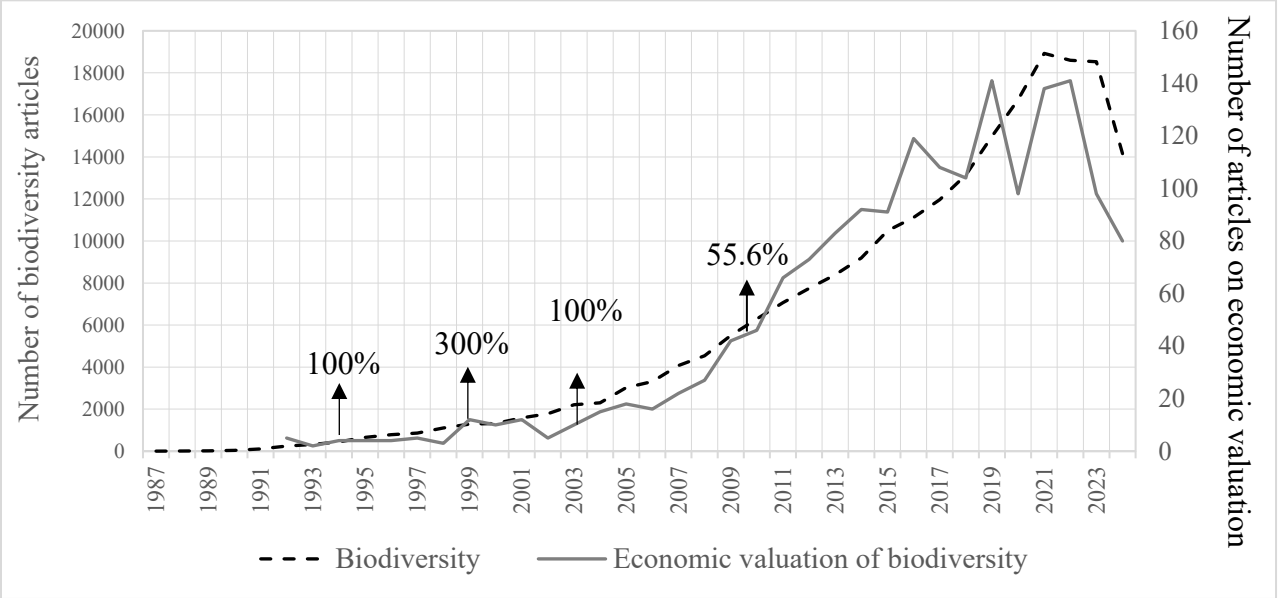


Figure 4.4: Comparison of the number of articles on the economic valuation of biodiversity and biodiversity as a topic in the Web of Science, showing spikes in the number of articles on the economic valuation from 1993-1994 (2 to 4 articles), 1998-1999(3 to 12), 2002-2003 (5 to 10) and 2008-2009 (27-42).

The trend toward valuing biodiversity in economic terms demonstrates how the concept has developed as a tool to engage various stakeholders. By framing biodiversity in terms of ecosystem services—such as food, water, air purification, and recreation—it becomes more accessible to policymakers and industries (Sukhdev et al., 2008; Sukhdev and Kumar, 2008). However, this economic framing has also generated debate. Some conservationists argue that this approach commodifies nature, potentially undermining its intrinsic value (Costanza et al., 2014). Critics worry that while initiatives like TEEB have gained political support, they may inadvertently encourage short-term exploitation rather than long-term conservation (Kosoy and Corbera, 2010). Furthermore, many critical functions of biodiversity are qualitative and difficult to quantify, complicating efforts to assign economic value (Ring et al., 2010; Sukhdev et al., 2014).

Those who wish to move beyond economic perspectives face the issue of state sovereignty. States determine what can be implemented at national and global levels, highlighting the political nature of biodiversity discussions. This is tied to the principle of sovereignty, which grants States control over natural resources within their borders (Diaz, 1994). Rooted in the Westphalian system of nation-states established in 1648, sovereignty grants nations the authority to govern the environment as an asset, of which biodiversity discourses are part (Croxton, 1999). Sovereignty over natural resources is also enshrined in international law, including the 1962 UN General Assembly resolution on permanent sovereignty over natural resources (Tyagi, 2015). This sovereignty not only shapes national development strategies rooted in economic models (Chekera and Nmehielle, 2013) but also informs how States approach biodiversity governance (Diaz, 1994).

The issue of sovereignty is particularly relevant in the context of historical relationships between nations. The colonial exploitation of natural resources by Western powers has left a lasting legacy in species-rich regions of the Global South, where resources were often extracted without fair compensation (Lenkabula, 2006; Merson, 2000a). Agreements like the 2014 Nagoya Protocol, an extension of the CBD, aim to address these imbalances by regulating access to genetic resources and ensuring equitable benefit-sharing between resource-rich and resource-using countries (Nagoya Protocol, 2014). However, the Nagoya Protocol, initially designed to regulate the commercial exploitation of biodiversity in the Global South without compensation, now extends deeply into research, requiring scientists to obtain permits to transport genetic samples or specimens for analysis (Colella et al., 2023; Kamau et al., 2015). With over 198 countries involved, each with different access and benefit-sharing requirements (Smith et al., 2018), navigating these regulations can be frustrating for scientists seeking access to this genetic material for research (Lajaunie and Morand, 2020; Richerzhagen, 2014). While many researchers previously saw political issues as unrelated to their scientific work, they now face confrontations with the political dimensions of biodiversity (Raja et al., 2022).

Colonial histories and global economics complicate understanding and operationalising biodiversity, particularly from an international perspective. In many Global South countries, biodiversity research involving the transfer of specimens to the Global North is often viewed with suspicion, seen as bioprospecting or biopiracy (South, 2013). This has led to a growing distrust in the scientific community, further complicating international biodiversity governance and research collaboration (Baghramian and Caprioglio Panizza, 2022; Del CORONA, 2021).

Managing biodiversity across national borders presents another significant challenge (Campbell and Hanich, 2015; Gentner, 2016; Hirsch, 2020; Knox, 2002; Palacios-Abrantes et al., 2020). Many species do not adhere to political boundaries (TFDD, 2023), as seen with migratory marine species like tuna or whales and terrestrial species such as African elephants, whose ranges span multiple countries (Meretsky et al., 2011). Effective conservation requires coordinated international efforts, but state sovereignty often complicates initiatives like Environmental Impact Assessments (EIAs) or efforts to address cross-border pollution (Nguitragool, 2014; Refisch and Jenson, 2016; Schrage, 2008; Tanzi et al., 2015; Tesli and Husby, 1999; see also further discussions in Chapters 6 and 7)

Climate change adds further complexity as rising global temperatures force species to migrate beyond their traditional range (Robinson et al., 2009; Scheffers and Pecl, 2019). This phenomenon challenges traditional notions of territorial sovereignty based on control over human and non-human bodies (Mbembe, 2008), as species migration requires cross-border cooperation. Ecologists continue to grapple with shifting baselines for conservation, as past ecological communities no longer serve as reliable reference points (Lenoir and Svenning, 2015; Thomas, 2011).

The tension between sovereignty and global responsibility is evident in multilateral agreements like the CBD, which encourages States to conserve biodiversity, sustainably use its components, and ensure equitable benefit-sharing (CBD, 1992). While States commit to these international goals, they retain the right to determine domestic implementation strategies (Atisa, 2014) revealing a paradox: States are bound by international agreements but can prioritise national interests over global biodiversity goals (Endicott, 2010). This tension is exemplified by the European Union's Natura 2000 network, which arose from the EU's obligations under the CBD (Bryan, 2012; Hodge et al., 2015). Natura 2000 seeks to protect critical habitats and species across member States, blending international conservation goals with national implementation (European Commission, 2010). However, Member States retain significant control, often leading to conflicts between conservation and economic development (Fairbrass and Jordan, 2001).

Addressing the global commons—regions beyond national jurisdiction, such as the High Seas and Antarctica—deepens the complexity. These areas are crucial for global biodiversity governance but lack a single governing authority. While UNCLOS attempts to regulate

activities in these areas, enforcement remains a significant challenge (Caminos, 2012), leading to inconsistent management efforts (Enright et al., 2021; Haas et al., 2021).

The upcoming Biodiversity Beyond National Jurisdiction (BBNJ) framework offers a potential solution to these governance challenges. However, the sovereignty paradox remains: States may agree to international treaties but must reconcile the fact that they have various interpretations of biodiversity and management objectives and that these agreements could limit their control over natural resources (Endicott, 2010).

4.7. Conclusion

In conclusion, addressing the first objective (see Chapter 1, page 33), biodiversity remains a complex and debated discourse because of the diverse applications of its concepts, not just due to its complexity. Crucial aspects of biodiversity, like the idea of "species," can also be heavily debated, as each field or location may interpret them differently depending on the intended objectives. How biodiversity is understood and managed depends on the interactions of different processes and perspectives at a given time and place. The next chapter will delve into these tensions using the Biodiversity Beyond National Jurisdiction (BBNJ) Agreement as a case study. This example shows how different interpretations of biodiversity—shaped by scientific, political, and economic priorities—affect international policy and environmental agreements. By examining the BBNJ negotiations, we gain insight into how power dynamics and competing interests shape biodiversity policies, either helping or hindering global conservation efforts.

---------- *End of Chapter 4* ----------

Part 2: Contemporary implications

Who measures marine biodiversity beyond national jurisdiction, and why and for whom?

Chapter 5: Inclusivity in Global Commons Governance

5.1. Introduction

The previous chapter explored key historical contexts, debates, and critical moments that have shaped the discourse on biodiversity. One clear takeaway is that the meanings, objectives, and practices associated with biodiversity evolve. This evolution is shaped by socio-political, economic, scientific, technological, and environmental factors and stakeholders' varying perceptions and interests. However, not all stakeholders have equal influence in defining biodiversity governance. Few participate in negotiations, and even fewer shape the prevailing concepts, objectives, and management strategies. A core challenge is determining which perspectives to include and how to balance the diverse interests of participating and non-participating stakeholders while addressing the environmental crisis.

This chapter explores the concept of *inclusivity* in the governance of global commons, with a specific focus on marine biodiversity discourses within the Biodiversity Beyond National Jurisdiction (BBNJ negotiations. The convergence of the two global commons domains, marine biodiversity and ABNJ, complicates the governance process (Hirsch, 2020), positioning the BBNJ Agreement as a landmark framework that not only addresses marine biodiversity but also establishes a foundational governance model for areas beyond national borders (Schofield and Andi Arsana, 2009; Supancana, 2015). Through this lens, the chapter unpacks the dynamics of participation in the BBNJ processes. It examines how these dynamics influence the development of biodiversity goals, which will be expanded upon in Chapters 6 and 7.

Scholars have long noted the dominance of specific actors—stakeholders, countries, or ideological frameworks—in global commons governance, underscoring the complex power dynamics that frame discourses on behalf of all humanity (Lambach, 2022; Miller, 2017; Storey, 2012). The BBNJ negotiations, as this chapter will explore, serve not only as a space for forging international cooperation (Hughes and Vadrot, 2023; Sitaraman, 2016) but also as an arena where foundational environmental concepts, including biodiversity, are debated and reshaped. Within the governance of global commons, achieving inclusivity is seen as a critical process for legitimacy, yet this ideal remains challenging to realise (Art et al., 2023). While existing research stresses the importance of sustainable and fair governance (Peters, 2023), the realities of implementing inclusivity and equity continue to present obstacles (Bordner, 2022;

Campbell et al., 2022; Dawson et al., 2018; Friedman et al., 2018; Lanz, 2011; Reed, 2008). In the context of biodiversity and ABNJ, the complex interplay of international priorities, environmental needs, and socioeconomic inequalities raises critical questions about the legitimacy of global processes and the inclusivity of diverse stakeholders (Kumm, 2004; Ringius et al., 2002). **This chapter positions these issues as central to understanding the stakes of inclusivity in biodiversity governance**.

The canonical notion of governing global commons creates two opposing imaginaries. On the one hand, global commons are often portrayed as empty spaces—natural and economic zones devoid of societal influence (Steinberg, 2001). This view often obscures the entanglement of private claims, such as those held by industries and military states, which coexist with the common rights of humankind, leading to what some scholars describe as the "uncommonness" of global commons (Milun, 2016). In such instances, the cumulative environmental impacts on oceans from various terrestrial and marine activities are ignored, sidelining the common rights of all humans to these spaces (Steinberg, 2008). Conversely, global commons are also portrayed as inherently inclusive spaces where resources are equally shared and universally accessible (Mezzadra and Neilson, 2012). This idealistic image of an egalitarian global community suggests that all stakeholders possess equal rights and representation (Payne, 2022) and carry the same influence on international discourses like biodiversity. However, in practice, the global community is an assembly of sovereign States or organisations central to institutions like the United Nations (UN), where decision-making processes reflect the interests of powerful actors (Payne, 2022; Steinberg, 2001). Consequently, these spaces are often shaped by a narrow set of priorities defined by states and organisations represented by influential elites (Payne, 2022; Vadrot and Ruiz Rodríguez, 2022). In some cases, mainly where checks on national power are limited, the agendas of individual elites overshadow broader public interests, skewing discourses toward specific interests (Cantir and Kaarbo, 2012; Rosendal, 2000; Rothkopf, 2008). This concentration of power presents a significant challenge to achieving inclusivity and equity in the governance of global commons (Ahmad et al., 2008; March and Olsen, 1998; Sokolova, 2023), as well as highlighting the diversity of objectives and perspectives related to biodiversity discourses.

To critically assess the role of inclusivity in the BBNJ context and the resulting influence on biodiversity discourses, this chapter is organised into five main sections, each providing a building block for understanding inclusivity in global biodiversity governance. Following this introductory section (5.1. section (5.1.1. provides a detailed distinction between inclusivity and

equity, establishing foundational definitions that will inform the analysis. Section (5.1.2. then introduces the epistemic community that drives biodiversity and ocean governance, outlining key actors and interests that shape discourse in this field. Section 5.2. delves into inclusivity within BBNJ contexts, analysing participation dynamics based on participant lists and categories created to deepen this examination (for a comprehensive outline of these categories, see Methods from page 89). Section 5.4. expands the analysis by reviewing delegation statements and textual proposals made by various participants in the BBNJ negotiations, shedding light on how inclusivity—or the lack thereof—materialises in official documentation and rhetorical positioning. Section 5.5. turns to the scientific literature on BBNJ to examine inclusivity through an empirical lens before the chapter concludes with section 5.6. **Through this structured approach, the chapter seeks to elucidate which groups shape biodiversity discourses in these governance contexts, for what purposes, and in whose interests.**

To frame this analysis, the following section returns to the distinctions between inclusivity and equity, exploring their conceptual underpinnings and relevance to the discourse on biodiversity in global commons governance. This discussion will give the reader a nuanced understanding of these principles as they relate to the thesis's central aim of examining biodiversity as a discourse for interpreting and managing the natural world.

5.1.1. Inclusivity vs equity

Inclusivity and equity, while related, are distinct concepts. Equity, as discussed by Campbell et al. (2022), has multiple dimensions: distributional equity (fair allocation of benefits and burdens), procedural equity (fair decision-making processes and equal voice), and recognition equity (respect for diverse identities and interests). Equity, in essence, addresses the systemic issues embedded in governance and policy processes, such as who is responsible for environmental impacts, who benefits, and who suffers from the consequences (Friedman et al., 2018; Schlosberg and Collins, 2014; Sultana, 2022 as cited in Campbell et al., 2022). It also extends to concerns about intergenerational justice and fairness for non-human organisms (Harden-Davies et al., 2020). The complexity of equity stems from its dependence on diverse social, economic, cultural, and political conditions (McDermott et al., 2013).

Inclusivity, by contrast, is a more focused aspect of equity that pertains to actual participation. It emphasises including a broad range of stakeholders in decision-making processes (Blasiak et al., 2017; Dumon et al., 2017; Pouw and Bruijne, 2015; Worm et al., 2021). In other words, inclusivity is about who participates in governance processes. While equity addresses broader

systemic outcomes, inclusivity ensures that decision-making is participatory and reflects diverse perspectives (Strand et al., 2022). This makes inclusivity easier to analyse, though no less challenging to achieve.

However, participation in global governance is complex. It ranges from formal to informal, active to passive, and evolves over time (Andresen, 1989). The ability to participate meaningfully depends on factors like coalition strength, leadership, and negotiation power (Starkey et al., 2015; Zartman and Rubin, 2005). However, increasing the number of participants while aiming for greater inclusivity can complicate decision-making. A larger pool of stakeholders may lead to conflicting interests, slower processes, and challenges in reaching consensus. This raises the question: what is the optimal level of participation for effective governance? Participation is not just about numbers; the quality of engagement also shapes it. Power dynamics, access to resources, and expertise often determine whose voices carry the most weight in negotiation (Dobrijevic et al., 2011). While participation is seen as a democratic ideal, some States or organisations with more significant economic, technological, or geopolitical influence may still dominate decision-making, regardless of how inclusive the process appears (Agnew and Crobridge, 2002). Thus, achieving meaningful and balanced participation remains a persistent challenge in global governance processes like BBNJ.

This chapter addresses inclusivity in terms of stakeholder groups and perspectives, participant numbers, and power dimensions that affect, but also go beyond, participation levels. **Subsequently, it explores how these factors influence biodiversity goals in the BBNJ Agreement and processes context**. The following section will introduce some critical stakeholders and dynamics underpinning global commons governance, leading to the analysis of inclusivity within the BBNJ contexts.

5.1.2. The epistemic community of global environmental governance

International governance, including those guiding ocean biodiversity and conservation, does not emerge from a vacuum but is informed by specific actors and knowledge frameworks forming the epistemic practice communities (Ulrich and Vadrot, 2013). According to Haas (2008: 792), “epistemic communities are the networks—often transnational—of knowledge-based experts with an authoritative claim to policy-relevant knowledge within their domain of expertise” (Haas, 2008, p.792). Haas indicates that epistemic communities shape norms, beliefs, and policy in environmental governance by developing and circulating ideas and normative beliefs during political processes. For instance, scientific insights into marine biodiversity and

political considerations around resource distribution and environmental responsibilities influence the structure and function of epistemic communities (Andresen, 1989; Haas, 2016). The community defines the state interests, identifies and legitimises participants and debated concepts, shapes negotiated outcomes, and sometimes holds authoritative and administrative positions during implementation (Cross, 2013; Haas, 2008; Ulrich and Vadrot, 2013). This influence shapes the biodiversity discourse through the varying stakeholder interests, revealing what different actors seek to manage or protect and whose interests are ultimately served, which is the central aim of this thesis.

These epistemic communities are composed of individuals emerging from institutions or drawn from national governments, yet at the same time, identify themselves as the international community to a greater extent than any other ordinary citizen (Hasenclever et al., 1996; Rosendal, 2000). By examining these communities, we can understand the motivations, agency, and underlying logic that drive biodiversity-related policies (Haas, 2008). In the case of global marine biodiversity within the context of BBNJ, understanding the role of these actors and their influences sheds light on how biodiversity is valued differently depending on the interests within this international community.

The following section introduces crucial stakeholder groups and institutions forming the epistemic community in global commons governance and some critical issues when analysing these communities.

5.1.2(a) The UN system and its military dilemma

Analysing biodiversity discourses within global commons governance without understanding the critical institutional contexts in which they emerge leads to unrealistic expectations about the processes and outcomes. A critical institution in this context is the United Nations (UN), which provides the foundational framework for international negotiations, such as the BBNJ. The UN's role is pivotal because it not only facilitates these discussions but also embodies specific governance structures and values shaped by its history and diverse membership, currently standing at 195 Member States (Finnemore, 1993; Krook and True, 2012).

The UN **Charter (Articles 7-8;** United Nations, 1945), outlines six principal organs which can directly or indirectly impact environmental priorities and frameworks in these international settings. These include:

1. The **General Assembly (GA):** Composed of all Member States, it provides a forum for multilateral discussions where each member has equal representation and voting rights for adopting resolutions and making recommendations (see UNC Chapter IV: Articles 9-22)
2. **Security Council (SC):** Responsible for maintaining international peace and security, it consists of 15 members, including five permanent members with veto power (China, France, Russia, the United Kingdom, and the United States) and ten non-permanent members elected for two-year terms (see UNC Chapter V, VI, VII and VIII: Articles 23-54)
3. **Economic and Social Council (ECOSOC):** Coordinates the economic, social, and related work of 15 UN specialised agencies, functional commissions, and five regional commissions (see UNC Chapter IX and X: Articles 23-54).
4. **Trusteeship Council:** Established to oversee the administration of trust territories and ensure their inhabitants were prepared for self-government (UNC Chapter XI, XII and XIII: Articles 73-91). Its operations have been suspended since the last trust territory, Palau, became independent in 1994 despite the presence of other territories (see discussion below).
5. **International Court of Justice (ICJ):** Settles legal disputes between States and provides advisory opinions on international legal issues (UNC Chapter XIV: Articles 92-96)
6. **Secretariat:** Headed by the Secretary-General, whom the GA appoints on the recommendation of the SC, it carries out the day-to-day work of the UN, servicing the other principal organs and administering their programs and policies (UNC Chapter XV: Articles 97-101)

These six organs are crucial for the operation of the UN as an institution. Understanding these structures is essential to understanding how biodiversity governance, particularly in international waters, is shaped within the complex interplay of the UN's decision-making processes.

The UN was established in the aftermath of World War II, with the primary objective of maintaining collective security as several countries were recovering from the humanitarian and economic impacts of the wars (Armstrong, 1982a). The UN's core mission was shaped by the global military powers of that era, based on the principle of a great power concert, primarily composed of Allied forces—the United Kingdom, the Soviet Union, and the United States

(Armstrong, 1982b). However, as global challenges have evolved, so has the UN's role, including addressing environmental crises like biodiversity loss. Nevertheless, the security considerations canonised in the UN's SC, through its five permanent members (China, France, Russia, the United Kingdom, and the United States), means balancing UN policies, including for the environment, against geopolitical interests. Notably, ten non-permanent members are elected by the General Assembly for a two-year term only, with more than 50 UN Member States having never been members of the Security Council.

This setting is crucial because the SC is the only UN organ with enforceable powers capable of imposing sanctions, authorising the use of force to adhere to the principles set by the GA. The SC can make binding decisions that member States must comply with, with the power to address conflicts directly and take enforcement actions. Therefore, the permanent member countries of the SC form a critical political system of the UN and hold substantial sway in international discourse due to their veto power (Caron, 1993).

Notably, as a legislative body of the UN and an essential organ in ocean governance and environmental matters (see Chapter 7 on fragile foundations), the ICJ can also make binding decisions on the parties involved. However, the ICJ does not have direct enforcement mechanisms to compel member States to comply with those decisions (Chan, 2018). For example, in 1984, the ICJ ruled that the United States had violated international law by supporting the Contras in Nicaragua and mining Nicaragua's harbours (Greig, 1992). The U.S. refused to participate in the proceedings and did not comply with the ruling, citing issues of national security and sovereignty (Roberts, 1990). This perspective is critical, especially for environmental issues, which often lack enforcement mechanisms, as elaborated in Chapter 7 on fragile foundations. Often, States comply with ICJ rulings for the respect of international law and the potential diplomatic and military consequences of non-compliance, especially if permanent members of SC agree to get involved. There are no direct enforcement mechanisms if a state refuses to comply with ICJ rulings. The parties involved can, however, take the matters to the SC, which has the power to enforce judgements. This is what makes the SC the most critical organ of the UN in terms of enforcement powers and maintaining the UN's core principles and structure.

Therefore, the UN was established as a political and diplomatic platform for dialogue, conflict resolution, and international cooperation and not designed as a legislative entity (Nicholas, 1970). However, over half the century, the UN and its specialised agencies began producing

corpus juris of international law, treaties and international organisations (IOs) in various areas and subjects, including environmental protection (Cançado Trindade, 2010; Schachter, 1994). The different IOs and conventions significantly inform any new Agreement and its processes, including those that address biodiversity like the BBNJ, with the expectation of not undermining the established system (Langlet and Vadrot, 2023a, 2023b). Each IO brings its unique mandate to address emerging issues (Langlet and Vadrot, 2023b).

The dual role of the UN system in addressing emerging issues like biodiversity loss or climate change while upholding its foundational principles of peace and security has proven challenging for its effectiveness. These principles, established to prevent military conflicts among states that have since become increasingly potent due to advancements like nuclear weaponry, remain central to the UN's mission (Ahmad et al., 2008; Caron and Scheiber, 2009). Biodiversity governance in areas beyond national jurisdiction (ABNJ) intersects directly with these core UN principles, particularly in initiatives like the BBNJ, where peace and security considerations are integral to developing ocean governance frameworks (Dalaker, 2024; Kraska, 2018). The nature of ABNJ brings unique security threats that extend beyond environmental issues, as resource extraction and military presence in the High Seas mean that security considerations are often inseparable from ecological priorities (Byers, 2004; Caron and Scheiber, 2009). This is especially true when considering that freedoms like military navigation often conflict with ecological goals, like establishing marine protected areas (MPAs). Accordingly, permanent UN Security Council members, mindful of their geopolitical and military presence in ABNJ, approach new regulatory frameworks with caution, ensuring that military activities remain excluded from regulation (Article 4[12] of BBNJ) and that frameworks align with their strategic interests, preserving High Seas freedoms (Xinmin, 2023).

Despite the influence of frameworks like CAMMLR, which governs sections of ABNJ in the Antarctic region by restricting military activities and suspending sovereignty claims, military interests remain a priority in UN negotiations (Nocito et al., 2022). This tension was evident in

12 BBNJ Article 4 Exceptions: "This Agreement does not apply to any warship, military aircraft or naval auxiliary. Except for Part II, this Agreement does not apply to other vessels or aircraft owned or operated by a Party and used, for the time being, only on government non-commercial service. However, each Party shall ensure, by the adoption of appropriate measures not impairing the operations or operational capabilities of such vessels or aircraft owned or operated by it, that such vessels or aircraft act in a manner consistent, as far as is reasonable and practicable, with this Agreement"

discussions surrounding BBNJ provisions for MPAs, deep-sea mining, and bioprospecting, where proposals that could limit military operations clashed with the geopolitical and economic priorities of member states (Wang, 2019; see also 5.2. Analysis of inclusivity in BBNJ). At the BBNJ negotiations in New York, a standoff could be felt among military powers, including Russia and the United States, over potential constraints on national activities in ABNJ. While delegates consistently highlighted the pressing environmental crisis in ABNJ, national sovereignty and strategic interests ultimately shaped the negotiations, often taking precedence over ecological concerns (see discussions on 6.5. Not undermining the legacies of existing frameworks). As negotiations advanced, these national priorities became significantly pronounced, demonstrating how biodiversity discourse is continually shaped by security and sovereignty considerations (see 5.4. Tracing inclusivity through delegation statements).

Therefore, envisaging a new treaty outside the UN system of security considerations is almost impossible. Concepts like marine biodiversity take on new dimensions when discussed through security lenses, and more so in ABNJ, as elaborated in Chapter 6 on tracing marine biodiversity objectives in BBNJ. The intersection between the UN system and biodiversity governance illustrates the intricate dynamics involved in addressing global environmental challenges. As a foundational principle, security ensures meaningful international cooperation while establishing a common framework to tackle shared global issues.

In the aftermath of the BBNJ negotiations, a senior delegate from an African state commented with relief, these negotiations felt like war…and as often time, we were caught up in a crossfire between superpowers (Delegate from an African State, 2023) These expressions were common throughout the author's engagements with delegations from African countries. These are some of the unspoken truths of the international environmental negotiations under the UN system, where sovereignty and military prowess limit international law (Berry, 2024). The current configuration of the UN SC highlights that these challenges will endure, allowing a few States to influence UN processes and shape the global political, economic, and even environmental governance of commons.

5.1.2(b) The state dilemma

Because the UN is a state-built organisation, national governments play the most critical role in multilateral settings like the BBNJ and the resulting biodiversity discourses. Through control over representation and the appointment of delegates (including for Ios and secretariats), states consolidate authority, allowing them to dominate agenda-setting, discourse framing, and

decision-making in international negotiations (Agnew, 2005). State interests are embedded within every level of UN processes, shaping the biodiversity priorities reflected in the BBNJ contexts. Represented as national delegations in multilateral settings, the individuals act as the power and driving force of negotiation processes, bringing their domestic government interests, priorities, and contexts (Adler-Nissen, 2014; Faizullaev, 2014; Rosendal, 2000). The delegates are both symbolic and substantive power holders, able to negotiate, compromise, and collaborate with other representatives, shaping the outcomes of these processes (Haas, 2008). In the contexts of this thesis and BBNJ, this also means that conceptualising marine biodiversity and its objectives are within the framework of government interests and priorities. The influence of governmental changes on policy continuity highlights the flexibility and limitations inherent in a state-centric international framework, where shifts in leadership can significantly impact ongoing environmental discourses (Carter and Goemans, 2011; Hamilton and Saito, 2015).

Effective participation of various state delegations becomes crucial in negotiation processes, as these influence resulting biodiversity discourses. However, the availability of resources, capacities in terms of expertise, as well as other social, economic, political and even historical contexts between States compound participation and the resulting influence on the discourses (Barnaud and van Paassen, 2013; Bexell et al., 2010). For example, regions, countries, or individuals with limited financial resources or different priorities struggle to effectively engage in international processes and or fulfil their commitments in resulting Agreements (Gillon et al., 2017). Finances are a crucial consideration for participation, with the high cost of travel and accommodation for many delegates, especially for low-income countries, impeding onsite negotiations (Falzon, 2023). These negotiations often happen in the Global North, where the cost of travel and living is exceptionally high for low-income delegations. Governments have many other pressing issues, sometimes relegating international meetings to the background. This ties back to this thesis's introductory themes and underlying approach, emphasising that those with the power of influence frame the biodiversity discourses.

Financial support structures, like trust funds, reflect attempts to address these inequities, but their reliance on voluntary contributions from wealthier nations creates additional dependencies that compromise autonomy and may even perpetuate power imbalances (Manning, 2006; Reinsberg, 2017; Weischer et al., 2012; Zimmermann and Smith, 2011). Even the UN secretariats often face operational budget shortfalls, as they depend on voluntary contributions from governments, many of which fail to meet their pledges or mandatory contributions (Mcdermott, 2001). This reinforces a framework in which income-rich states shape the global

environmental agenda, underscoring the limitations of a UN system rooted in state-driven representation.

Resource disparities go beyond mere participation, influencing the ability of low-income countries to implement the environmental agreements they negotiate. Wealthy nations not only influence negotiations due to their financial capabilities but also have greater leverage in shaping outcomes (Kumm, 2004; Ringius et al., 2002), while low-income countries face barriers to advocating effectively for their needs and may struggle to fulfil their commitments (Connolly and Keohane, 1996). Notably, there is also an environmental protection burden on states that have arguably contributed less to the crisis (see Chapter 4) than high-income industrialised countries (Le Duc, 2020). Many lower-income countries have been calling for high-income countries to increase their contributions to the trust funds to effectively address the crisis and offset the burden for low-income States (Grasso, 2011). However, the lower-income countries then lose some of their agency, as any recommendations for action must be accompanied by financial support for implementation and enforcement. This gives high-income countries leverage to influence the outcomes of the negotiations.

Beyond economics, states leverage military power, political alliances, and historical influence to shape multilateral negotiations and resulting discourses. These dynamics, often rooted in colonial legacies, continue to exclude some countries from meaningful participation, limiting the diversity of perspectives represented in environmental agreements (Root, 2013). For instance, countries that have experienced or are emerging from military occupation or political instability often find engaging fully in international deliberations challenging. These barriers reflect the limitations of a governance structure based on state sovereignty, as including countries with complex colonial histories is often superficial (see 5.2. Analysis of inclusivity in BBNJ). Addressing these power imbalances requires rethinking how state power is represented and considering ways to incorporate perspectives from historically marginalised regions. This partly makes other stakeholders, like dependent States, disputed territories, and overseas territories, critical for analysing global commons governance, which is the focus of the next section.

5.1.2(c) Dependent States, disputed and overseas territories

Classic geopolitical or international relations scholarship typically focuses on states recognised by the UN (Barkin and Cronin, 1994; Park, 2023). However, the landscape of multilateralism attracts broader perspectives, especially in the ABNJ. ABNJ encompasses regions considered

the common heritage of all humanity; therefore, many actors have vested interests. Among these are the interests of dependent States and disputed and overseas territories (DDOs). Despite not having direct representation at the UN General Assembly, these DDOs sometimes possess the total treaty-making capacity that the United Nations Secretariat recognises.

For example, the Cook Islands, Kosovo, and Niue participate in UN specialised agencies but are not UN member states or hold observer status with the United Nations General Assembly. The Cook Islands and Niue have self-governance while in free association with New Zealand. Despite their unique status, they participate robustly in international negotiations, with Cook Islands having representation in all the five IGCs (Intergovernmental Conferences) of the BBNJ negotiations(Appendix Table 19). Kosovo and Palestine are examples of States recognised by some countries as independent and not by others. Despite lacking full status, Palestine, for instance, engaged actively in BBNJ negotiations, while Kosovo did not (Appendix Table 19). The participation of some DDOs underscores the desire of such entities to have their voice heard and the need to include their perspective, especially in global commons governance

Moreover, many overseas territories, such as the Cayman Islands, Faroe Islands, and Madeira, which, although they may not participate as independent States, have ratified some of the significant treaties independently, including for the oceans. Others have had these treaties extended to them, such as the UNFSA (United Nations Fish Stocks Agreement) for the British Indian Ocean Territory, British Virgin Islands, and Falkland Islands. However, treaties may not automatically extend to newly independent States unless specified otherwise. For example, the Netherlands Antilles, comprising several Caribbean islands, had a unique political status within the Kingdom of the Netherlands. Upon its dissolution in 2010, its ratified treaties did not automatically extend to the new entities. Curaçao and Sint Maarten, becoming constituent countries, needed to confirm or renegotiate their treaty obligations. At the same time, Bonaire, Sint Eustatius, and Saba, as special municipalities, generally saw an extension of the treaties applicable to the Netherlands.

Furthermore, many such States have registered large fleets of ocean-going vessels under their flags, independent of their mother States (**Appendix Table 19**). Shipping activities significantly impact the marine environment and cannot be ignored (Jägerbrand et al., 2019; Walker et al., 2019). Therefore, their perspectives become crucial in ocean and environmental governance, whether these territories are just acting as flags of convenience or managing these fleets (Metaxas, 1981). Negotiation of ocean treaties, especially concerning global commons, should

not be assumed to apply to these territories automatically (Fawcett, 1949; Milanovic, 2014) without their participation, as their interests and priorities can differ substantially from those of the mother state. For example, French Polynesia, a small island reliant on tourism and fisheries (Andréfouët and Adjeroud, 2019), may prioritise different conservation aspects compared to mainland France.

These perspectives become even more crucial when territories aspire to become independent. For instance, New Caledonia, which did not participate in BBNJ negotiations, continues to experience political unrest driven by a desire for independence and distinct representation apart from France (Connell, 2019). While the unrest itself may not be directly linked to the lack of participation in BBNJ, parallels can be drawn based on the case of Ukraine, an independent state (**Appendix Table 19**), which did not participate arguably due to its involvement in the war with Russia. The case of New Caledonia indicates that several DDOs under other sovereign country influences may, in the future, aspire to have independent opinions on governance of the global commons. The role of the Trusteeship Council of the UN can be reinstated by assisting such States to have meaningful participation in critical global discussions even before their independence. Without active participation in negotiation processes, newly independent States may view global treaties as non-representative of their voices and interests (Abi-Saab, 1962).

Post-colonial States may seek to assert their sovereignty and interests in pre and post-colonization and maritime affairs (Castellino, 2000). Their participation in past global governance discussions reflects a desire for recognition and agency in shaping policies that affect their territories and underscores the ongoing struggle for self-determination and sovereignty. As territories navigate these intricate dynamics, their engagement in international Agreements like the BBNJ becomes a matter of environmental concern and a platform for asserting their rights and aspirations concerning the global commons. Therefore, the extent to which dependent States and territories are included and represented in global Agreements will likely shape the narrative of global commons governance in the coming years. Understanding the nuanced dynamics of colonial history and its implications for participation can inform strategies for more inclusive participation, address historical inequalities and promote equitable decision-making processes in international fora (Sokolova, 2023). Efforts to support capacity-building and technical assistance for young States can help address these barriers and promote more inclusive participation

5.1.2(d) Non-state actors

Beyond state entities, non-state actors—including NGOs, international organisations (IOs), academic institutions, and private-sector entities—play pivotal roles in enhancing the legitimacy, transparency, and effectiveness of governance processes, contributing perspectives that state actors may overlook (Hughes and Vadrot, 2023; Tessnow-von Wysocki and Vadrot, 2020). Inclusion helps foster broader compliance and ownership of global agreements by addressing diverse interests and perspectives (Gupta and Mason, 2014). Fostering an inclusive environment where as many voices as possible are heard and valued is crucial for addressing complex environmental challenges (Bordner, 2022). **Therefore, understanding these actors is crucial to the central aim of this thesis, which is to determine who contributes to the biodiversity discourse**.

In recent years, these non-state actors, also known as observers, have seen growing participation in international processes, including BBNJ processes, employing diverse strategies to contribute to international processes (Blasiak et al., 2017; Langlet and Vadrot, 2023a, 2023b). For example, NGOs and IOs use their expertise and advocacy to influence policy. They are critical in highlighting inconsistencies, gaps, or shortcomings in proposed Agreements (Willetts, 2000). These organisations bridge gaps in representation, often advocating for minority groups, non-human entities, and other underrepresented interests that country delegations may fail to include (Luoma-aho and Paloviita, 2010). Indigenous scholars and animal activists have long criticised the social Darwinist thinking that treats minority groups and non-human animals together as the *other*, ignoring their rights and voices in domestic and international discussions (King, 2019). NGOs and IOs tend to bridge this gap by bringing critical perspectives from their varying mission and objectives (**Appendix Table 18**). Through their influence, these organisations deepen the discourse on biodiversity by highlighting varied priorities within international negotiations. The UN recognises these organisations as crucial for consultative purposes and partnerships for governments, but they are also crucial for inclusive participation (Willetts, 2000).

While some organisations have a solid regional and or national focus (Smith and Wiest, 2005), others tend to have broader objectives operating globally. Those operating globally are often more open to diverse groups, arguably adding depth to the discussions and allowing more inclusivity in their perspectives and composition during international negotiations. For instance, I participated as an observer through the International Studies Association after several failed

attempts to get credentials through country delegations. It is crucial to emphasise that individuals cannot participate in UN processes besides country delegations or through registered organisations with observer or consultative status. The operational location of these organisations becomes a critical factor in allowing the participation of various stakeholders (see 2.5.2. BBNJ negotiations: Multilateral settings as study sites).

Despite their influential input, these organisations lack direct decision-making power and possess varying degrees of rights to participate, speak or influence international negotiations. Furthermore, the direct cooperation between NGOs or IOs with some governments is sometimes seen with suspicion by other governments or agencies (Grigorescu, 2007). Moreover, the common belief that domestic and transnational organisations or groups inherently represent others' interests or are better at solving environmental and developmental problems than States can be misleading. (Lipschutz, 1996; Raustiala, 1997b). These organisations are also shaped by the ideas, cultures, and systems they emerge from or work within, which can influence their decisions and effectiveness just like it does with governments (Nay, 2012; Tallberg et al., 2018). By analysing their perspectives, one can tell which voices are included or sidelined, thus aligning with the thesis's central aim concerning the intended beneficiaries of these agreements and the underlying dynamics of stakeholder influence.

Another crucial factor for these non-state actors is that they carry varying levels of influence and legitimacy informed by various factors, including their location (see discussion 5.3.6. Observers and institutional participation) and legitimacy. The acceptance of their interventions in international negotiations is often contingent on their perceived legitimacy and problem-solving capacity (Take, 2012). Legitimacy can be established through advocacy and lobbying efforts, as well as an institution's capacity to mobilise resources and secure funding (Nelson, 1997; Zaum, 2013). Other organisations obtain their legitimacy through scientific expertise (Coicaud, 2001; Dellmuth et al., 2019; Zapp, 2021), which will be the focus of the next section.

5.1.2(e) Scientists, science, and the other knowledge they need

The UN recognises various knowledge systems for addressing global environmental issues. Knowledge is a precondition for appropriation of nature and management actions. However, no knowledge is produced objectively but consistently situated in context by a specific set of people and not others (Vadrot, 2016). The sources and creators of knowledge play a critical role in international processes, with science as the primary framework for discussions. As a result,

scientists and their work are considered a key stakeholder group within the epistemic community (Tessnow-von Wysocki and Vadrot, 2020, 2024). However, how science is selected and legitimised for use in biodiversity discourses can be questionable, as this thesis primarily explores in Chapter 4 and will elaborate shortly.

A typical example is the UN Decade for Ocean Science, guided by the slogan The science we need for the ocean we want (UNESCO, 2021), emphasising the importance of scientific research in achieving the goals set for the decade (Andrea et al., 2023; Polejack, 2023b). However, the decade's slogan has plural provocations (Sammler and Peters, 2023), raising questions about whose scientific contributions are valued and prioritised, illustrating the political dimension of science within biodiversity discourses. One wonders who is the "we" in these contexts and whose science is needed, especially since the UNESCO's Intergovernmental Oceanographic Commission (IOC) running the decade has 150 Member States (https://www.ioc.unesco.org/en/ioc-about-members-States), which is 40 fewer than the total number of United Nations members (https://www.un.org/en/about-us/member-States). This suggests that not all countries fully represent or subscribe to this initiative, raising concerns about whose voices and needs should be prioritised.

Returning to science, the initiative outlines ten significant challenges defining what the ocean "we" want to look like. These challenges include understanding and reducing marine pollution, protecting and restoring ecosystems, ensuring sustainable food sources from the ocean, developing a sustainable ocean economy, finding solutions to climate change, increasing resilience to ocean-related hazards, expanding ocean observation systems, creating digital representations of the ocean, providing access to skills and technology, and fundamentally changing how humanity interacts with the ocean. These are ambitious and necessary goals, but they also prompt us to ask: what specific scientific research is required to meet these challenges? Experts can have different views on what kind of science is needed (Andrea et al., 2023), but the contexts BBNJ reveal varying objectives from different countries (see Chapters 6 and 7), raising concerns about whether the scientific agenda within the international agenda can genuinely reflect the needs and priorities of all stakeholders, especially those from underrepresented or less privileged groups, including non-human actors.

The UN body responsible for organising international processes in this context, the BBNJ Agreement by DOALOS, solicits scientists from various countries and expert groups (Tessnow-von Wysocki and Vadrot, 2024). These form the ad hoc group of experts that inform which

elements to include in the first draft text presented for the negotiation based on consensus (Buzan, 1981; Regan et al., 2006). Organisations such as FAO, WWF and IUCN, boasting scientific expertise, successfully represent and influence textual proposals during both these informal meetings and actual negotiation processes (Humphreys, 2004, 2004; Rosendal, 2000; Willetts, 2000), including for the BBNJ Agreement (see 5.2. Analysis of inclusivity in BBNJ). Furthermore, involved scientists contribute research findings and recommendations during drafting and directly support various delegations with expertise and credibility (Rietig, 2014; Sarkki et al., 2014). Regarding expertise and country of origin, inclusivity has become a critical consideration of international processes (Yamineva, 2017).

Despite science's recognised role in ocean governance, including in the formulation of law (Kingsbury, 2009; Orangias, 2022), its perceived neutrality and the underrepresentation of non-Western perspectives have created a growing distrust among those who do not feel their perspective are included (Iñiguez et al., 2012; Polejack, 2023a; Polejack, 2023b). For instance, the BBNJ negotiations have spotlighted the limited representation of the Global South scholarship (Polejack et al., 2022), raising concerns about potential biases within biodiversity discourses that the BBNJ claims to address. Additionally, there is a lack of diversity among institutions contributing to BBNJ literature and insufficient information on the origins of various authors' perspectives, such as those from interviews during negotiations (see 5.2. Analysis of inclusivity in BBNJ). Some scholars perceive the dominance of Western countries in these discourses as an extension of colonial legacies that dictate the superiority of specific knowledge systems (Polejack et al., 2022; Vadrot, 2020).

The nuanced perspectives from non-Western actors, traditional knowledge from local and Indigenous communities, and oral or unwritten perspectives are often not discussed in multilateral settings (Vadrot, 2020), and after that, in literature. The contributions of these stakeholders are frequently treated as anecdotal or supplementary rather than recognised as equally valid perspectives alongside Western scientific views (Coombe, 2001). This dynamic creates an environment where some participants in international negotiations feel like their knowledge systems are undervalued (Vadrot, 2020). As highlighted by a delegate from a Pacific small island state during the BBNJ negotiations:

> *It is difficult to engage in a setting where one's knowledge system automatically disadvantages the other. Our ideas, values, and approach to the marine environment are not always in tandem with Western values.*

> *Therefore, in my analysis, I extend inclusivity to include the scientific discourse on the BBNJ contexts, highlighting institutional affiliations and topical focus as a critical indicator of inclusivity in global governance* (Interview with Delegate from a Pacific Island State, 2023).

While scholars emphasise the importance of science-policy interfaces and unbiased research, challenges persist in recognising the diversity of perspectives besides that produced by Western scientific approaches (Fedoroff, 2009; Muhl et al., 2023). Scholars argue that science is inherently political, influencing policy decisions and favouring the Global North over the South (Haas and Stevens, 2015). The best available science is also questioned, with accusations of biased metrics (Rynes et al., 2018) and sometimes bad science being used to push specific environmental narratives (Broome et al., 2018; Friedrichs, 2011; Taylor et al., 2023). Additionally, the best available science often relies on technological advancements, which are more common in high-income nations than in low-income countries. This focus can overlook other types of applied science and introduce political questions into the science itself (Acharya and Pathak, 2019). The Cold War era exemplifies this connection between science and politics, where military and oceanographers worked closely (Robinson, 2021). As seemingly neutral tools, maps were frequently employed in warfare and political contexts (Gray et al., 2020). Additionally, some scientific concepts, for instance, the Maximum Sustainable Yield (MSY) in fisheries, originated as political ideas solely dependent on political negotiations, with science used to legitimise them (Finley and Oreskes, 2013; Miles, 1997). This reveals a need to question whose perspectives and knowledge systems are validated within these processes, thus supporting the thesis's aim to explore how biodiversity discourse varies across social, economic, and geographic contexts.

Through analysing which stakeholders participated in the BBNJ negotiations, this thesis lays the foundation for understanding which stakeholders get interested in these global discussions and potentially why they potentially obtain the influence they have in these discussions. By analysing these participation dynamics, this thesis sheds light on the patterns and factors influencing stakeholder engagement in biodiversity governance. This examination contributes to a deeper understanding of the structural and political elements that shape international biodiversity discourses, offering insights into how these dynamics inform current and future environmental agreements. Thus, the chapter connects these complex participation patterns to

the central question of how different groups understand, measure, and act on biodiversity and for whose benefit these actions are undertaken.

The list of all stakeholder groups and institutions in the context of global commons governance is difficult to exhaust. For instance, the private sector and industry, with their significant impact on environmental and economic dynamics, are also crucial stakeholders to consider in the governance of ABNJ (Corell and Betsill, 2017; Haufler, 2001). Like other non-state actors, many assume an observer role with varying degrees of engagement in these processes. Moreover, observers were generally excluded from many informal discussions during the BBNJ negotiation processes, including the final stages of negotiations at the last Intergovernmental Conference (IGC) (Mendenhall et al., 2023). Therefore, the stakeholder groups selected here are used as a critical framework and proxy to discuss inclusivity in global commons governance within the BBNJ contexts.

Building upon this background, I will now highlight whether the BBNJ negotiations are emblematic of a broader pattern in global commons governance and whether they diverge (positively or negatively) from existing norms of UN negotiations.

5.2. Analysis of inclusivity in BBNJ contexts

Despite ongoing discussions on the need for inclusivity in global commons governance, such as biodiversity in areas beyond national jurisdiction (ABNJ) (Espinosa, 2023; Ostrom, 1990; Ostrom et al., 1999b), empirical evidence supporting exclusion claims remains limited. Critical analyses that address the nuanced social, economic, political, and historical factors influencing participation trends in these processes are scarce (Blasiak et al., 2017)One barrier is the antiquated nature of multilateral frameworks, including the United Nations Convention on the Law of the Sea (UNCLOS) and the Outer Space Treaty (OST, 1967). These frameworks lack data on the inclusivity of negotiations at their inception, complicating efforts to assess whether modern governance frameworks sufficiently engage diverse stakeholders. The BBNJ negotiations offer an opportunity to re-evaluate these discussions, providing a contemporary context in which to assess stakeholder inclusivity and participation (Hughes and Vadrot, 2023; Koulouri et al., 2019; Langlet and Vadrot, 2023b; Mautner-markhof, 2019). Understanding who participates, how they influence discourse, and whose interests are represented is essential for realising biodiversity's full scope in international governance.

To address these gaps, this chapter employs the Methods outlined in Chapter 3 to analyse stakeholder representation in the BBNJ negotiations. The chapter identifies critical stakeholders by examining participant lists provided by the Division for Ocean Affairs and the Law of the Sea (DOALOS) following each negotiation round. It assesses factors that impact both participation and meaningful engagement. This analysis draws on delegation statements, interviews, and relevant governance literature to illuminate BBNJ processes' diverse perspectives. By scrutinising how and why certain actors engage in these discussions, this study connects to the thesis's broader aim: understanding biodiversity as a discourse encompassing various priorities, agendas, and knowledge systems across diverse groups. These insights establish a foundation for exploring how biodiversity's operationalisation aligns with or diverges from its many advocates' objectives.

Through quantitative and qualitative analysis of participation patterns, this section highlights the dynamics that shape the inclusion of represented and underrepresented voices in BBNJ negotiations. Examining these patterns sheds light on the mechanics of international negotiations, particularly on the role of active, inclusive engagement in shaping approaches to managing global biodiversity commons. This inquiry directly relates to the thesis's aim by revealing how inclusivity, or lack thereof, in biodiversity governance impacts what is measured, valued, and protected—and for whom these actions are intended. As countries navigate complex questions of resource stewardship, this analysis underscores the broader implications for future treaties, ultimately enhancing our understanding of how biodiversity governance frameworks might evolve toward more inclusive and practical approaches.

Finally, as policymakers, advocates, and stakeholders evaluate current levels of engagement, they gain critical insights that can inform strategies for fostering inclusivity and transparency in environmental decision-making. Such a perspective on inclusivity influences current BBNJ negotiations and sets a precedent for biodiversity governance in future international agreements. This alignment with the thesis's objectives demonstrates that an inclusive understanding of biodiversity governance can shape more equitable and representative management practices, ensuring biodiversity conservation serves the broadest possible range of interests.

5.2.1. The limitations of analysing inclusivity in BBNJ contexts

From the outset of informal negotiations, which set the stage for formal Intergovernmental Conferences (IGCs), access and transparency issues arose, impacting inclusivity and influence in the BBNJ treaty discussion. Preparatory committees (PrepComs) responsible for drafting

early agendas often face scrutiny over restricted access to documentation and limited opportunities for broader participation (Novak, 2013). Working groups often operate behind closed doors, further limiting transparency in many countries (Naurin and Reh, 2018; Odell, 2009; Stasavage, 2004). The constraints imposed on access during preparatory phases raise questions about who can influence these critical discussions on marine biodiversity and for whose benefit these frameworks are ultimately shaped

In formal negotiations, access is restricted further, as participation requires affiliation with national delegations or observer status, often limited to UN-recognized organisations. This restricted access reflects a broader trend where negotiation transparency is compromised, particularly affecting those who may lack direct representation in these critical discussions. Limited access shapes which stakeholders can participate in forming biodiversity frameworks (Lanz, 2011; Reed, 2008), influencing the discourse by favouring groups or individuals with the resources and permissions to be present (see 2.5.2. BBNJ negotiations: Multilateral settings as study sites). As such, these access limitations underscore the need to examine biodiversity as a discourse that is, in practice, shaped by select voices, reinforcing the need for diverse engagement.

Participant lists published by the UN offer limited insight into stakeholder representation, as they do not differentiate between registered attendees and those actively participating. Many organisations or delegations register members for attendance, even if those individuals do not ultimately participate in the proceedings. The distinction is, therefore, crucial in understanding whose voices are genuinely part of the conversation. By moving beyond essential participant lists and examining the statements made by non-state actors and delegates during sessions, this chapter explores who significantly contributes to the BBNJ discourse on biodiversity and the interests they represent. Such a nuanced analysis highlights that biodiversity as a discourse—and thus our understanding of it—is partly shaped by the differential capacities of groups to engage, speak, and influence negotiations

However, even these approaches have limitations. Some institutions rely on a single delegate or a few representatives to deliver prepared statements, after which they may be absent for the remainder of the proceedings—a pattern observed during the BBNJ negotiations. Interviews and direct observations, as employed in this study, offer valuable insights into the dynamics of engagement and the capacity of different actors to influence the negotiations. Even so, the assumption that presence in negotiation rooms equates to influence is also problematic.

Scholars like Betsill and Corell (2001) argue that mere physical presence does not guarantee meaningful engagement or influence over outcomes. Similarly, Blasiak et al. (2017) contend that while active participation, such as delivering statements or taking the floor, may suggest engagement, it does not necessarily indicate inclusivity or significant contributions to the process. Simply giving a statement does not equate to substantive influence, and participation alone does not reflect the depth of contribution, whether active or passive (Blasiak et al., 2017; Sebuliba, 2024). This disconnect between attendance and actual impact illustrates how biodiversity is not a static concept that can easily be traced to one source.

Therefore, no single approach, such as analysing participant lists or reviewing statements, fully captures the complexity of inclusivity within BBNJ negotiations. By integrating multiple perspectives—quantitative data on delegates, qualitative interviews, and literature insights—patterns emerge that reveal how different groups conceptualise biodiversity and prioritise their agendas. This analysis draws on these various sources to construct a nuanced understanding of biodiversity as a discourse shaped by participation levels and other factors.

A critical point to note here is that despite the limitations of official documents like participant lists or delegation statements, these tools remain essential for identifying which stakeholder groups are aware of and involved in the negotiations. They offer a baseline for tracking engagement and can be correlated with other observed participation patterns. Moreover, in the absence of other detailed records, these official sources, supported by perspectives from relevant literature, become crucial evidence for future analyses of inclusivity.

The following sections will present the results and discuss the various dimensions of inclusivity analysed within the BBNJ contexts, first focusing on the participant lists.

5.3. Country participation as a sign of inclusivity

In the on-site negotiations of the BBNJ Agreement, state delegates held a dominant presence, with certain nations represented more robustly than others. Analysis reveals a significant likelihood (68%, representing 172 of 252 countries and territories) of a state registering at least one participant in the BBNJ Intergovernmental Conferences (IGCs). Conversely, some countries and territories (32%, or 80 entities, including 28 sovereign states and 52 overseas or disputed territories) did not register participants (Table 6 and

Table **7**). The high probability of participation can be attributed to the widespread recognition of shared responsibility for the global oceans in ABNJ. As a delegate noted, “We are getting

close to the finish line...guided by our joint responsibility to the global ocean...we will very soon be able to conclude the ambitious treaty our future generations demand and deserve" (Government of Costa Rica, 2018). Similar sentiments were echoed throughout the negotiations concerning "our common responsibility" to protect and sustainably use marine living resources for the benefit of all humankind. (H.E. Mr. V. Va'inga Tone, Permanent Representative of the Kingdom of Tonga, 2018). However, the disparity in representation, where some countries did not attend, reflects broader dynamics in international environmental policy. While many states recognise a shared responsibility for ocean stewardship in ABNJ, other considerations or limitations may take precedence.

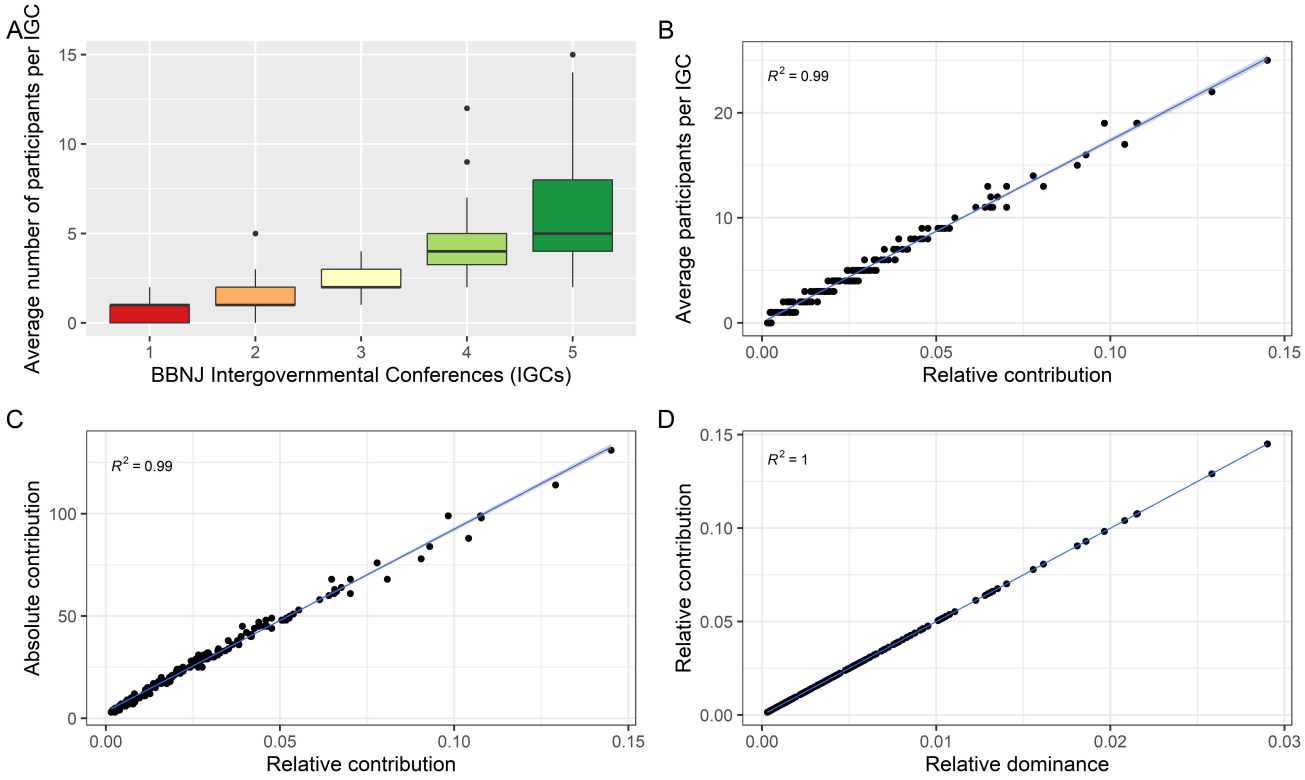


Figure 5.1: Box plots showing average participation per IGC (A) and scatter plots showing relative contribution compared to average participation per IGC (B) and absolute contribution (C), as well as relative contribution against relative dominance.

For many delegations, biodiversity concerns emerged as a driving factor in the BBNJ discussions, particularly in safeguarding marine ecosystems for future generations. A participant interviewed during the IGCs in 2023 articulated this view, stating, "Our presence here is to ensure that marine biodiversity is safeguarded for future generations (Author interview notes during BBNJ IGCs, 2022/2023). Such perspectives suggest that, beyond a

shared obligation to the ABNJ, biodiversity discourses are recognised as essential drivers for global environmental responsibility. This aligns with the thesis's aim of dissecting the diverse values and motivations that underpin biodiversity discourses, as state actions are linked directly with the legacy left to future generations. By unpacking these motivations, we can see how biodiversity has become central to discussions about shared marine responsibility, as will be explored further in Chapter 6 on Tracing Marine Biodiversity in the BBNJ dis-Agreement.

The participant data also indicates an increasing trend in delegate numbers across IGCs, with more countries sending larger delegations as negotiations progressed (**Figure 5.1A** and Table 6; see Appendix Table 19). This escalation suggests growing awareness or urgency around biodiversity and marine protection issues, primarily as negotiation milestones draw closer. However, differences in participation levels remained stark: the United States, for instance, averaged 25 participants per IGC, with a peak of 40 in the final session, while many low-income countries managed to send just a single delegate (see

Table **7**). Notably, most of the countries with a high number of participants (more than 10) were either members of the Organisation for Economic Co-operation and Development (OECD) or highly industrialised countries (HICs), with Tanzania, which had 19 participants being a notable exception (

Table **7**). This disparity raises critical questions about resource access, equitable representation, and the inclusiveness of the global biodiversity discourse, whose implications are discussed in the subsequent chapters.

Adequate participation is crucial in negotiations like the BBNJ, which often extend beyond the scheduled time and sometimes involve multiple parallel informal sessions. Those without enough delegates were left fatigued and unable to participate effectively as the negotiations proceeded (Vadrot, 2020). Although many negotiating teams rely on support from teams back home, physical presence is vital for finalising critical aspects. This was partly observed in the final BBNJ IGC (resumed fifth IGC), which went beyond the usual negotiation time through the night into the following day, leaving small delegations weary and unable to cope with the pressure (Mendenhall et al., 2023). Comments like, "We just want to get this done", could be heard in the corridors from both state delegates and observers (Author observations during the BBNJ IGCs, 2022/2023).

Further analysis reveals a strong correlation (R^2=0.99) between a country's absolute and relative delegate contributions, suggesting that higher delegate numbers may predict a country's relative impact on the proceedings. While this is a statistical assumption, countries with more delegates appeared to play a more dominant role in negotiation dynamics, measured by their frequency of statements, objections, or textual proposals. Consequently, these findings emphasise that while biodiversity protection is a shared goal, the power to shape its governance remains unevenly distributed—a tension this thesis examines in its broader exploration of biodiversity as a global discourse. The following section will delve into the individual categories analysed to deepen the analysis, beginning with the World Bank regional groupings. The tables immediately following this section relate to the above exploration and will be consulted in further sections.

Table 6: The likelihood that countries in a given IGC had more participants than another IGC (A) or that a given IGC had the same number of participants as another IGC (B).

A

	1>	2>	3>	4>	5>
1		0.37	0.35	0.47	0.68
2	0.25		0.35	0.43	0.67
3	0.29	0.29		0.68	0.68
4	0.26	0.32	0.25		0.65
5	0.16	0.19	0.23	0.15	

B

	1=	2=	3=	4=
1				
2	0.38			
3	0.37	0.37		
4	0.27	0.26	0.09	
5	0.16	0.14	0.09	0.21

Table 7: Average number of registered participants per country across the five BBNJ Intergovernmental Conference (IGC) sessions from 2018 to 2023

Average registrations	**Country**
Very high (average 16-25)	25 participants: USA 22 participants: Japan, 19 **participants:** Indonesia, Korea Republic, Tanzania 17 **participants:** Philippines 16 participants: Germany
High (average 10-15)	15 participants: China 14 participants: France 13 **participants:** Brazil, Switzerland, Türkiye, 12 **participants:** Nigeria, Vietnam 11 **participants:** New Zealand, Russian Federation, Saudi Arabia, Singapore, United Kingdom 10 participants: Norway

Average registrations	Country
Medium (average 6-9)	9 **participants**: Belgium, Canada, Colombia, Costa Rica, Fiji, Kenya, Netherlands, Papua New Guinea, Spain 8 **participants:** Bahamas, Chile, Denmark, Palau, Samoa, Sweden, Tonga 7 **participants:** Australia, Ghana, Maldives, Mexico, Micronesia, Peru, Portugal, Thailand 6 **participants:** Belize, Ecuador, El Salvador, Holy see, Iceland, Ireland, Kiribati, Nepal, Slovakia
Low (average 1-5)	**5 participants:** Argentina, Bangladesh, Botswana, Bulgaria, Cuba, Estonia, Finland, Greece, India, Iran, Italy, Madagascar, Malta, Mauritius, Morocco, Panama, Paraguay, Saint Vincent and the Grenadines, Seychelles, Sri Lanka, Togo, Trinidad and Tobago, Uruguay, Zimbabwe **4 participants:** Barbados, Côte d'Ivoire, Croatia, Cyprus, Djibouti, Egypt, Gabon, Guatemala, Honduras, Hungary, Jamaica, Malaysia, Marshall Islands, Mozambique, Nauru, Nicaragua, Oman, Romania, Senegal, Sierra Leone, Slovenia, Timor-Leste, Tuvalu, Venezuela **3 participants:** Algeria, Angola, Austria, Brunei Darussalam, Burkina Faso, Czechia, Eritrea, French Polynesia, Gambia, Guyana, Israel, Lao PDR, Lithuania, Monaco, Pakistan, Poland, Solomon Islands, United Arab Emirates **2 participants:** Antigua and Barbuda, Bolivia, Congo Democratic Republic, Dominican Republic, Grenada, Guinea, Haiti, Iraq, Latvia, Liberia, Luxembourg, Mali, Mongolia, Palestine, Saint Lucia, South Africa, Sudan, Suriname, Uganda, Vanuatu, Yemen **1 participant:** Azerbaijan, Belarus, Bhutan, Cabo Verde, Cambodia, Cameroon, Chad, Congo Republic, Equatorial Guinea, Eswatini, Ethiopia, Georgia, Kuwait, Lebanon, Liechtenstein, Malawi, Mauritania, Montenegro, Myanmar, Namibia, Saint Kitts and Nevis, Serbia, Syrian Arab Republic, Tunisia

5.3.1. World Bank regional groupings and income categories

The analysis of state participation patterns in BBNJ negotiations reveals that income level is a primary factor influencing involvement. Using Principal Component Analysis (PCA) on components such as participant numbers, coastal proximity, maritime presence, treaty ratifications, and negotiating blocs (see methods), income emerged as a critical determinant of participation, with distinct clusters formed along income lines (Figure 5.2 and Figure 5.3). This analysis is grounded in PCA's capacity to reduce complex data to essential patterns (Jolliffe and Cadima, 2016). It shows that higher-income countries are typically more involved, with

many connected through a single intermediary in a spanning tree (Figure 5.2). The clustering underscores income as a decisive factor for active engagement in biodiversity and ocean governance discourses (Figure 5.3).

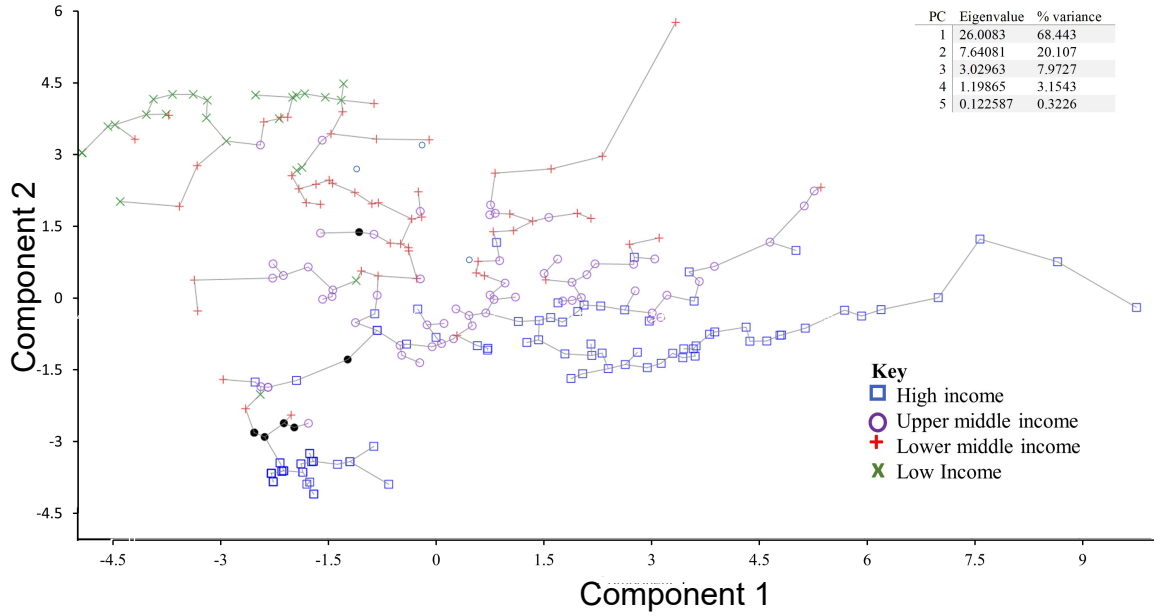


Figure 5.2: Spanning tree from Principal Components Analysis showing relationships between States and their connections through various nodes. In the set are principle component eigenvalues and % variances. Refer to Figure

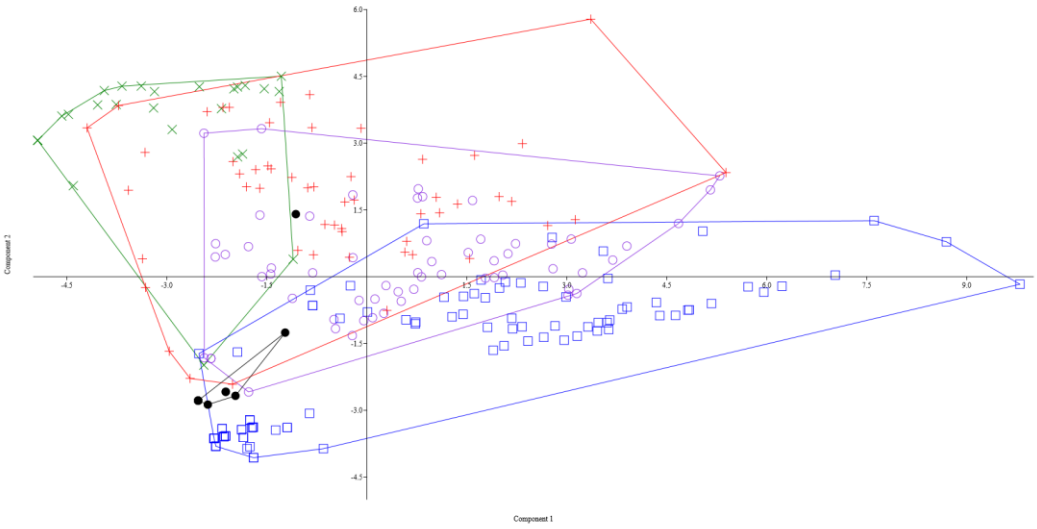
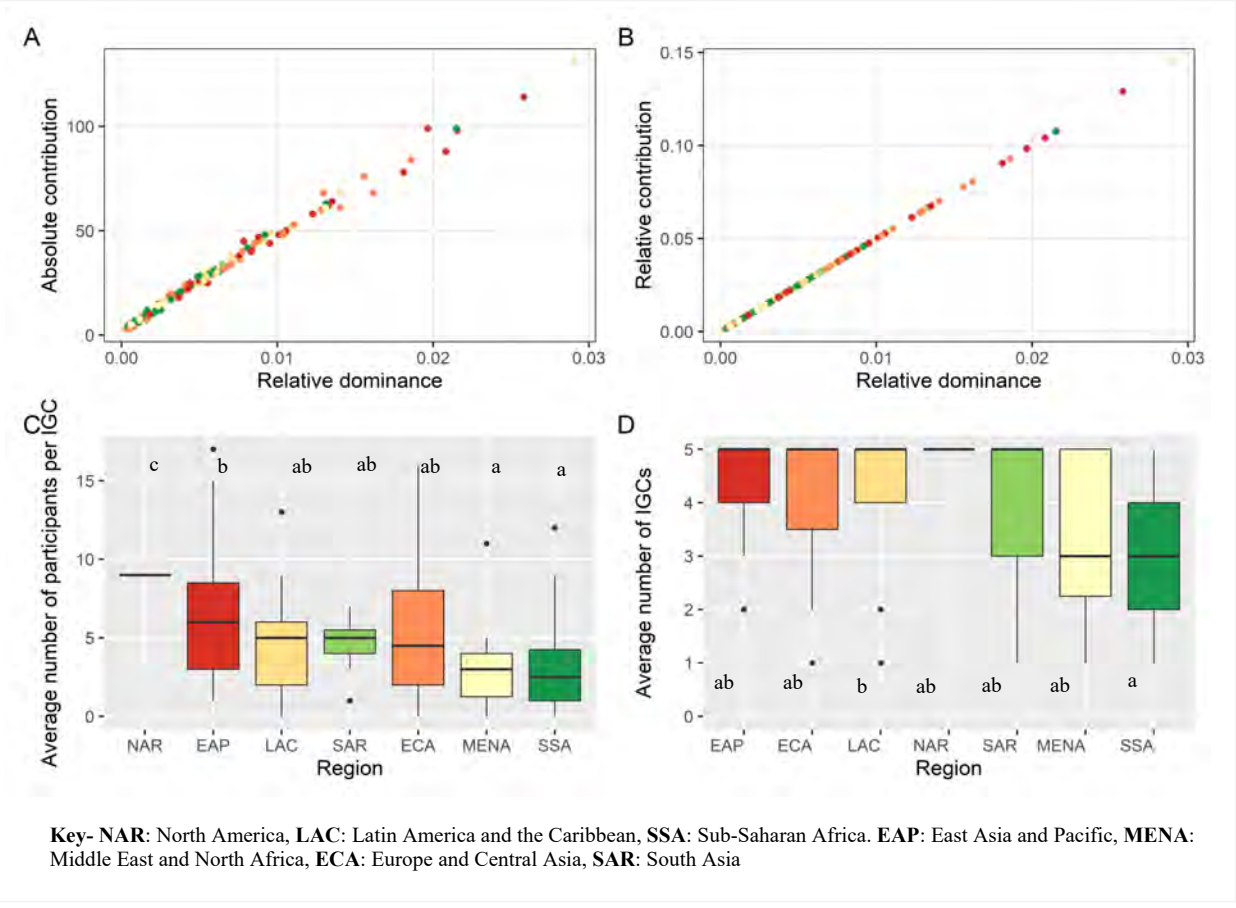


Figure 5.3: PCA showing convex hulls showing various clusters of countries, High income (blue), upper middle income (purple)t, Low, middle income (red) and low income (green)

In comparing regions, those with higher income levels, such as North America (NAR) and Europe and Central Asia (ECA), demonstrate consistently higher representation across all IGCs (**Figure 5.4**). For example, North America's participation is dominated by the U.S. and Canada, while Bermuda remains absent, highlighting disparities in representation within the same region (**Appendix Table 19**). In contrast, regions with lower income levels, like Sub-Saharan Africa (SSA), exhibit significantly lower participation rates, with fewer countries consistently represented across IGCs (**Figure 5.4**; **Appendix Table 19**).Thus, income can influence the diversity and volume of perspectives in BBNJ discourse and affect participation likelihood (Table 9).



Key- NAR: North America, **LAC**: Latin America and the Caribbean, **SSA**: Sub-Saharan Africa. **EAP**: East Asia and Pacific, **MENA**: Middle East and North Africa, **ECA**: Europe and Central Asia, **SAR**: South Asia

Figure 5.4: Relative dominance of various World Bank regional groups is shown in terms of absolute contribution (A) and relative contribution (B). The average number of participants per IGC (C) and the average number of IGCs (D) are also shown. The small letters (a, b, c) indicate groups that are significantly similar or different, as determined by the Turkey post-hoc test ($p < 0.05$).

The analysis shows that 33.1% of participating states are high-income (HI), 29.6% are low- and middle-income (LMI), 25.6% are upper-middle-income (UMI), and only 10.4% are low-income (LI). Higher-income states generally attend more IGCs and have a higher average participant count (seven per IGC), while low-income states average just two delegates per IGC (**Figure 5.5** and Table 9). There was no significant difference in participation levels between the HI and UMI groups (Table 9). Madagascar was the only LI country with an average of at least five participants across the IGCs (see Appendix for detailed information on each country and income category). This underscores income as a critical yet not standalone factor influencing participation.

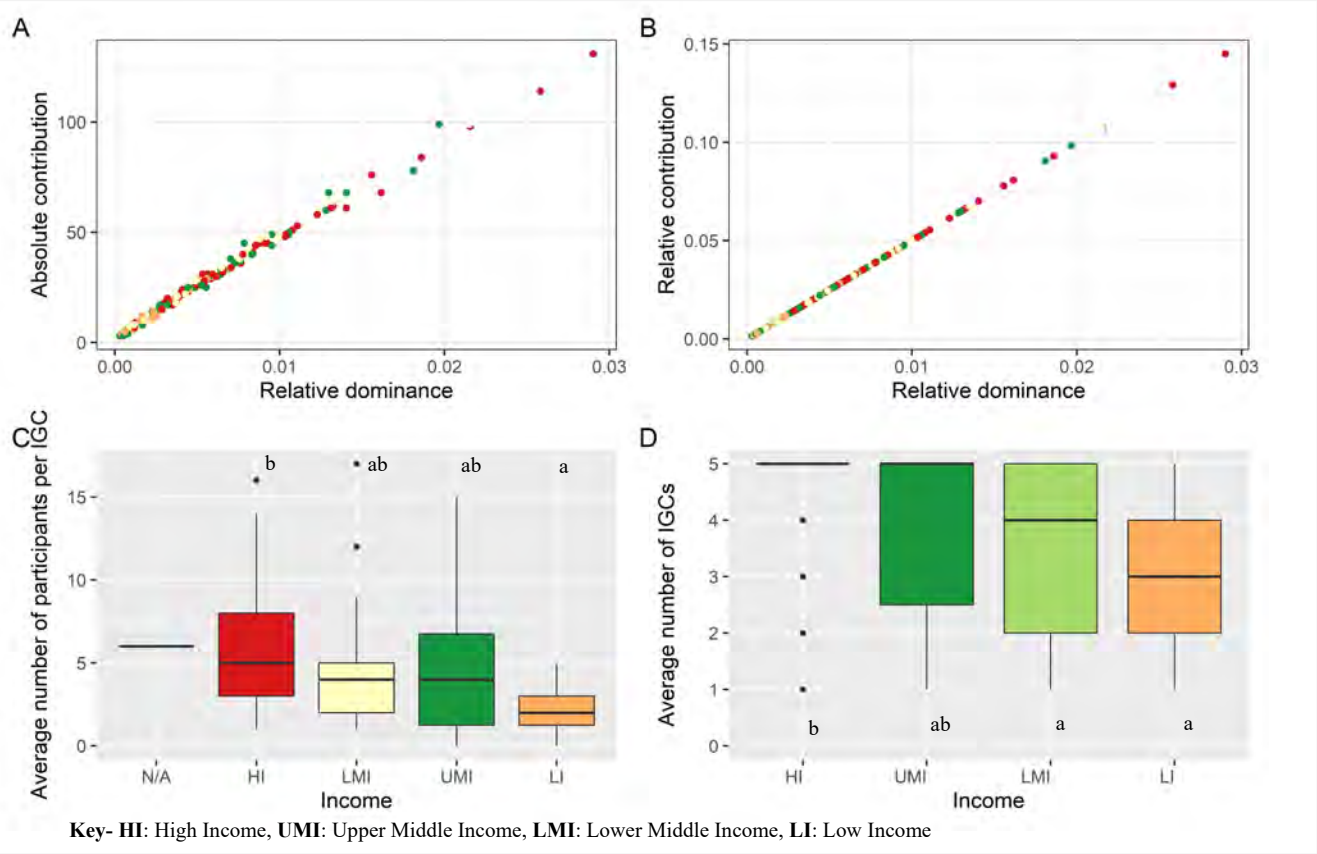


Figure 5.5: Relative dominance of various World Bank income groups is shown in terms of absolute contribution (A) and relative contribution (B). The average number of participants per IGC (C) and the average number of IGCs (D) are also shown. The small letters (a, b, c) indicate groups that are significantly similar or different, as determined by the Turkey post-hoc test ($p < 0.05$)

Although income is significant, it interacts with other factors, such as geographic and political affiliations, further shaping participation dynamics (see Figure 5.2 and Figure 5.3). For instance, many low-income countries are landlocked and part of the Group of 77 and China

(G77), a significant negotiation bloc in BBNJ talks. The G77, primarily composed of African and Global South nations, forms its distinct cluster, indicating that political alliances can also drive participation, albeit interwoven with income-related challenges (Appendix Table 19). Consequently, distinguishing the impact of income from other factors presents challenges. **Figure 5.6** below shows the relationships of some categories analysed from the different state dimensions; **the following sections will discuss the participation results of the other categories besides income levels. However, these factors should not be viewed as operating independently.**

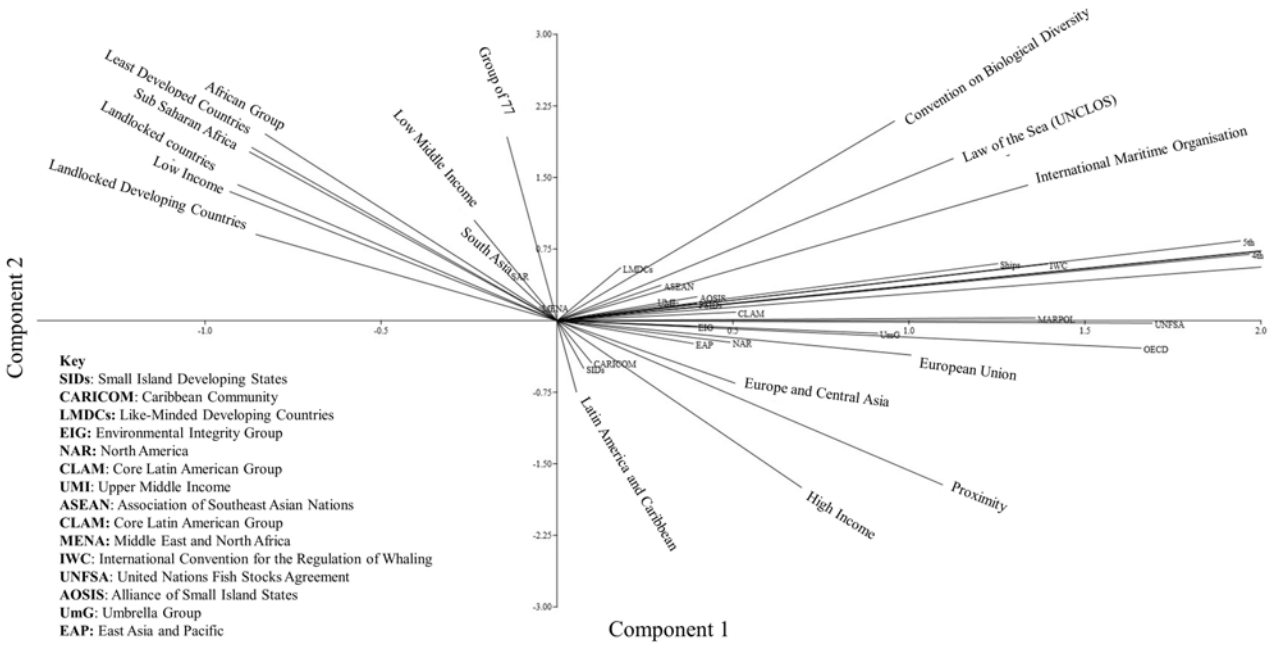
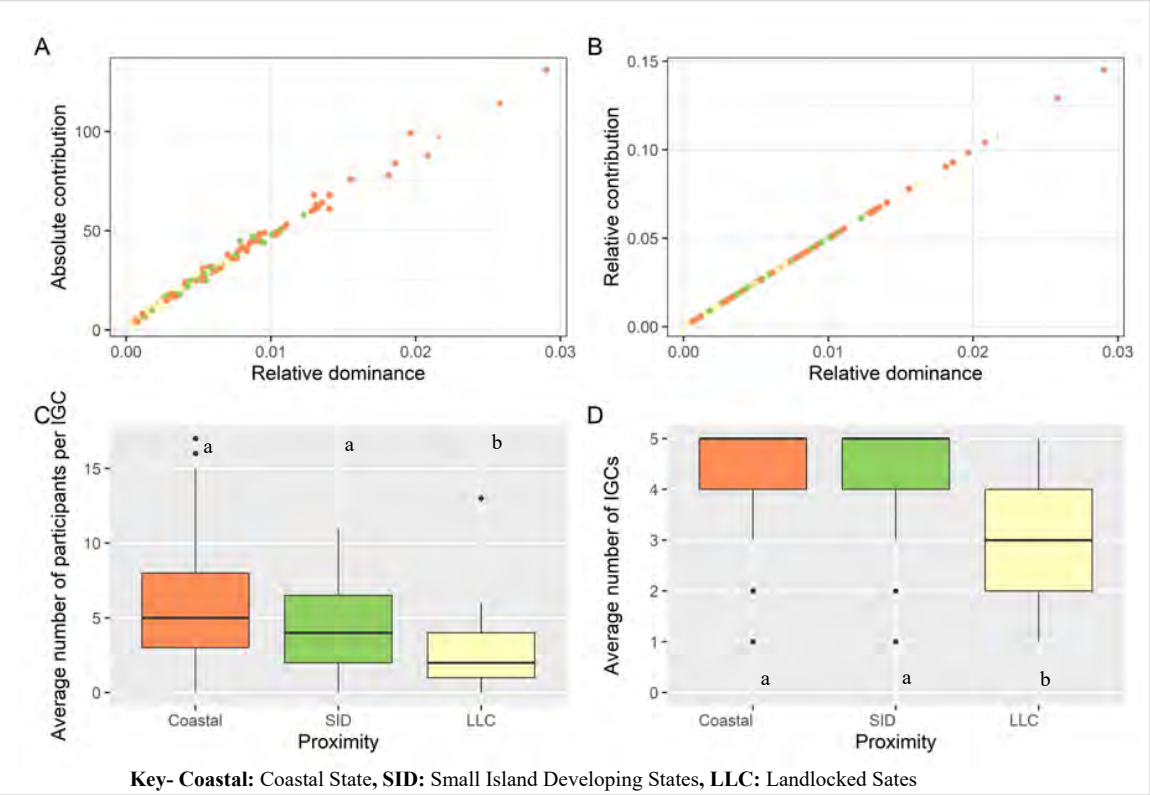


Figure 5.6: PCA biplot showing the relationships between various categories

5.3.2. Geographical proximity to the coast

The results indicate that coastal States have a significantly higher likelihood of participating in BBNJ IGCs, both in terms of the number of conferences attended and the number of delegates per conference (mean = 5.5, SE = 0.36), compared to landlocked countries (mean = 2.9, SE = 0.80) (Figure 5.7 and Table 9). Landlocked developing countries (LLDCs) demonstrated

notably lower levels of participation and accounted for a substantial proportion of non-participating sovereign States (Table 9). Even when Switzerland, a high-income landlocked country, averaged 13 participants per IGC, this outlier did not skew the overall results.



Key- Coastal: Coastal State**, SID:** Small Island Developing States**, LLC:** Landlocked Sates

Figure 5.7: Relative dominance of proximity to the ocean is shown in terms of absolute contribution (A) and relative contribution (B) for coastal States (including Small Island States (SIDS)), SIDs alone and landlocked countries (LLC). The average number of participants per IGC (C) and the average number of IGCs (D) are also shown. The small letters (a, b, c) indicate groups that are significantly similar or different, as determined by the Turkey post-hoc test ($p < 0.05$).

Proximity to the ocean appears to influence LLDCs' engagement in ocean governance, likely due to historical and socio-economic factors. International law supports these disparities, such as the limitations imposed on LLCs' rights in ocean governance under the UNCLOS regime, which upholds coastal States exclusive rights within their Exclusive Economic Zones (EEZs), creeping them in ABNJ (Sebuliba, 2024). The involvement of LLDCs is vital for comprehending the inland States' viewpoints on ocean governance. As I have argued in Sebuliba (2024), unlike previous international ocean discussions, the BBNJ Agreement focuses on ABNJ, aiming to create a more equitable platform for all nations, particularly those

economically and geographically disadvantaged, such as LLDCs. Although the ABNJ is collectively owned, LLDCs have a distinct perspective due to their developmental needs, solidarity with other developing countries, and limited ability to benefit economically from these regions (see further discussion in Chapter 8.4. The BBNJ-landlocked case). Contrastingly, small island developing States (SIDS) exhibit a more urgent engagement in ocean governance due to their direct dependency on the ocean and the existential threats of climate change and resource depletion. SIDS face immediate challenges, such as land loss from rising sea levels (Sammler, 2020b) and economic impacts from dwindling fish stocks (Voccia, 2012). These threats drive SIDS to participate actively in governance efforts (Figure 5.7), showing that geographical vulnerability can shape biodiversity management priorities. The more critical the ocean is to a state's interests, the more likely it will participate in ocean governance. The following section addresses maritime presence as a proxy for participation patterns.

5.3.3. Maritime presence

Maritime presence—particularly the number of ships at sea—was used as a proxy for gauging a country's potential interests in participating in BBNJ IGCs and broader ocean governance. This is because countries with vessels at sea often have substantial economic and security stakes in using ocean space, such as fishing, shipping routes, and marine biodiversity conservation (Gjerde et al., 2013; Huntington et al., 2015). Such vested interests shape these countries' motivations to engage in ocean governance discussions, as these policies directly impact their maritime activities and national industries.

Regarding maritime presence, as of January 25, 2024, there are over 102,429 actively commissioned ships registered by 187 countries or territories, with only 65 countries or territories having no registered ships. Of the 172 participating countries in the BBNJ IGCs, 147 possess ships, contributing over 93% of the total maritime presence, while 23 participating countries lack any ships. The 59 non-participating countries are less engaged, with only a minority contributing to maritime presence, suggesting that a tangible maritime stake might drive more active participation (Figure 5.8 and *Table 9*). Countries with ships attended an average of four IGCs and had an average of 5.5 participants per IGC (Standard Error

(SE)[13]=0.35), while countries without ships are less likely to participate (24%) in fewer conferences (mean of 3.2 IGCs, SE=0.29) and fewer delegates (mean of 2.6 participants, SE=0.89).

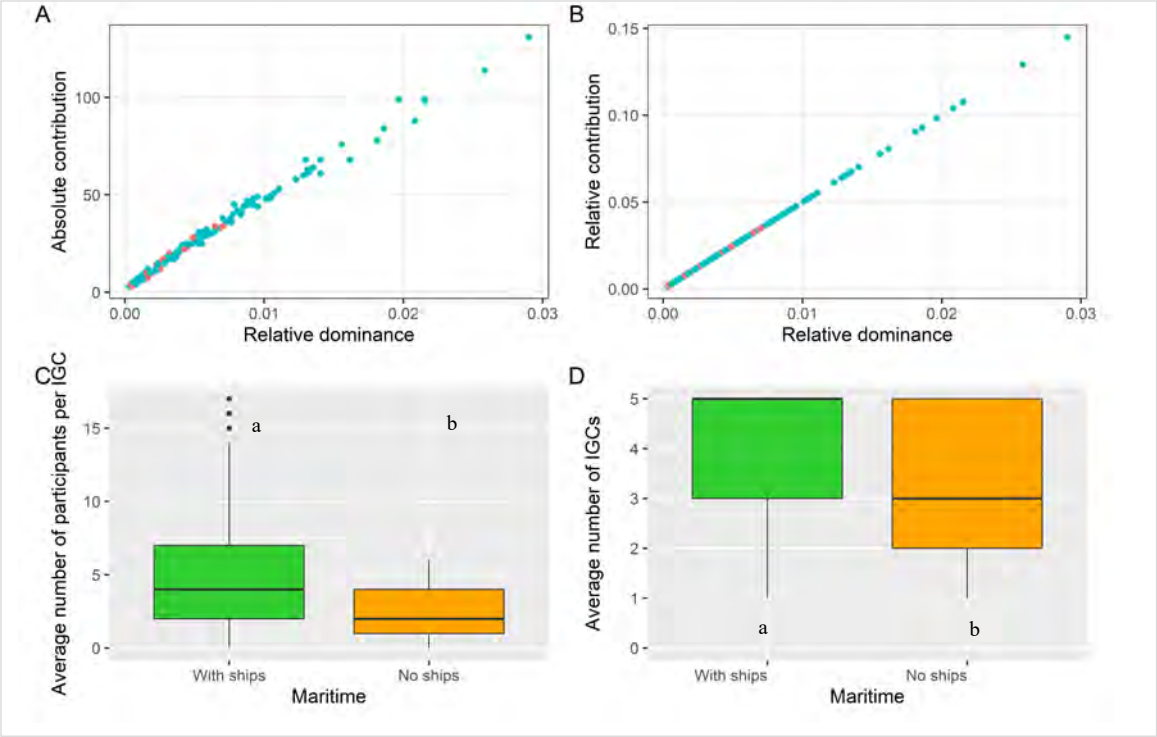


Figure 5.8: Relative dominance of maritime presence is shown in terms of absolute contribution (A) and relative contribution (B). The average number of participants per IGC (C) and the average number of IGCs (D) are also shown. The small letters (a and b) indicate groups that are significantly similar or different, as determined by the Turkey post-hoc test ($p < 0.05$).

The correlation between the number of ships and average participation per IGC ($r = 0.48$) suggests that countries with large fleets have more to gain (or lose) in shaping ocean governance, underscoring that direct interests partly influence stakeholder engagement in marine issues, including environmental protection, shipping, and resource extraction. This historical tendency for sector-specific governance, with entities like the International Maritime Organization (IMO), Regional Fisheries Management Organizations (RFMOs), and the

[13] The standard error (SE) measures the accuracy with which a sample represents a population. It indicates the extent to which the sample mean of the data is expected to differ from the true population mean. A smaller SE suggests more precise estimates of the population mean

International Seabed Authority (ISA), demonstrates how maritime powers leverage specific governance areas to protect their interests. Major maritime powers, such as the USA and China, exemplify this trend, as they actively participated in BBNJ negotiations to protect economic and strategic interests—reflecting how governance motivations shape biodiversity discourse in contexts with significant geopolitical stakes.

However, the nuanced relationship between maritime presence and participation underscores the complexity of ocean governance as a discourse. While the correlation between fleet size and participation rates is not absolute, flags of convenience introduce a layer of ambiguity. Smaller countries or those with limited governance capacity may register ships under their flags without the resources to oversee these fleets (Petrossian et al., 2020). This phenomenon can skew the observations, making it appear that there is a weak link between maritime presence and State interests in ocean governance. Therefore, without these flags of convenience, I argue that maritime presence is a significant factor in framing global biodiversity discourses in ABNJ.

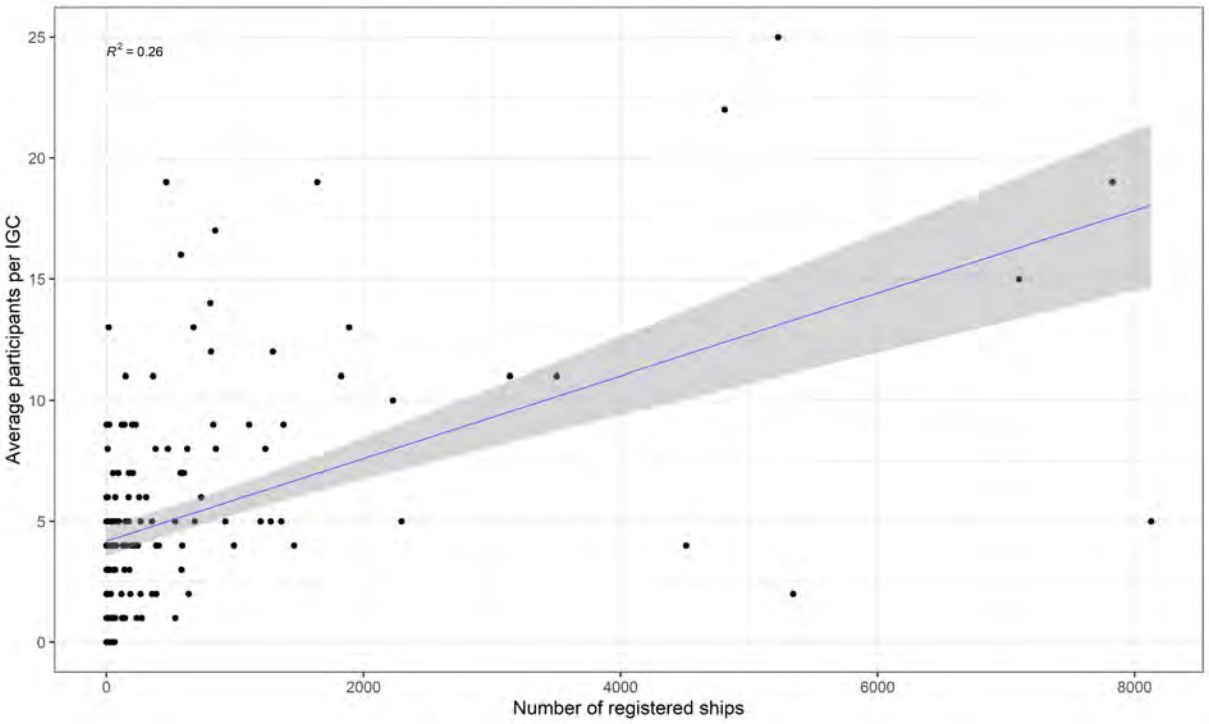


Figure 5.9: A weak positive correlation between average participation per IGC and number of ships (R^2=0.26, $p < 0.05$)

As shown in State behaviour, historical engagement in international agreements underscores how prior commitments shape ongoing participation. States' decisions to ratify agreements

often hinge on multiple factors, such as their economic positioning or civil society strength (Roberts et al., 2004), with countries that previously ratified ocean treaties showing a higher likelihood of sending larger delegations and participating more actively in the BBNJ negotiations. This pattern is even more significant for States that ratified the UN Fish Stocks Agreement (UNFSA), suggesting that historical involvement in biodiversity-related frameworks bolsters ongoing engagement with international treaties (Figure 5.6 and **Figure 5.10**).

5.3.4. Ratification/participation in past ocean governance processes

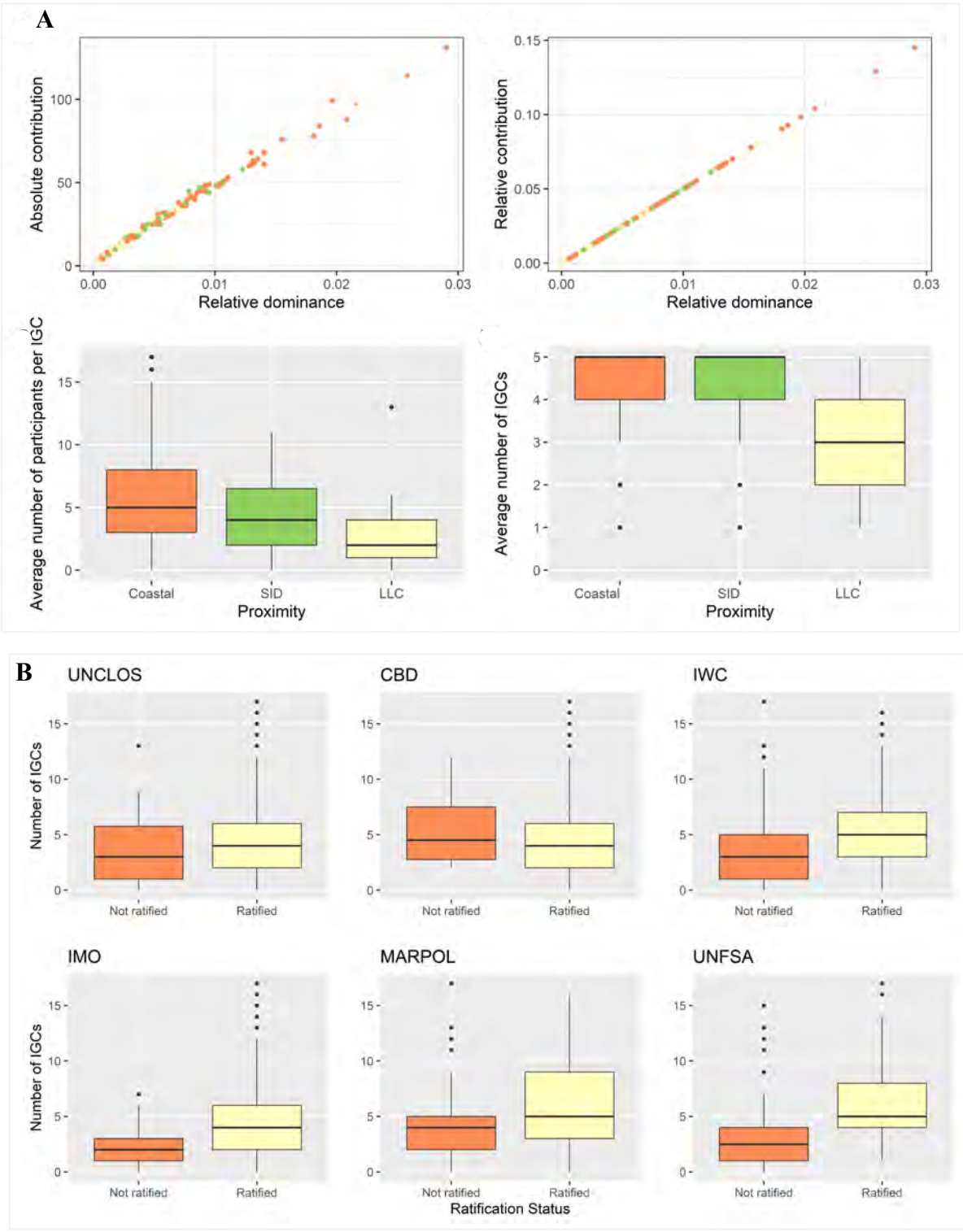


Figure 5.10: Box plots showing average participation per IGC for countries that have ratified past ocean-related treaties or not (A) and the average number of IGCs for countries that have ratified past ocean-related treaties or not.

In line with the thesis's focus on examining the motivations and priorities of various stakeholders, countries with established commitments in areas like Areas Beyond National Jurisdiction (ABNJ) appear more inclined to support new treaties within these contexts. Comparing ratification rates of the United Nations Convention on the Law of the Sea (UNCLOS) and UNFSA further illustrates this; UNCLOS has broad participation (167 States) due to its comprehensive mandate on ocean governance, while UNFSA's narrower focus on migratory fish stocks limits its ratification (91 States) primarily to nations with vested interests in high-seas fisheries. This contrast demonstrates how specific ecological and economic interests influence the extent to which different States invest in biodiversity and governance frameworks. Such variations highlight how biodiversity is conceptualised and operationalised differently depending on national priorities and the relevance of specific ecosystems or resources to a given country (**Figure 5.10**).

Further, countries that have ratified agreements like the UNFSA tend to exhibit greater participation in ABNJ governance, underlining a view of biodiversity that encompasses not only species or ecosystems but also the interconnections between migratory species and broader ecological frameworks. These countries recognise the necessity of managing migratory and straddling stocks within ABNJ, seeing such governance as integral to biodiversity conservation and sustainable resource use. This interconnected understanding aligns with the BBNJ Agreement's goals and underscores the notion that treaty ratification is more than symbolic; it reflects a commitment to uphold global norms and a rules-based order, fostering trust and cooperation that serves as a foundation for future negotiations (Chan et al., 2015). Therefore, biodiversity discourse extends beyond conservation for these nations, encompassing sustainable resource management and a commitment to collective governance.

This analysis points to a broader implication for the BBNJ Agreement's success: to attract widespread participation, it must address diverse national priorities and frame biodiversity in terms relevant to a wide range of States. If the BBNJ Agreement appears too narrow or disconnected from the practical needs of many countries, enthusiasm for its ratification and implementation may be limited. Conversely, for countries already engaged in ocean governance frameworks, the BBNJ can be positioned as an extension of existing commitments, reinforcing their previous investments rather than competing with them. Strategically framing the BBNJ in this way ensures broad-based engagement, which is critical to its successful implementation and longevity. This highlights how biodiversity discourse when tailored to reflect diverse

stakeholder priorities, can drive collaborative, multilateral action for preserving and managing the natural world across varied international contexts.

5.3.5. Negotiation blocs

States with large delegations, for example, often leverage their size to dominate international negotiations through lock-in strategies (Panke, 2015). Such strategies enable countries like Russia and the USA to hold firm on issues directly impacting their national sovereignty, even at the expense of collective goals (participant observations). This rigidity, observed in participant discussions, highlights the tension between national and global interests, with states prioritising their policies over broader biodiversity objectives (Sebuliba, 2024).

For smaller delegations, navigating such a landscape can be exhausting, leading to the formation of negotiation blocs like the G77, the African Group, Small Island Developing States (SIDS), the Alliance of Small Island States (AOSIS), and Landlocked Developing Countries (LLDCs). These blocs allow smaller states to amplify their voices collectively, challenging the dominance of wealthier, often Global North countries. This division, especially in international governance, frequently follows a North-South axis, with each side promoting distinct interests (Hughes and Vadrot, 2019). As issues become more contentious, so does the divide, intensifying the discourse around biodiversity management (Wright et al., 2016b).

However, reliance on these blocs can limit individual country agencies, particularly when nations belong to multiple groups. As shown in Figure 29, states affiliated with multiple blocs often reduce their direct engagement in negotiations, averaging only two participants per IGC when part of four or more blocs. Consequently, these states may allow blocs to represent their interests, which may only partially reflect their national priorities (Sebuliba, 2024). This dynamic highlights how bloc participation shapes biodiversity discourse, potentially overriding unique national interests and favouring collective goals. However, this influence is also undermined as many countries maintain reservations within their groups (Sebuliba, 2024). For instance, while China is part of the G77, it independently asserts its interests when the bloc's outcomes do not meet its expectations, such as in the distribution of responsibilities in EIA processes captured during negotiations.

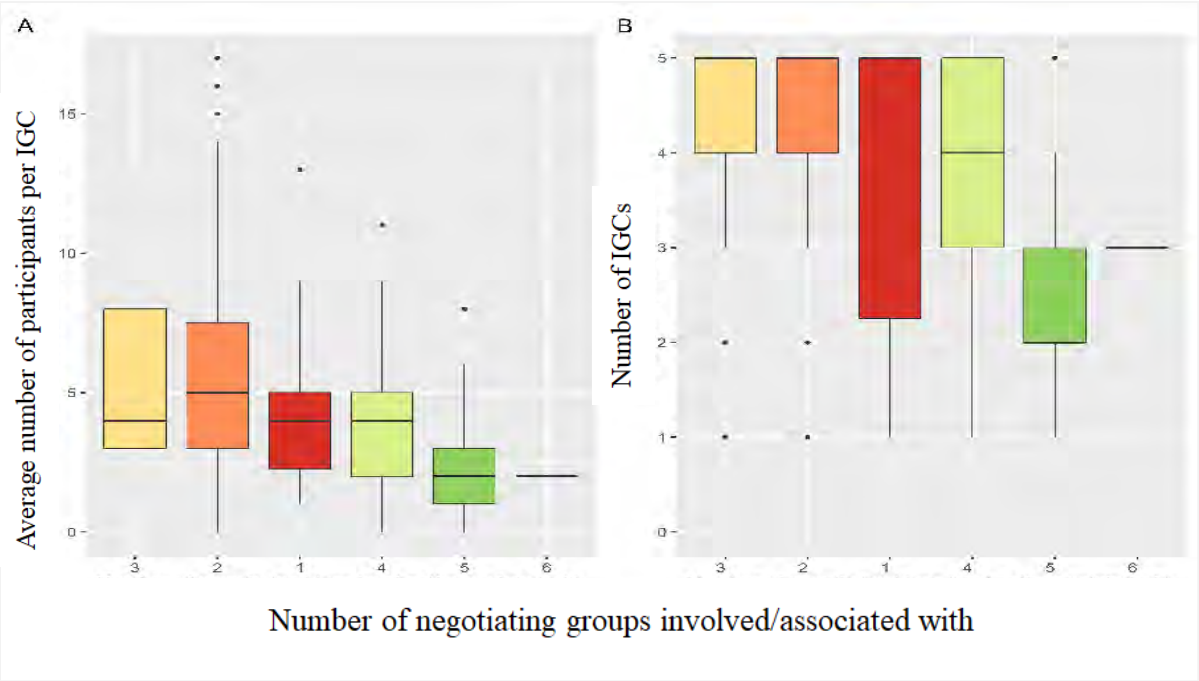


Figure 5.11: Box plots showing the average number of participants per IGC (A) and Average number of IGCs (B) against the number of negotiation blocs involved or associated with.

The diversity of perspectives within blocs further complicates the uniform understanding of concepts. During the fifth session, Indonesia and Türkiye opposed the capitalisation of "Indigenous Peoples" in negotiation texts, viewing it as an imposition of a global ideology at odds with their national contexts. Their resistance, which stalled negotiations, reveals that even within blocs, countries may hold fundamentally different views on seemingly straightforward issues, including biodiversity, challenging a monolithic portrayal of regions or alliances in global discourses. The inclusion of "Indigenous Peoples" in the final text, despite Indonesia's and Türkiye's objections, underscores what issues are maintained and included in the final treaty. Generalised groupings of either north or south, Africa or Europe, etc., do not account for individual state perspectives or concerns that can adversely influence biodiversity understanding and objectives. This has led some States to seek alternative forums, such as bilateral negotiations, which may offer more favourable outcomes than multilateral negotiations. Abstention from negotiations may indicate a lack of vested interest in the issues debated or just disagreement, dissatisfaction with how specific issues are addressed (Depledge, 2016).

In other cases, it may be due to evolving circumstances such as ongoing domestic turmoil. For example, overseas and disputed territories showed limited participation, even those with vested

interests in ocean governance, as approximated through their maritime presence. Ukraine, for instance, grappling with a war with Russia, did not participate, and neither did Afghanistan, which had undergone a recent significant government change. These countries and territories may have less developed institutional capacities, resources or diplomatic networks during the negotiations, potentially impacting their ability to engage actively in multilateral negotiations (Krasner, 2004). Those recovering from colonial legacies or political exclusion may experience residual effects, such as institutional structures, ideologies or diplomatic ties inherited from previous powers (Nel, 2010), which affects their participation in new negotiations. This complex interplay between history, resources, and diplomacy shows how institutional and political legacies shape state participation and engagement, ultimately influencing biodiversity discourses.

5.3.6. Observers and institutional participation

Beyond individual country representation, 129 institutions participated in at least one BBNJ IGC, accounting for roughly 25% of total participants. These institutions included 87 NGOs, such as universities, foundations, and pharmaceutical companies. Additionally, 28 were international organisations, including the African Union, the European Union, fisheries commissions, international chambers, and the International Union for Conservation of Nature (IUCN). The remaining 14 were UN bodies, such as the BBNJ Secretariat, the Division of Ocean Law and Affairs (DOALOS), the International Maritime Organization (IMO), and the International Seabed Authority (ISA). While many NGOs operate globally, most headquarters are in Europe and the USA (Appendix Table 17). Of all participating organisations, 90% were from the USA, where the negotiations were held. Programs like UNEP, the only UN program headquartered in the developing world, offer significant regional representation in terms of these programs (see also Table 8).

These analyses are crucial because institutions account for most observers during negotiations. Observers are not passive participants; they offer alternative perspectives through lobbying efforts and sometimes expertise to smaller delegations. This diversity in observer organisations—mission and geographic location—becomes essential.

Research by Langlet and Vadrot (2023b) suggests that organisations often tailor their statements to align with the specific issues and priorities of the States they represent or are closely associated with. This means that organisations' positions in international negotiations are

frequently influenced by the interests and concerns of the countries they support, ensuring their interventions are relevant to those nations' agendas.

However, there also seems to be a relationship between an organisation's interventions with its mission, objectives, and location. For instance, organisations like the United Nations Environment Programme (UNEP) and the International Seabed Authority (ISA) provided interventions in BBNJ negotiations, which were closely tied to their mandates. Furthermore, an organisation's intervention often reflects its mission, objectives, and location. For example, UNEP, headquartered in Nairobi, Kenya, focused its interventions on sustainable development and ensuring that the needs of developing countries were considered. Fisheries, a critical resource for many coastal developing nations, were a key focus for UNEP's interventions. UNEPs location in Nairobi and its environmental mandate likely contributed to its sensitivity to the challenges facing developing countries. Similarly, the ISA, headquartered in Kingston, Jamaica, emphasised the need for the BBNJ Agreement to respect its mandate and ensure equitable sharing of resources from the international seabed, particularly for landlocked and disadvantaged States. The ISA's Caribbean location may have heightened its focus on the interests of small island developing States (SIDs).

The location of an organisation's headquarters plays a crucial role in shaping its culture, priorities, and access to resources, influencing its participation in global negotiations. Organisations based in high-income countries benefit from political and financial support, as seen with Switzerland hosting numerous UN and international bodies due to its stable environment and access to funding. This support enhances their ability to engage effectively in global discussions, including research, advocacy, and lobbying. In contrast, organisations or institutions from the Global South may struggle to participate equally due to limited resources, even if they are strategically located or have relevant expertise. Being headquartered in prominent countries often brings greater visibility and influence, which can lead to a more substantial presence in global decision-making. This imbalance can result in the underrepresentation of developing countries in international discussions.

The issue of headquarters has also become significant as the BBNJ Agreement awaits ratification and implementation. The question of where the BBNJ secretariat should be headquartered is highlighted, highlighting the broader implications of an organisation's location. This decision carries significant implications, particularly for the administrative aspects of managing marine genetic resources (MGR) and the permitting processes for research.

Establishing a central headquarters for the BBNJ Secretariat could streamline many complex procedures that currently require navigating different national systems to access genetic materials, similar to the challenges faced with the Nagoya Protocol (Richerzhagen, 2014). A centralised location could serve as a one-stop hub for managing permits and providing guidance, making it easier for researchers and stakeholders to navigate the bureaucratic hurdles of accessing study material. Researchers have often expressed frustration with the fragmented and time-consuming processes, where they must comply with varying national regulations, which slows down research and innovation (Burton and Evans-Illidge, 2014; Lajaunie and Morand, 2020). A central headquarters could alleviate this burden by creating a unified system, facilitating smoother and faster access to MGR and other resources under the BBNJ framework.

However, the location of that headquarters is crucial, as gathered during the BBNJ processes. Chile has actively lobbied to host the BBNJ headquarters in its coastal city of Valparaiso, arguing that such a location would promote regional balance within the UN system, as no key UN institutions are based in South America. Chile contends that placing the secretariat in Valparaiso would rectify this regional imbalance and significantly boost South America's representation in global ocean governance. Conversely, some delegates I talked to from the EU hinted at New York or Brussels as more advantageous locations, citing centrality and connectivity regarding transportation. Proponents of Belgium argue that Brussels, being a central hub for international diplomacy and home to numerous EU institutions, would facilitate more accessible travel for international meetings and events. By the final run of this thesis, Brussels has now put up a website calling for the BBNJ secretariate to be in Brussels for the same reasons discussed above (an accessible and central location, a worldwide diplomatic centre, top-notch infrastructure, a multicultural and diverse society) (Kingdom of Belgium, Foreign Affairs, Foreign Trade and Development Cooperation, 2024). In an exchange with a Chilean delegate, they argued that the centrality of Brussels's argument is based on the convenience the location gives for the Global North and not just its connectivity. These differing positions illustrate that the choice of headquarters is not merely a matter of geographic preference or operational efficiency but also inclusivity within the global community.

Table 8: The 30 UN programmes as of 2024 and their country headquarters

Program/Agency	*Headquarters location*
UN Children Fund (UNICEF)	New York City, USA
UN Refugee Agency (UNHCR)	Geneva, Switzerland
UN Environment Programme (UNEP)	Nairobi, Kenya
World Food Programme (WFP)	Rome, Italy
UN Office on Drugs and Crime (UNODC)	Vienna, Austria
UN Relief and Works Agency for Palestine Refugees (UNRWA)	Amman, Jordan (Operational HQ), Gaza
UN Development Programme (UNDP)	New York City, USA
UN Population Fund (UNFPA)	New York City, USA
UN Women	New York City, USA
World Health Organization (WHO)	Geneva, Switzerland
International Maritime Organization (IMO)	London, United Kingdom
World Intellectual Property Organization (WIPO)	Geneva, Switzerland
International Atomic Energy Agency (IAEA)	Vienna, Austria
International Telecommunication Union (ITU)	Geneva, Switzerland
Food and Agriculture Organization (FAO)	Rome, Italy
UN Educational, Scientific, and Cultural Organization (UNESCO)	Paris, France
World Meteorological Organization (WMO)	Geneva, Switzerland
World Bank	Washington, D.C., USA
International Labour Organization (ILO)	Geneva, Switzerland
Universal Postal Union (UPU)	Bern, Switzerland
International Monetary Fund (IMF)	Washington, D.C., USA
International Organization for Migration (IOM)	Geneva, Switzerland

Key to Table 9: ***Avg***.- *Average,* ***SD***- *Standard Deviation,* ***Min***- *Minimum,* ***Med.***- *Median,* ***Max***.- *Maximum (number of participants per conference),* ***NAR***- *North America Region,* ***LAC***- *Latin America and the Caribbean,* ***SSA***- *Sub-Saharan Africa,* ***EAP***- *East Asia and Pacific,* ***MENA***- *Middle East and North Africa,* ***ECA***- *Europe and Central Asia,* ***SAR***- *South Asia Region,* ***LI***- *Low Income,* ***LMI***- *Lower Middle Income,* ***UMI***- *Upper Middle Income,* ***HI***- *High Income,* ***LLDCs***- *Landlocked Developing Countries,* ***LDCs***- *Least Developed Countries,* ***LLC***- *Landlocked Countries,* ***EIG***- *Environmental Integrity Group,* ***LMDCs***- *Like-Minded Developing Countries,* ***ASEAN***- *Association of Southeast Asian Nations,* ***Um. Grp***- *Umbrella Group,* ***OECD***- *Organisation for Economic Co-operation and Development,* ***EU***- *European Union,* ***CARICOM***- *Caribbean Community,* ***CLAM***- *Core Latin American Group,* ***PSIDs***- *Pacific Small Island Developing States,* ***AOSIS***- *Alliance of Small Island States,* ***SIDs***- *Small Island Developing States,* ***AG***- *African Group,* ***G77***- *Group of 77 and China,* ***All coastal***- *All Coastal States,* ***UNFSA***- *United Nations Fish Stocks Agreement,* ***MARPOL***- *International*

Convention for the Prevention of Pollution from Ships, ***IMO****- International Maritime Organization,* ***ICRW****- International Convention for the Regulation of Whaling****, CBD****-*** *Convention on Biological Diversity,* ***UNCLOS****- United Nations Convention on the Law of the Sea. Not UNFSA, MARPOL… etc .*

Having explored inclusivity using the participant lists, the following two sections will now delve into more nuances and forms of inclusivity while linking them to the participation patterns observed from the participant lists.

Table 9: Summary of participation patterns of delegates in various categories compared to the total countries in the group that participated in the five intergovernmental conferences (IGCs) for the negotiation of the BBNJ spanning from 2018 to 2023.

		Countries		*Summary statistics*					*The likelihood of a country participating*					
	Group	*Total*	*In IGC*	*Avg*	*SD*	*Min.*	*Med.*	*Max.*	*1st IGC*	*2nd IGC*	*3rd IGC*	*4th IGC*	*5th IGC*	*Average*
World Bank regional groups	NAR	3	2	17.20	7.22	7	14	40	0.7	0.7	0.7	0.7	0.7	0.7
	LAC	52	33	4.7	2.90	0	4	22	0.5	0.5	0.5	0.5	0.6	0.52
	SSA	51	37	4.5	3.73	0	2	27	0.4	0.5	0.5	0.4	0.6	0.48
	EAP	46	31	7.67	6.11	0	6	39	0.6	0.5	0.5	0.5	0.6	0.54
	MENA	22	18	3.20	2.96	0	3	15	0.5	0.5	0.5	0.6	0.6	0.54
	ECA	64	44	5.24	4.14	0	4	30	0.5	0.5	0.6	0.5	0.6	0.54
	SAR	8	7	4.49	2.56	0	5	10	0.6	0.6	0.6	0.8	0.8	0.68
Income groups	LI	26	18	2.39	1.91	0	1	13	0.3	0.4	0.4	0.3	0.6	0.4
	LMI	56	44	4.57	4.48	0	3	27	0.5	0.5	0.6	0.6	0.7	0.58
	UMI	60	52	4.82	4.15	0	4	39	0.7	0.6	0.7	0.6	0.7	0.66
	HI	101	57	6.62	4.93	0	5	40	0.5	0.5	0.5	0.5	0.6	0.52
Negotiating groupings	LLDCs	31	19	2.18	2.29	0	0	14	0.2	0.3	0.3	0.2	0.4	0.28
	LDCs	51	39	3.21	3.34	0	2	27	0.4	0.4	0.5	0.4	0.7	0.48
	LLC	78	58	3.22	3.47	0	2	27	0.4	0.4	0.5	0.4	0.6	0.46

		Countries		*Summary statistics*					*The likelihood of a country participating*					
	Group	*Total*	*In IGC*	*Avg*	*SD*	*Min.*	*Med.*	*Max.*	*1st IGC*	*2nd IGC*	*3rd IGC*	*4th IGC*	*5th IGC*	*Average*
Negotiating groupings	EIG	6	6	7.10	7.07	0	4	25	0.7	0.5	0.8	0.7	0.8	0.7
	LMDCs	24	23	5.38	4.90	0	4	39	0.8	0.8	0.8	0.8	0.8	0.8
	ASEAN	10	10	7.60	7.07	0	5	39	0.8	0.9	0.8	0.8	0.9	0.84
	Um. Grp	11	9	11.56	6.61	0	9	40	0.8	0.8	0.7	0.7	0.8	0.76
	OECD	38	38	8.26	5.27	0	6	40	1.0	0.9	0.9	0.9	1.0	0.94
	EU	25	25	5.63	3.24	0	4	28	1.0	0.9	1.0	1.0	1.0	0.98
	CARICOM	18	14	3.27	2.59	0	3	12	0.6	0.6	0.6	0.6	0.8	0.64
	CLAM	14	14	6.30	2.83	0	5	22	1.0	0.9	0.9	0.9	1.0	0.94
	PSIDs	14	12	5.95	3.09	0	5	24	0.8	0.6	0.8	0.7	0.8	0.74
	AOSIS	39	34	4.62	3.02	0	4	24	0.7	0.6	0.7	0.7	0.8	0.7
	SIDs	55	35	4.58	3.02	0	4	24	0.5	0.5	0.5	0.5	0.6	0.52
	AG	54	43	3.48	3.57	0	2	27	0.5	0.5	0.6	0.5	0.7	0.56
	G77	134	117	4.58	4.19	0	3	39	0.6	0.6	0.6	0.6	0.8	0.64
Proximity	All coastal	186	122	5.5	3.00	0	4	40	0.6	0.6	0.6	0.6	0.7	0.62
	LLC	78	58	3.22	3.47	0	2	27	0.4	0.4	0.5	0.4	0.6	0.46
	Small Islands	55	35	4.58	3.02	0	4	24	0.5	0.5	0.5	0.5	0.6	0.52

		Countries		*Summary statistics*					*The likelihood of a country participating*					
	Group	*Total*	*In IGC*	*Avg*	*SD*	*Min.*	*Med.*	*Max.*	*1st IGC*	*2nd IGC*	*3rd IGC*	*4th IGC*	*5th IGC*	*Average*
Maritime presence	No ships	65	24	2.58	2.38	1	2	14	0.2	0.2	0.3	0.2	0.3	0.24
	Ships	187	147	5.50	4.66	1	4	40	0.6	0.6	0.6	0.6	0.7	0.62
Past ratifications and ocean governance engagements	UNFSA	90	80	6.91	4.75	1	5	40	0.8	0.8	0.8	0.8	0.9	0.82
	Not UNFSA	162	91	3.497	4.23	1	3	30	0.3	0.3	0.4	0.4	0.5	0.38
	MARPOL	47	46	7.25	5.74	1	5	40	0.9	0.7	0.8	0.8	0.9	0.82
	Not MARPOL	205	125	4.50	4.65	1	4	39	0.4	0.5	0.5	0.4	0.5	0.46
	IMO	174	159	5.29	4.58	1	4	40	0.7	0.7	0.7	0.7	0.8	0.72
	Not IMO	78	12	2.5	2.73	1	2	10	0.1	0.1	0.1	0.1	0.1	0.1
	ICRW	88	84	5.89	4.58	1	4	40	0.8	0.8	0.8	0.8	0.9	0.82
	Not ICRW	164	87	4.32	5.08	1	4	39	0.7	0.6	0.7	0.7	0.8	0.7
	CBD	191	166	5.12	4.41	1	4	39	0.7	0.6	0.7	0.6	0.8	0.68
	Not CBD	61	5	8.96	9.02	1	5	40	0.1	0.1	0.1	0.1	0.1	0.1
	UNCLOS	168	152	5.12	4.41	1	4	39	0.7	0.7	0.7	0.7	0.8	0.72
	Not UNCLOS	84	19	4.90	6.74	1	3	40	0.6	0.7	0.6	0.6	0.8	0.66

5.4. Tracing inclusivity through delegation statements and textual proposals

The national delegates and observers delivered several statements and textual proposals during the negotiations to contribute to the ongoing discussions on BBNJ biodiversity. Analysis of those documents reveals some nuances of inclusivity that also shape biodiversity discourses in these contexts. Inclusivity was derived from the activity level of the different states or state groups during the negotiations and the various perspectives or themes that emerged from these documents. The following two sub-sections will discuss these two dimensions.

5.4.1. Activity level

The activity level was approximated as the count of interventions and contributions to the textual proposals made or references to a State, negotiating group, or organisation. Phrases such as agree, align with, and endorse were used to find references to and alignment with different States or negotiating groups. The analysis reveals that The Group of 77 (G77) and China had the most interventions and references, with small delegations and low-income countries primarily depending on this negotiating bloc to voice their positions. Notably, the G77 is the largest negotiating group, consisting of over 134 Member States, including several from groups like the African Group, which explains the sheer number of interventions.

Other active groups included the European Union (EU), Alliance of Small Island States (AOSIS) and Small Island Developing States (SIDS), with significant contributions from Pacific Small Island Developing States (PSIDS). The Umbrella Group, which consists of Australia, Canada, Iceland, New Zealand, Norway, Switzerland, the United Kingdom, the United States, and the European Union, also played an active role. Countries from the Umbrella Group often expressed their views individually or in alignment with the EU. Russia generally negotiated independently but occasionally aligned with the G77 and China. Other notable groups were the Coalition of Latin American and Caribbean Countries (CLAM) and the Caribbean Community (CARICOM) (**Table 10**).

Beyond the negotiating groups, some countries also demonstrated high activity levels through individual interventions. These are instances where countries voiced their positions independently of negotiating groups. New Zealand, Tonga, Canada, Norway, the USA, and Japan had the highest levels of individual interventions. Australia, the Philippines, Colombia, Fiji, Micronesia, the Maldives, Singapore, and Iceland also showed notable activity**.** These

individual interventions are crucial as they reveal the specific interests of States that may be difficult to grasp through negotiating blocs (Sebuliba, 2024).

Several observers, including non-governmental organisations (NGOs) and international organisations (IOs), stood out for their high activity levels. These included the International Union for Conservation of Nature (IUCN), the United Nations Environment Programme (UNEP), the International Maritime Organization (IMO), the International Seabed Authority (ISA), WWF International, the High Seas Alliance, and the Deep-Ocean Stewardship Initiative (DOSI), with particularly notable contributions from the Food and Agriculture Organization (FAO). Several other institutions, such as the Convention on Biological Diversity (CBD) and its secretariat, also made significant contributions and were frequently referenced (Langlet and Vadrot, 2023b).

High activity could signal active efforts to influence and prioritise specific conservation and management goals across different interests, as further explored in Chapter 6.

Table 10: Activity level approximated as the total number of interventions per country during the BBNJ IGCs and contributions to textual proposals available to the public through

Activity Level	Countries
Low (0-9)	Haiti, Iraq, Oman, Bahamas, Myanmar, Vietnam, Liberia, Sudan, Barbados, Dominican Republic, Holy See, Malawi, South Africa, Nicaragua, Seychelles, Cameroon, Kenya, Togo, Algeria, Bolivia, Honduras, Jamaica, Peru, Israel, Paraguay, Solomon Islands, El Salvador, Monaco, Morocco, Republic of Korea
Middle (10-19)	Bangladesh, Eritrea, Marshall Islands, Sri Lanka, Thailand, Nepal, Tuvalu, Belize, Türkiye, Brazil, Mauritius, Nigeria, Uruguay, Iran, Senegal, Switzerland, India, Russia, Chile, Samoa, Nauru, Argentina, Indonesia, Papua New Guinea, Ecuador, Palau, Costa Rica, Iceland, Singapore, Maldives, Micronesia, United Kingdom, China
High (20-39)	Australia, Philippines, Japan, USA
Very High (40 and above)	Norway, Canada, Tonga, New Zealand

5.4.1(a) State and State-group interests as a dimension of inclusivity

Different States, negotiating groups, country clusters, and organisations displayed varying levels of interest in the different aspects of the BBNJ processes that arguably underpin marine biodiversity understanding and objectives, as explored in Chapter 6. Inclusivity in these contexts was approximated as the various aspects that received emphasis during the negotiations and the level of interest in these various aspects relative to other aspects per a given state or group. The interest levels were assessed based on the textual analyses of themes, which were also informed by the author's notes and experiences (see methods) and the frequency with which states or groups mentioned or referred to the package elements and specific themes within these statements. The findings are visually represented for different States and or State groups (**Figure 5.12**). The next chapter will discuss how these themes relate to marine biodiversity and objectives within the BBNJ contexts, while this chapter will highlight them as aspects of inclusivity.

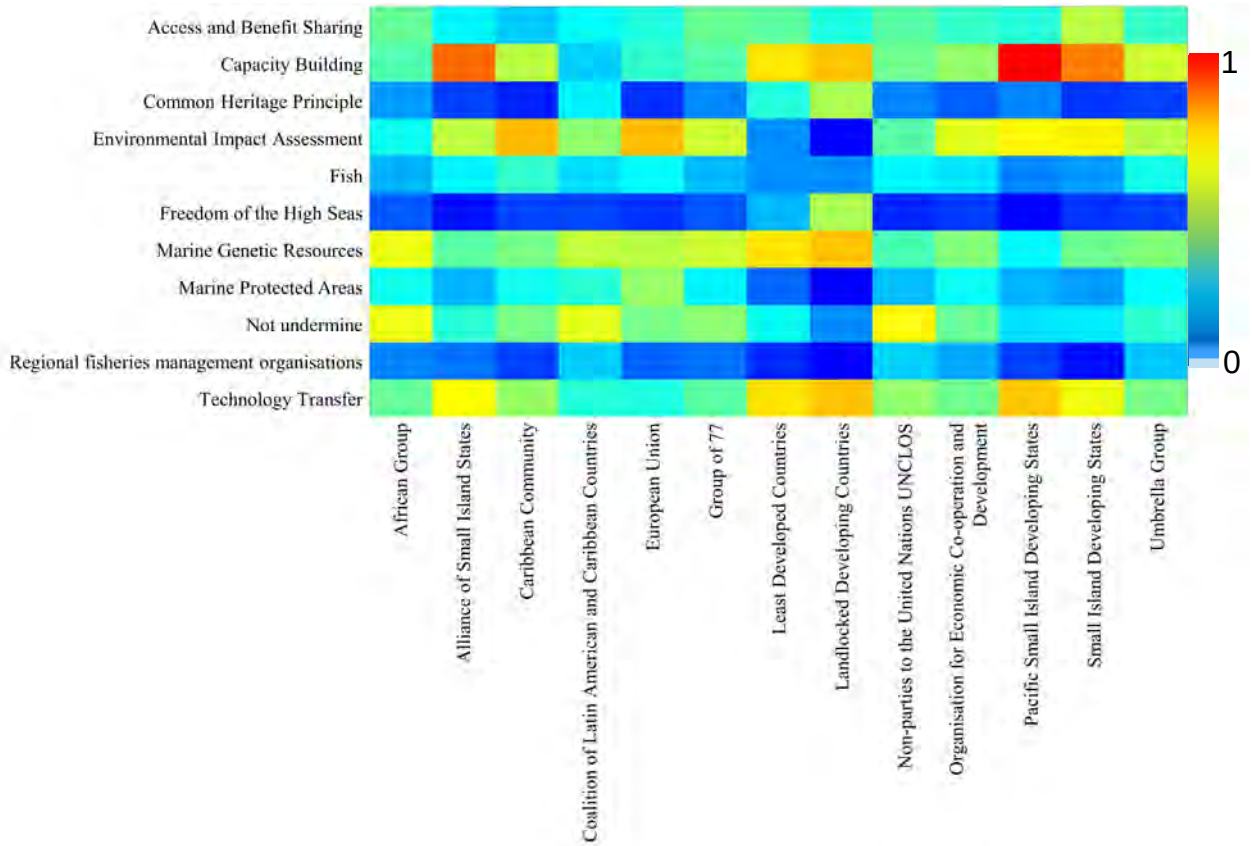


Figure 5.12: Heat map showing the level of interest in various BBNJ themes relative to others per negotiating group.

The four package elements—Marine Genetic Resources (MGR) and Access and Benefit-Sharing (ABS), Area-Based Management Tools (ABMTs) including Marine Protected Areas (MPAs), Environmental Impact Assessments (EIAs), and Capacity Building and Technology Transfer (CB&TT)—were the main focus of delegation statements and proposals, and arguably form the core understanding of biodiversity in these contexts.

Generally, CB&TT was particularly emphasised by groups predominantly from the Global South, such as PSIDs, SIDs, AOSIS, Least Landlocked Developing Countries, and lower-income states (**Figure 5.12**). These groups stressed the need for this package to level the playing field regarding accessing and benefiting from activities accruing to using these ABNJ spaces. Conversely, higher-income and OECD countries focused more on the modalities of technology transfer, reflecting a desire to maintain intellectual rights over technology crucial for accessing and using ocean space and resources (Brown, 2012). Notably, CB&TT was one of the first package elements to be concluded in the negotiations, seemingly being of low priority. However, it became the most referenced package as the discussions progressed, reflecting a state's careful consideration of the short-term and long-term implications, obligations, and benefits associated with each package (Blasiak et al., 2016).

Environmental Impact Assessments (EIAs) were another significant area of interest across various groups, with high-income countries showing notable cautious interest. Generally, Global South countries, represented through various negotiating groups like the G77, PSIDs, and CARICOM, advocated for a more stringent, centralised, and elaborate EIA process. In contrast, most OECD and higher-income countries (including China and Russia) preferred a less strict approach that relies on national processes, reflecting ongoing tensions between environmental protection, natural resource access, and state sovereignty, including in ABNJ (Barral, 2016; Stec, 2010; see also discussion in Chapter 4). Although initially of least concern in earlier IGCs and meetings per textual analysis, EIAs gained prominence over time. The focus on EIAs reflected the prioritisation of environmental protection. It indicated a move towards holding industrialised States accountable, as these States often sought quicker and less restrictive access to marine resources in ABNJ (Sebuliba 2024). Without the strict demands of the G77, OECD countries treated this package as straightforward, claiming that EIA processes are well-established in national contexts.

Similarly, MGRs attracted substantial interest from highly industrialised and lower-income countries throughout the negotiations. For many low-income states, MGRs represented a

valuable potential resource, leading them to advocate for equitable access and benefit-sharing. On the other hand, industrialised countries focused on the commercial and research potential of MGRs, emphasising the importance of clear regulations to facilitate their use. CB&TT considerations partly drove the inclusion and sustained interest in MGR. Industrialised states aimed to secure their technological and economic dominance by maintaining control over valuable genetic resources (Raustiala and Victor, 2004), while lower-income States, recognising the potential for these resources to support their development needs and level the playing field, advocated for fair access and equitable benefit-sharing (ABS) (Coolsaet and Pitseys, 2015; Nikolaisen; Thambisetty et al., 2023). Moreover, the MGR package was also perceived as having the potential to influence the fisheries regime (Haas et al., 2021), which attracted much attention from SIDs and fishing nations such as Iceland (see discussion Chapter 6, Section 6.7. Fisheries out: our fish is not your marine biodiversity). In the final draft, fisheries were excluded from the MGR regime, driven mainly by the concerns of SIDs (see Article 10 of BBNJ). This strategic exclusion of fisheries underscores the complex interplay of interests in ocean governance, where economic potential and environmental stewardship are continually balanced against national priorities (Brodie Rudolph et al., 2020; Garcia et al., 2014; Keen et al., 2018).

Among the various potential marine environmental management approaches that could have been included, ABMTs were specifically preferred for the BBNJ Agreement. While ABMTs encompass several approaches, including MPAs and Biosphere Reserves like Fisheries Reserve Zones, the discussions primarily focused on MPAs (Halpern et al., 2010; Petza and Katsanevakis, 2024; Reimer et al., 2021). The European Union frequently championed MPAs, viewing them as a critical tool for achieving BBNJ conservation goals, potentially informed by their commitment to the 30 x 30 goal of protecting 30% of the ocean by 2030, as adopted by the European Commission and more than 90 countries (Giakoumi et al., 2024; Pike et al., 2024)However, many industrialised countries, such as the USA, China, and Russia, expressed concerns about MPAs' restrictive nature, seeing them as potential limitations on access to resources and as encroachments on the freedoms of ABNJ. Chapter 6 will elaborate on these perspectives, including concerns about MPAs from Global South countries.

The subjective ideals of participating States regarding the proposed conservation measures shaped and continue to shape which aspects are included and remain of interest in the BBNJ discourses. For example, representatives from countries heavily reliant on fisheries, like Iceland

and many SIDs, seemed to contextualise the negotiations from a fisheries-livelihood perspective, as discussed in Chapter 6. This perspective also informed their overall interests and participation patterns in the negotiations. An engagement with a delegate from Iceland highlighted how they navigated with their small delegation (Iceland had an average of six participants per IGC (see **Appendix Table 19**). The delegate noted that;

> *We do have a small delegation, but we can still somehow manage. You have to understand that there are so many facets and interests here, and it is impossible to focus on all of them. For us, MPAs [Marine Protected Areas] are highly of interest as they are likely to directly impact our fisheries, which are our livelihood resources. So, we have to focus our efforts on this crucial package element [Area-based Management tools/MPAs] and be flexible with the rest* (Author engagements with respondents, 2024).

From this perspective, delegations in international negotiations, particularly smaller ones, strategically focus on critical aspects of complex topics like marine biodiversity and its objectives. This targeted approach allows them to effectively address the issues of significant interest to them and within their capacity to manage. Given their limited resources, small delegations cannot afford to spread their attention too thin across the entire spectrum of negotiation topics. Instead, they concentrate on issues that can have the most impact, ensuring their priorities are not overlooked in the broader discussion. This strategic focus underscores the importance of including diverse actors to introduce varied perspectives in international negotiations. It also explains the inclusion or exclusion of certain aspects in these processes.

As described in the Underlying approach and theoretical framework, various themes were identified from the documents beyond the package elements, which were also analysed in literature as proxies of broader attitudes (Blasiak et al., 2017). Regarding the themes that emerged from the analysis of these documents, informed by ethnographic experiences during the negotiations, *fish* and or *fisheries* were the most frequently mentioned topics outside the four package elements. Small Island Developing States (SIDs), fishing OECD States, international organisations such as the Food and Agriculture Organization (FAO), and regional bodies, including Regional Fisheries Management Organizations (RFMOs), frequently referenced fisheries and RFMOs in their submissions. Concerns about the BBNJ Agreement "not undermining" the authority of existing frameworks (Langlet and Vadrot, 2023b) were

primarily informed by these fisheries concerns, as will be elaborated further in Chapter 6, Section 6.5. Not undermining the legacies of existing frameworks.

Additionally, among the various principles that could have emerged concerning the governance of marine biodiversity in the ABNJ (see other principles in Chapter 7), the Freedom of the High Seas (FOH) and the Common Heritage Principle (CHP), both legacies of UNCLOS, were the most referenced, with particular emphasis on the CHP (**Figure 5.13**). The CHP embodies a legal and moral commitment to manage resources in a manner that benefits all of humanity, particularly future generations (Noyes, 2011). This principle has roots in the early discussions of space law, which later influenced maritime law, suggesting that resources beyond national jurisdictions should not be exploited to the detriment of others (Baslar, 1998). The CHP was designed in ABNJ to ensure that the Area is managed under an international regime for the collective benefit, incorporating elements of equity and sustainability (Bungenberg and Hobe, 2015; Prislan and Schrijver, 2009; Schrijver, 2016).

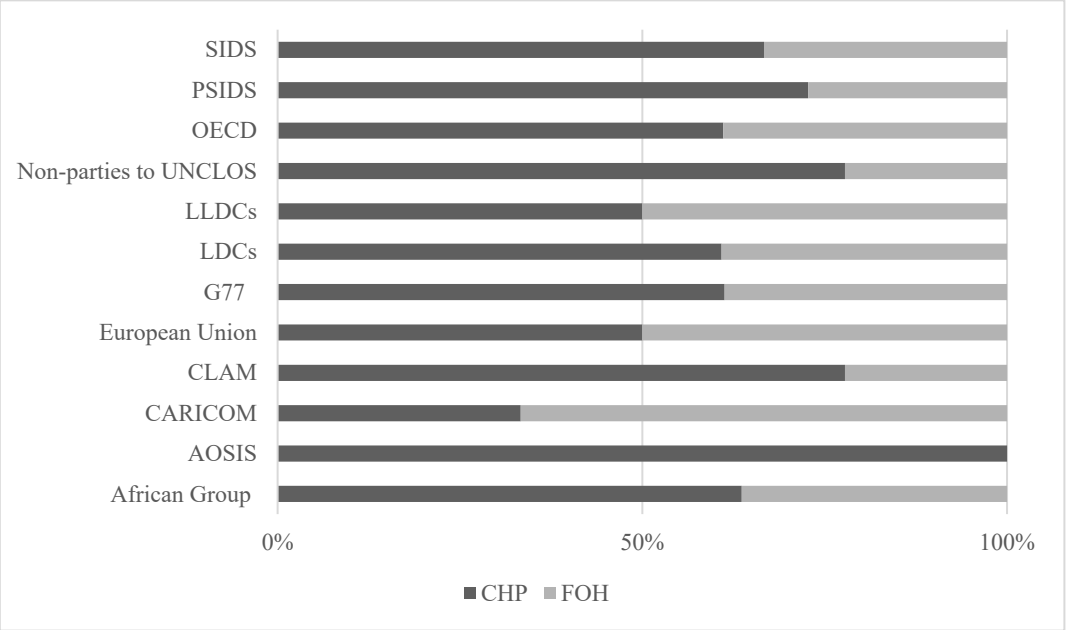


Figure 5.13: Relative reference to the Common Heritage Principle (CHP) and Freedom of the High Seas (FOH) by the negotiating groups.

In a statement by the African Group, the CHP was absent from the initial draft text, which pointed to it as the most important principle for achieving the BBNJ objectives (H.E. Ambassador Mohammed Bessedik, 2019). Many statements reiterated the significance of this principle, not only for humankind but also for the High Seas and marine life, emphasising inter-

and intra-generational equity, peaceful use, and benefit sharing as key elements arising from the CHP. On the other hand, countries like the USA questioned whether references to the CHP were advancing practical and workable compromises, especially regarding MGR, cautioning against undermining the intellectual property rights regime established by the existing international legal framework (United States, 2018).

The connection between the CHP and the package elements was particularly evident throughout the discussions (**Figure 5.14**). For MGR and ABS, the CHP principle underscores the importance of equitable sharing of benefits derived from marine resources, aligning with the concept that the ocean's genetic resources are a common heritage to be shared by all, not monopolised by a few (Zewers, 2007). In the context of ABMTs, including MPAs and EIAs, the CHP was invoked to reinforce the idea that some regions of the ocean should be preserved and managed for the benefit of all humanity. Regarding CB&TT, it highlighted the importance of building capacity and transferring technology to ensure that all countries, especially developing ones, can participate in and benefit from marine conservation and sustainable use efforts.

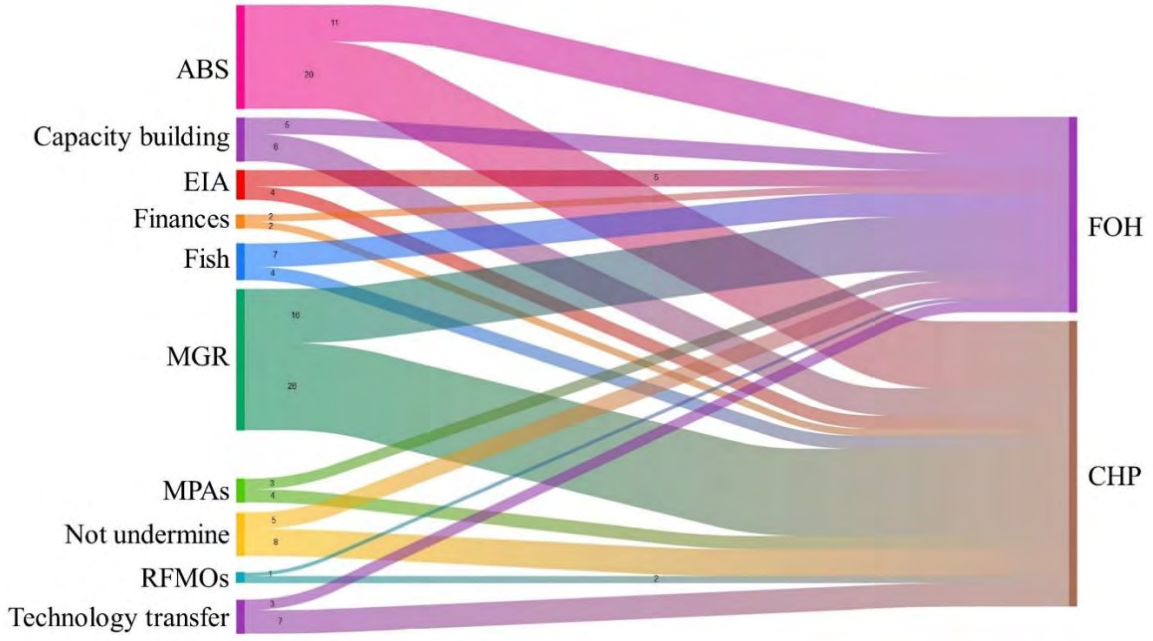


Figure 5.14: The connection between the CHP and FOH principles and themes analysed from the delegation statements and textual proposals—image using Atlas.ti.

Despite this perspective, there seemed to be a misunderstanding of these principles (CHP and FOH), with many delegates viewing CHP as the sole principle relating to ABNJ. The FOH principle remains one of the critical cornerstones of maritime law, emphasising freedom of navigation and access to resources (Lapidoth, 1975; Lowe, 1997; Papastavridis, 2011; Pineschi and Treves, 1997). Delegates appeared unclear about the scope of the BBNJ negotiations, mainly whether the marine biodiversity pertained to the water column or the seabed (the Area) since UNCLOS treats these spaces as distinct entities (see Chapter 2, Section 2.5.1(b) on ABNJ as an abstract UNCLOS zone). As a result, they often referenced the CHP principle as applying to the entire ABNJ without fully understanding how it applied to the different geographical aspects of ABNJ (the High Seas and Area). This lack of clarity led to frequent but sometimes misguided invocations of the CHP, reflecting a need to understand better how these principles interact with the various package elements and could ultimately impact marine biodiversity governance in ABNJ.

Observer NGOs and regional and international organisations also aligned their statements with different aspects of their missions and objectives (see Appendix). For example, the FAO emphasised fisheries, advocating for fish exclusion from the MGR regime and ensuring that RFMOs were not undermined. The FAO tended to align with SIDS and developing fisheries nations. Similarly, the International Seabed Authority (ISA) highlighted its role in managing the seabed, expressing concerns about measures such as Marine Protected Areas (MPAs) that could undermine its authority. The ISA aligned with States that emphasised benefit sharing, capacity building, and the transfer of marine technology, which are critical aspects of the ISA mandate (see discussion on Not undermining the legacies of existing frameworks). The themes from the documents are also reflected in the BBNJ literature, as addressed in the following section.

5.5. Inclusivity through the Scientific Discourse

The analysis of 344 published articles about the BBNJ (Biodiversity Beyond National Jurisdiction) Agreement and related processes (see Underlying approach and theoretical framework) reveals that these articles have been authored by over 200 individuals from more than 400 institutions across 81 countries. The majority of literature on BBNJ is still primarily authored by individuals based in OECD countries or high- and upper-middle-income non-OECD countries, making up over 92% of the authorship (**Figure 34** and **Figure 5.16**) (see also Blasiak et al., 2017). Approximately 80% of these articles originate from OECD countries, with around 55% (139 out of 252 countries and overseas territories analysed)

remaining unrepresented. Authors from six OECD countries—the USA, Australia, England, Canada, and France—account for over 55% of the total authorship. This disparity may be attributed to the search being conducted in English, potentially leading to the underrepresentation of non-English-speaking countries (see Chapter 2: section 2.3. A review of a discourse).

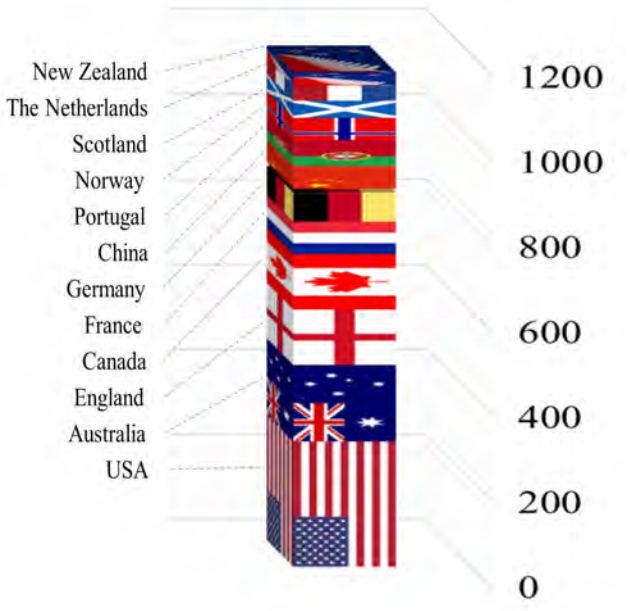


Figure 5.15: Countries with the most representation in the BBNJ literature based on Author Affiliations

A weak but significant negative correlation ($R = -0.42$, $p < 0.001$) was observed between the number of authors from each country and the percentage of countries with a given number of authors (**Figure 5.16**). As the number of authors from a country increases, the proportion of countries with that specific number of authors tends to decrease slightly. In practical terms, this correlation suggests that a few countries, such as the OECD, have many authors contributing to the BBNJ literature, while most countries have few or no authors. This is consistent with the overall findings in global discourses, which show that most research comes from a few countries. In contrast, many predominantly low-income or non-English-speaking countries are underrepresented in international governance literature. Notably, this may not represent authors from these low-income or non-English-speaking nations doing research based in or affiliated with higher-income countries. However, it also shows that resources crucial for research are often available in high-income countries, attracting scholars worldwide.

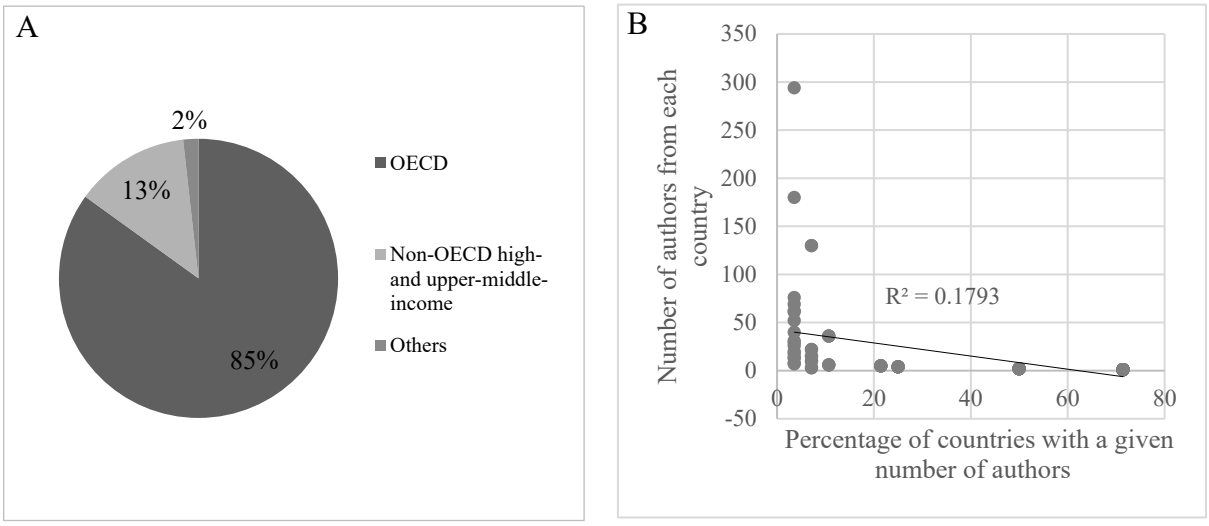


Figure 5.16: Contribution of authorship from OECD and non-OECD countries (A) and correlation between the number of authors from each country and percentage of countries with a given number of authors (B)

No articles were identified by authors based on the World Bank category of least developed countries (LDCs). Blasiak et al. (2016), argue that the absence of authors from LDCs and SIDS in peer-reviewed literature may reflect a lack of domestic scientific capacity in these regions or suggest that the interests and priorities of the Global North disproportionately influence the BBNJ discourse. While it is challenging to prove these claims definitively, there are observable associations that tend to support this argument. For example, the broad themes identified from the delegation statements were also captured within the BBNJ literature (**Figure 5.17**), including the four package elements, as well as **f**ish or fisheries relating to the management of fisheries, not undermining existing frameworks and organisations (e.g., (Friedman, 2019; Langlet and Vadrot, 2023b; Scanlon, 2018; Tang, 2024), and shared heritage relating to the principles governing ABNJ (e.g., (Papastavridis, 2020; Santo et al., 2019; Vadrot et al., 2022). Other key emphases are on institutional frameworks in ABNJ governance, the development of the BBNJ Agreement as a new legal framework, stakeholder participation, engagement and perspectives analysing the involvement and viewpoints of various stakeholders, general processes and international cooperation. These perspectives are explored in detail when tracing marine biodiversity concepts and objectives in Chapters 6 and 7. Notably, a few articles directly address the non-human aspects, such as the rights of nature (Harden-Davies et al., 2020).

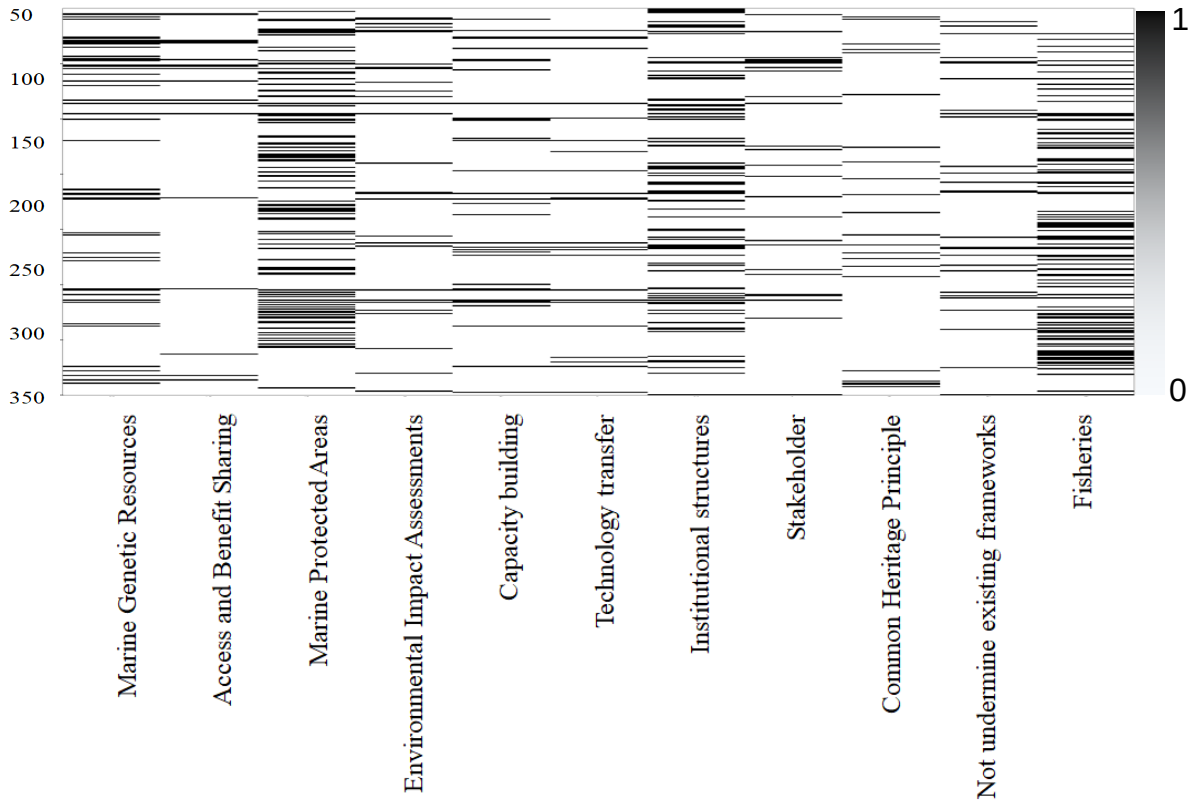


Figure 5.17: Matrix plot using Past software, showing how frequently the various package elements and selected concepts appear in BBNJ literature

Unsurprisingly, the package elements and institutional frameworks are the key focus of the literature as these inform the operationalisation of the BBNJ Agreement. However, the analysis also shows that although all packages are envisaged as working together to contribute to the overall objectives of the BBNJ, they are often addressed as individual elements, except aspects of the package elements directly associated with each other in the BBNJ Agreement, such as MGR and ABS, and CB &TT (**Figure 5.19**), that show a strong positive correlation between them (**Figure 5.18**). Apart from these package elements, some weaker associations exist between other package elements, such as MGR and CB&TT (**Figure 5.18**).

Interestingly, the predominant focus in the literature on some package elements and not others is evident. Most of the academic literature on BBNJ is heavily focused on MPAs and MGRs—topics of primary interest to OECD countries. One reason for this focus could be that MPAs and MGRs were among the most contentious elements of the BBNJ negotiations and were the last packages to be finalised.

The debates around MPAs were particularly complex, involving practical challenges related to their establishment, governance, and the principle of not undermining existing frameworks

(Clark, 2020; Santo et al., 2020). Similarly, MGR was a novel area in ABNJ governance, raising issues about new technologies, data access, and benefit-sharing, which are of significant interest to technologically advanced countries (Broggiato et al., 2014; Taghizadeh and Asgarian, 2024). Moreover, the drafting process and negotiation dynamics suggest that MPAs and MGR were primarily shaped by the interests of High-Income (HI) and Upper-Middle-Income (UMI) countries, predominantly those in the OECD. This is further evidenced by the involvement of prominent scientists from OECD countries, who have contributed to the academic literature and advised or participated in their respective national delegations during the BBNJ negotiations. Their dual roles as scholars and advisors may have influenced the topics they chose to focus on in their research, reinforcing the dominance of Global North perspectives in the literature.

On the other hand, examining the focus areas of Global South countries in delegation statements, it is evident that CB&TT, ABS, EIAs and the CHP principle are the dominant themes. These issues align closely with the needs and concerns of economically developing nations, particularly in ensuring equitable access to marine resources and their benefits. However, the skewness of the BBNJ discourse to global north perspectives, where the priorities of the global north are more prominently represented, while the concerns of the global south, particularly those related to CB&TT, ABS, and CHP, raise important questions about the inclusivity of the BBNJ process and the need for a more balanced representation of perspectives in both academic literature and policy discussions

The notion that some elements of the BBNJ package, like MPAs, are inherently more challenging to implement and require more attention than others is misleading. For example, while there have been numerous calls for capacity building and a wide array of international commitments to support such initiatives, this remains one of the least realised aspects of existing frameworks, including in UNCLOS (Vierros and Harden-Davies, 2020). For instance, the assumption that establishing MPAs is particularly difficult to envision undermines the same complexity that applies to CB&TT and ABS. Many low-income states struggle to accept any measures without catering to these interests. The lack of scientific literature and research tailored to the needs of the Global South leaves these countries underprepared for negotiations but also hinders their ability to effectively advocate for their concerns without objecting to tools that could be critical for achieving conservation objectives.

Furthermore, expanding the discussion to include non-human aspects, such as the rights of nature (Harden-Davies et al., 2020), could significantly broaden the scope of inclusivity. Recognising the intrinsic value of marine biodiversity, independent of human interests, would allow for a more holistic approach to conservation, potentially leading to more sustainable and equitable outcomes for both humanity and the environment (Hamley, 2023; Santos et al., 2022). The limited focus on these non-human aspects in the current BBNJ literature (Harden-Davies et al., 2020) may indicate either a lack of awareness about the broader implications or a narrow focus on what is perceived as leading to sustainable outcomes, even if those outcomes do not explicitly address critical concerns of the scientific and broader public interests.

Analysing literature on BBNJ (biodiversity beyond national jurisdiction) highlights how these concepts are framed, who shapes this framing, and the implications for inclusivity. Authors' geographic and institutional backgrounds can influence the perspectives shared, and a lack of diversity among authors risks creating a limited view of BBNJ issues. Inclusive literature typically draws from various disciplines—such as marine biology, international law, and environmental justice—to foster a comprehensive understanding.

The framing of BBNJ issues in literature can be eco-centric, emphasising the intrinsic value of marine biodiversity, or anthropocentric, focusing on human benefits. This framing can shape policy recommendations and priorities. Addressing equity and justice is essential for inclusive discourse and exploring how marine resource management impacts different groups. The analysis of inclusivity within BBNJ frameworks shows that diverse stakeholder groups hold distinct expectations for BBNJ objectives, moving beyond a simple North-South divide and revealing varied views on ocean governance.

This diversity raises a core question: What constitutes marine biodiversity, and what are its objectives within the BBNJ framework? While some aspects have been explored, indicating that different groups prioritise different aspects, the next section will critically examine how these perspectives have developed among stakeholders within BBNJ contexts and existing governance frameworks.

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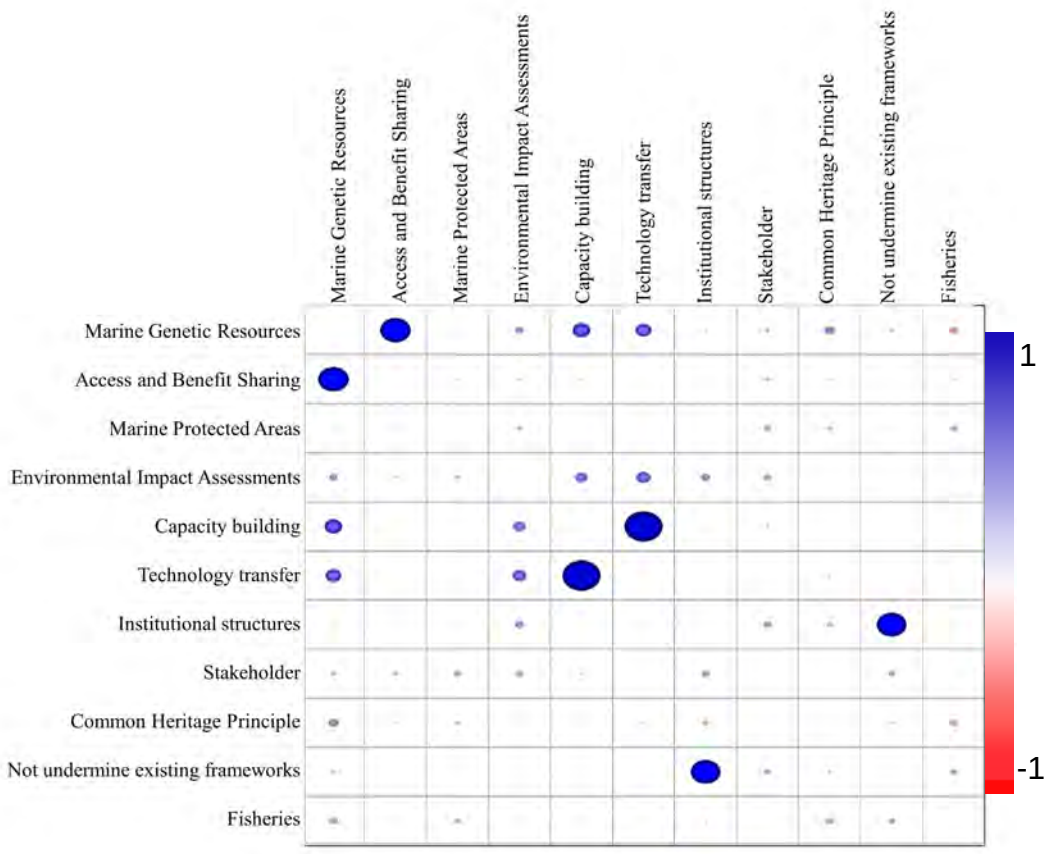

Figure 5.18: The correlation matrix showing the relationship between the various topics focused on in BBNJ literature

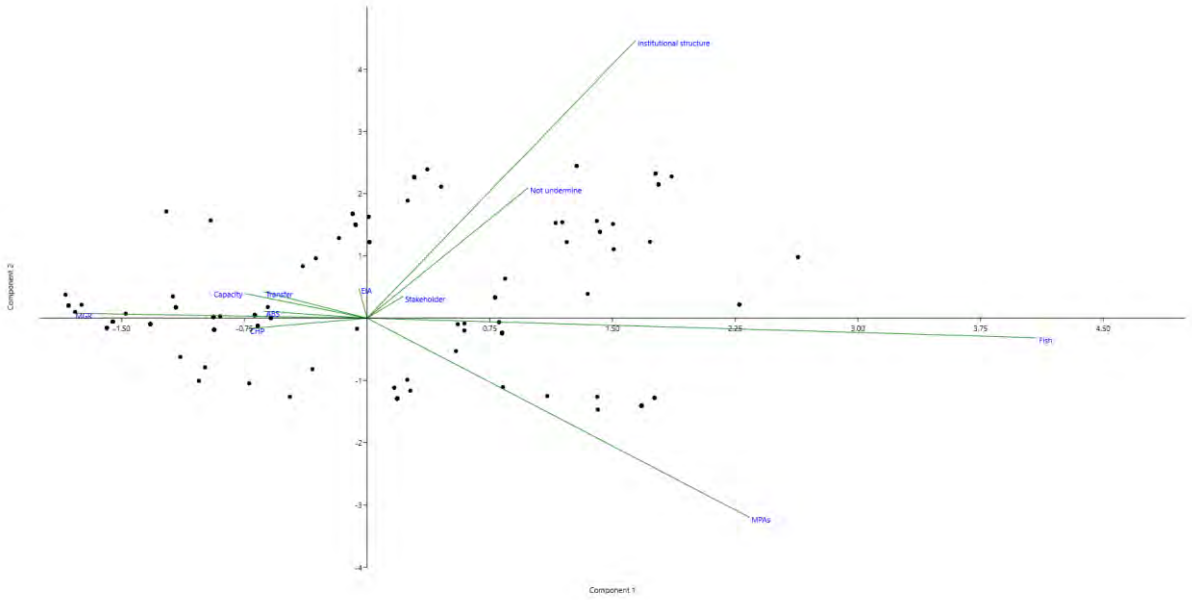

Figure 5.19: A principle component analysis showing the relationship between the package elements and selected concepts in BBNJ literature.

5.6. Conclusion

The central aim of this thesis is to examine biodiversity not merely as an ecological measure, but as a discourse—a structured way of understanding and engaging with the natural world that shapes what is valued, protected, or exploited. Through the context of the BBNJ processes, this chapter has examined the role of various actors such as scientists, governments and international institutions—in defining biodiversity priorities in global spaces. The analysis has uncovered why different groups engage with biodiversity discourses, and what they hope to achieve.

The chapter has illuminated how biodiversity discourse is influenced by the priorities and perspectives of those within powerful epistemic communities. By examining these communities, we see that biodiversity management is not neutral; it reflects the agendas and values of these influential actors, primarily states, which dominate the UN-driven governance structure. This exclusivity inherently shapes which biodiversity priorities are pursued. As states and affiliated institutions navigate the complex political and economic landscape of ocean governance, they embed their own values and objectives into biodiversity management, steering both discourse and decision-making processes.

This reflection underscores a key insight: biodiversity, as approached within the BBNJ, is not simply an ecological imperative, but a political one. Decisions about how to manage biodiversity on the global stage are deeply intertwined with issues of power, economic interest, and geopolitical influence. By exploring these dynamics, the thesis sheds light on how and why biodiversity becomes a contested terrain, where what is measured, managed, or protected is tied to the interests and aspirations of those with the authority to set global priorities. Consequently, understanding biodiversity as a discourse allows us to critically question who benefits from these governance structures and how global conservation objectives may serve broader, often unequal, socio-political agendas.

This realization encourages a more nuanced anlysis of biodiversity abstractions and objectives which will be the focus of the following chapter..

----------*End of Chapter 5*----------

Chapter 6: Tracing Marine Biodiversity in the BBNJ dis-Agreement

6.1. Introduction

"The ship has finally reached the shore," declared Rena Lee, the Singaporean president of the Intergovernmental Conferences (IGCs) for the negotiation of the BBNJ (Biodiversity Beyond National Jurisdiction) Agreement, as discussions on the general text concluded (Author observations during the final BBNJ IGCs, 2023). This metaphorical ship symbolises the culmination of intense, prolonged negotiations resulting in the finalised BBNJ text. The negotiation process involved diverse stakeholder groups, each contributing unique perspectives and interests that have significantly influenced, and will continue to shape, the implementation of the BBNJ Agreement and its objectives. The previous section provided an in-depth look at these stakeholders, highlighting how they obtain these positions of influence and the power dynamics involved in multilateral negotiations. Now that this metaphorical ship has reached the shore, it is crucial to re-examine the BBNJ Agreement and its objectives.

This chapter will analyse the various (mis) understandings of *marine biodiversity* underpinning this metaphorical voyage's central aim: the conservation and sustainable use of marine biodiversity in Areas Beyond National Jurisdictions (ABNJ).

The successful negotiation of the Agreement marks the end of one phase, but the ship reaching the shore is just the beginning of another complex journey. The successful negotiation of the Agreement marks the end of one phase, but reaching the shore signifies the beginning of another complex journey. Recalling the issues that informed UN resolution 69/292, which led to the BBNJ negotiations, we can summarise them as the environmental crisis and inequalities in the access and use of ocean space and resources in the ABNJ. These issues were diagnosed as a severe threat to the marine environment, which can be metaphorically considered the patient. Rena's metaphorical ship was tasked with diagnosing this patient and prescribing treatment. From the stated objectives of the BBNJ Agreement, conservation and sustainable use were intended as the prescription.

However, the complexity of marine biodiversity, with its myriad facets and interpretations, poses significant challenges for decision-makers and stakeholders seeking to offer remedies. Marine biodiversity is not explicitly defined in the BBNJ Agreement, despite being the core reason for its negotiation, opting instead to define other concepts that can be directly linked to this *marine biodiversity,* such as Marine Genetic Resources (MGR) (see BBNJ Article 1: Use of Terms). The processes of defining and legitimising certain aspects of *biodiversity* include or exclude various

human or non-human entities and perspectives. The contexts in which this biodiversity is defined and applied determine which aspects are emphasised, marginalised, or neglected (see also Chapter 4). This lack of definition makes it difficult to set clear objectives, as *biodiversity* adopts various meanings depending on the actors involved and contexts (ABNJ) in which the term is applied.

From the previous chapter, the four package elements (MGR/ABS, ABMTs/MPAs, EIAs, and CB&TT) and a few other aspects, such as fisheries, form the core ideas of *marine biodiversity* abstractions and objectives in the BBNJ context. However, how these elements fit into the diverse perspectives of this *marine biodiversity* and how they are implemented in practice is crucial for successfully implementing the Agreement. Simplistic targets and measures cannot address the complexity of the environmental crisis the BBNJ seeks to tackle(Fisher et al., 2024). **This chapter critically examines the various understandings of marine biodiversity within the BBNJ processes and the tensions arising from differing interpretations of these abstractions.**

Building on Chapter 5, this chapter incorporates additional data from interviews and surveys conducted with various respondents regarding what biodiversity means to them in different contexts, including the BBNJ IGCs. This analytical framework provides a foundation for situating and critically analysing all identified Chapters 5 and 6 perspectives within a broader social discourse (refer to Chapters 2 and 3 for the exact Underlying approach and theoretical framework and methods).

The analysis examines how BBNJ processes encapsulate or overlook diverse facets of marine biodiversity perspectives, enabling prioritising specific aspects and objectives or neglecting others. The goal is to dispel misinterpretations and foster a more nuanced understanding of the BBNJ's scope and objectives, whether explicit or implicit, within its texts and broader discourses. This section is relevant to various stakeholders, including marine scientists, policymakers, decision-makers shaping marine conservation policies, non-governmental organisations (NGOs), industries, communities engaged in marine resource utilisation, and scholars investigating international environmental governance. Through a critical analysis of the core elements, this study empowers stakeholders to engage in discussions with an informed awareness of what constitutes, might entail, and what does not align with the BBNJ's objectives. This comprehensive understanding aids in refining marine conservation policies, ensuring they are inclusive, informed by various perspectives, and effectively aligned with the needs of diverse stakeholders, especially the marginalised.

The chapter unfolds as follows;

The following section **6.2.** expands the analytical framework by incorporating a critical dataset that includes respondents' perspectives on marine biodiversity discourses gathered during events such as the BBNJ negotiations in New York. This data provides insight into the diverse views of stakeholders involved in these discussions and helps anchor the chapter's analysis in real-world examples. Section **6.3.** examines the different interpretations of marine biodiversity within the BBNJ negotiation context, illustrating how language plays a pivotal role in defining biodiversity and shaping its normative and practical dimensions. The section is broken down into six crucial subsections. Subsection 6.4. explores the use of strategic ambiguity in negotiations. Here, the focus is on how stakeholders use intentionally flexible language to build consensus, facilitating progress while managing the inherent complexities of defining biodiversity in a legally binding context. Subsection **6.5.** considers the impact of existing legal and governance frameworks on biodiversity discourse, analysing how prior regulations shape and sometimes limit how biodiversity is conceptualised and managed in the BBNJ process. Sections **6.6.** to **6.9.** investigate the processes by which certain biodiversity concepts and practices are prioritised or excluded. Each sub-section delves into specific aspects of this selective inclusion or exclusion, uncovering the underlying motivations and implications for biodiversity management and governance. Section **6.10.** concludes the chapter with a synthesis of these findings, introducing the next chapter concerning how abstract conceptualisations of biodiversity within the BBNJ framework are either informed by or serve specific objectives.

The following section will now address the respondents' perspectives, adding to the analytical framework of this chapter.

6.2. Respondent perspectives on marine biodiversity in BBNJ contexts

As seen in the interviews conducted (see Underlying approach and theoretical framework), most respondents were from Europe. These participants were national representatives, NGO observers, lawyers, journalists, or early-career marine professionals (including five Ph.D. students and two post-doctoral researchers) (**Figure 6.1**). Most respondents (24) had not participated in other international negotiations, with only 11 claiming prior experience. Two respondents were also involved in the final stages of the UNCLOS negotiations.

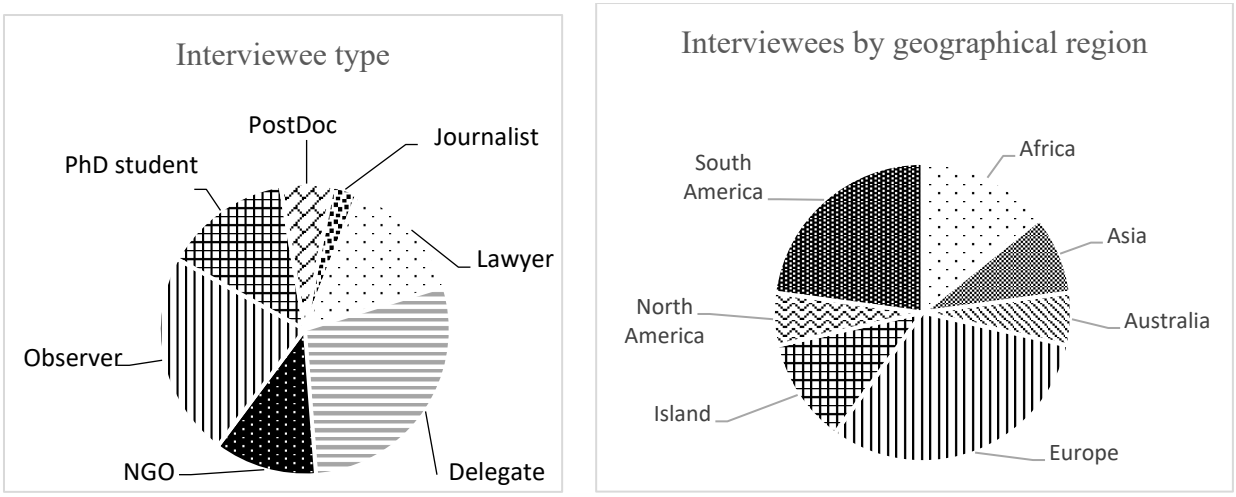

Figure 6.1: Distribution of respondents by type (left) and region (right).

The respondents varied in their claims of familiarity with critical BBNJ-related concepts (see guiding questions **Appendix Table 15**). Many said they were unfamiliar with the UNCLOS regime and CB&TT, while there was a higher claim of familiarity with MGR/ABS. However, a substantial number still expressed unfamiliarity with the MGR concept. Most respondents claimed familiarity with ABMT/MPAs, EIA, and marine biodiversity (**Figure 6.2**)

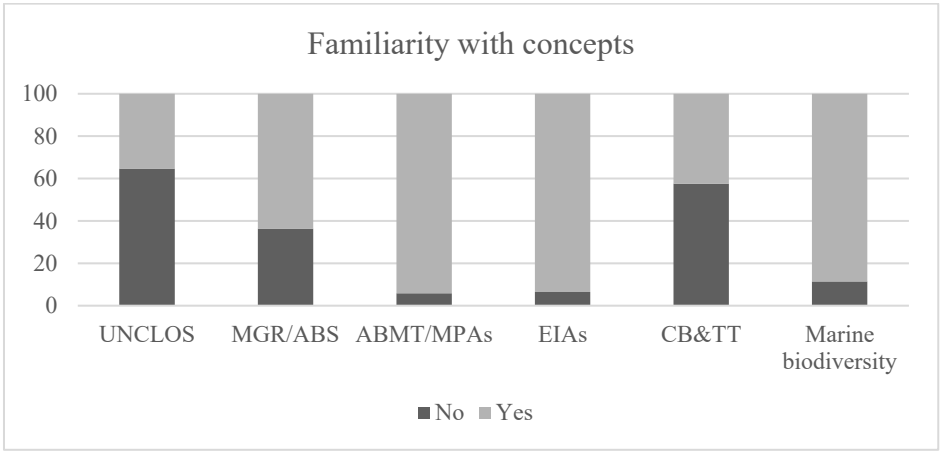

Figure 6.2: Stacked graph showing responses no and yes concerning familiarity with the BBNJ package elements (MGR/ABS, ABMT/MPAS, CB&TT and EIAs), Marine biodiversity and UNCLOS framework.

Several themes emerged regarding the perception of the treaty's objectives, with *marine biodiversity* being the dominant theme, alongside *climate change*, *environmental protection*, *international cooperation*, and *conservation*. Other notable themes included *governance in ABNJ*, *the High Seas*, *law*, *mining*, *power*, and *sustainable development*.

When asked what *marine biodiversity* means, respondents provided diverse answers ranging from specific mentions of *animals* and *plants* to broader concepts such as ocean *biodiversity*, *conservation*, *preservation*, *diversity of life forms*, *ecosystem diversity*, and *factors affecting marine life*. Other specific mentions included *fish*, *habitat preservation*, *marine animals*, *marine ecosystems*, and *marine species*. One respondent expressed that marine biodiversity meant "nothing" to them, while another described it as "vague" (**Figure 6.3**A).

Regarding how respondents viewed MGR and fish concerning marine biodiversity in the BBNJ context, responses to the guiding question— *Do you perceive this as a critical aspect of marine biodiversity or the same as marine biodiversity*? —revealed distinct patterns. Many respondents viewed *MGR* as synonymous with *marine biodiversity*, though one described *MGR* as confusing. For *fish*, fewer respondents saw them as equivalent to *marine biodiversity*, but most considered them a critical aspect of *marine biodiversity* in BBNJ contexts (**Figure 6.3**A).

When asked to categorically state if *MGR* and *fish* were the same as *marine biodiversity* in the BBNJ context, some respondents shifted from a positive to a negative response, indicating that these aspects were confusing in marine biodiversity. However, most respondents maintained their original positive or negative assertions (**Figure 6.3**B).

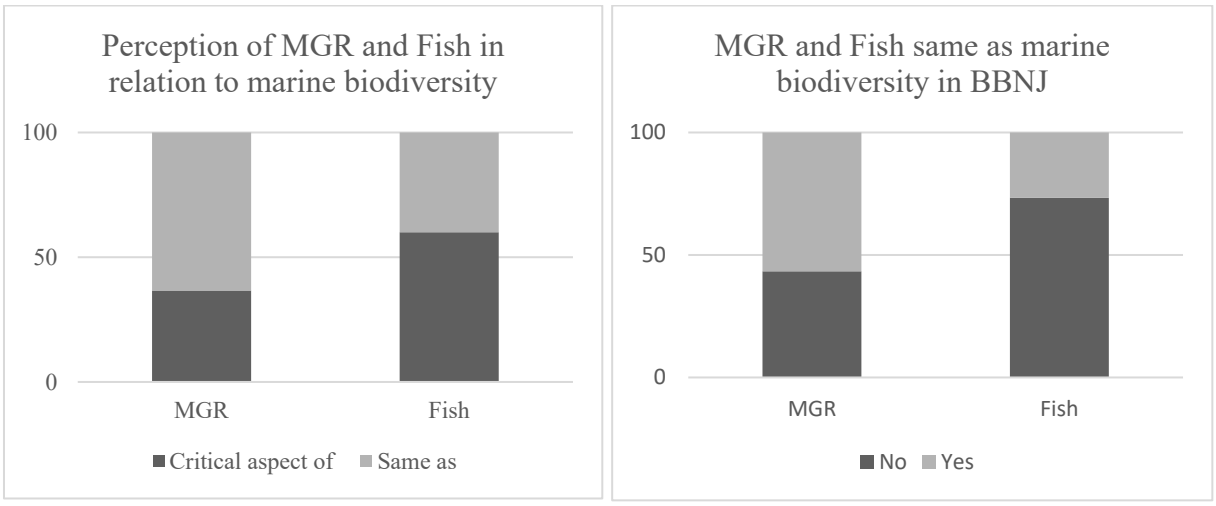

Figure 6.3: Binary question of the respondents' views on marine genetic resources and fish concerning marine biodiversity in BBNJ.

The respondents demonstrated a high level of interest in the four package elements, with the most interest expressed for MGR/ABS and the slightest interest in ABMTs/MPAs. These interest levels were derived from respondents' answers regarding the most compelling package elements. In

assessing which aspects respondents thought were the most critical for the negotiations, CB&TT and MGR/ABS received the highest emphasis among the package elements. *Climate change* and *implementation* were also frequently mentioned. Some respondents expressed confusion about various concepts, particularly MGR and its association with marine biodiversity, ownership, access, and benefit-sharing.

Notably, the sampling method, which combined random and purposive approaches, could have influenced these observations. The random sampling ensured a broad and unbiased representation of opinions. In contrast, the purposive sampling targeted groups likely to have informed or different perspectives on the BBNJ negotiations (see methods in Chapter 3). This methodological approach, meant to provide a comprehensive overview, may also have amplified the views of those already engaged or familiar with certain aspects of the negotiations. As a result, the high interest in MGR/ABS and CB&TT might reflect the broader community's general concerns and the specific priorities of more engaged stakeholders rather than the general group.

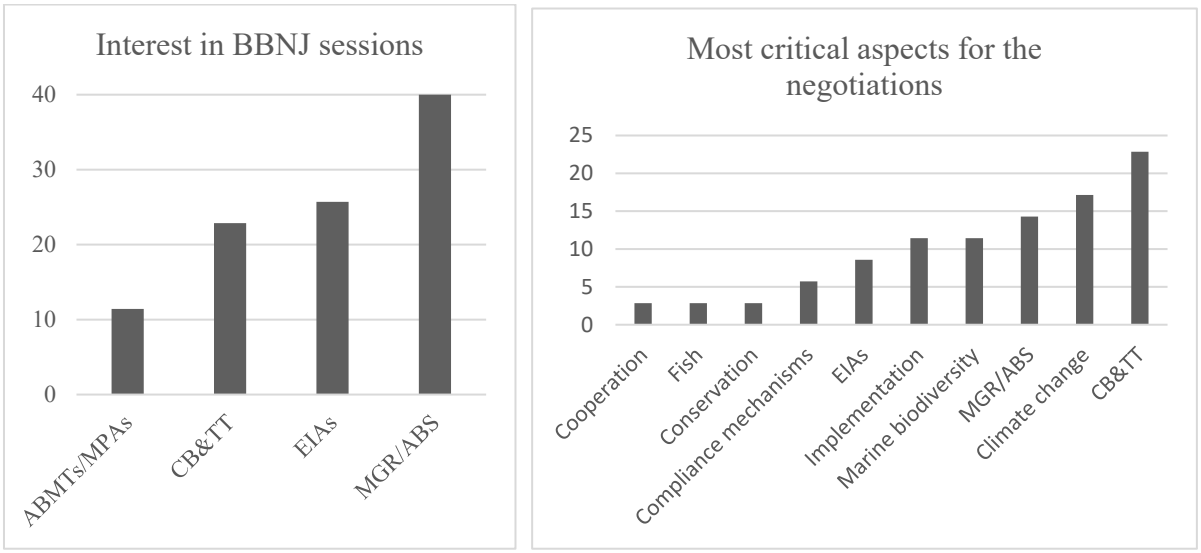

Figure 6.4: Respondents' Interests in the BBNJ sessions (left) and the aspects they think are most critical.

Several respondents commented that the BBNJ negotiations were a unique and historic experience for them, stating they had never been involved in any other international negotiations. Throughout the survey, many respondents consistently highlighted the prolonged and challenging nature of the BBNJ discussions. As the fifth session resumed, a sense of urgency and frustration prevailed among respondents. Post-adoption, social media posts from some respondents underscored the sentiment that witnessing the BBNJ's conclusion was a notable achievement for them. Adopting

the BBNJ Agreement was a personal milestone and a momentous occasion. Additionally, engagements with young career marine scientists outside the negotiations revealed general awareness of the BBNJ adoption, though clarity on its specifics was lacking. Some held positive views, referring to it as a significant policy achievement, while others expressed broader scepticism towards international policy efforts.

After adopting the BBNJ Agreement, an online survey using word clouds of treaty texts (**Figure 6.5**) was conducted to gather more insights about the agreement and its objectives (see Methods). The survey was designed to illuminate which terms, themes, and concepts resonate most with various stakeholders, shedding light on how different audiences interpret the agreement's language and objectives concerning biodiversity. This approach provides a visual and interpretive means to capture respondents' immediate associations with the treaty.

6.2.1. Analysis of Word Clouds

The survey results provided diverse insights from the 14 participating marine scientists, highlighting their perceptions of the BBNJ Agreement as represented through word clouds. These word clouds, generated from key marine biodiversity-related treaties, including the BBNJ Agreement itself, serve as visual representations of the most frequently used words in the texts. Notably, 50% of respondents clicked the read more button, accessing a summary of the BBNJ Agreement and its key elements (see **Appendix Figure 0.1**).

When asked which word cloud best represented the BBNJ Agreement, the Nagoya Protocol (cloud 2) emerged as the most popular choice, with five respondents selecting it. This was followed by the BBNJ word cloud itself (cloud 5), chosen by four respondents. Two respondents selected the UN Fish Stocks Agreement (UNFSA, cloud 6). In contrast, the Convention on Biological Diversity (CBD, cloud 4), the Convention on Migratory Species (CMS, cloud 8), and the United Nations Convention on the Law of the Sea (UNCLOS, cloud 3) each received one vote. None of the respondents selected the word cloud for the International Convention for the Regulation of Whaling (ICRW, cloud 1) or the United Nations Framework Convention on Climate Change (UNFCCC, cloud 7) (**Figure 6.5**).

Regarding the unique elements in the word cloud associated with the BBNJ Agreement, respondents highlighted vital terms such as *genetic*, *benefit sharing*, *resources*, and *beyond*. Other essential concepts included *marine*, *sea, international resources, migratory species*, and the

significance of genetic diversity. Additional terms that caught their attention were *Nagoya Protocol*, *shall*, *fishing*, and *conservation*.

When considering the environmental and biodiversity aspects represented in the BBNJ word cloud, respondents noted the presence of terms like *biodiversity, marine, biological, genetic, sustainable, conservation,* and *diversity.* They also observed the inclusion of terms related to *communities, government, social aspects, migratory species,* and *measures.* However, some respondents desired additional environmental and biodiversity aspects in the word cloud they selected to represent the BBNJ. Their expectations included *commons, environmental impact, vulnerability, uniqueness, biodiversity,* references to the *volume or body of water, water column, seabed/benthos,* and *physics considerations*.

Some participants provided detailed feedback on the word clouds they reviewed. One participant who chose word cloud 3 (UNCLOS) expressed a desire to include terms directly related to biodiversity, such as *species, keystone,* or *functional diversity,* which were notably absent. Another participant, who selected the Nagoya Protocol (cloud 2), observed that the word cloud focused heavily on people, politics, and processes, with insufficient emphasis on environmental or biodiversity-related terms. They pointed out the absence of words like *sea, ocean, water,* and references to specific *species* or *materials*.

When asked if there were any surprising or unexpected themes in the word clouds, a respondent who selected the Nagoya Protocol was surprised by the prominence of terms like “domestic” and felt that there was an overemphasis on “use” and “resources.” Another participant, who also selected the Nagoya Protocol, noted that some words in other clouds were irritating enough to dissuade them from choosing those options. They found the word “Nagoya” to be somewhat unusual in the cloud, while terms like “Secretariat” seemed out of place, some of the verbs appeared inconclusive in isolation.

Additionally, a respondent who chose the BBNJ (word cloud 4) remarked that they selected it because the terms aligned with their limited understanding of the BBNJ, with nothing seeming out of place. Meanwhile, another respondent who selected UNCLOS (word cloud 3) commented that all the terms made sense, indicating no surprises.

These insights reflect the complex and varied perceptions of the BBNJ Agreement among different stakeholders. While some respondents appreciated the focus on resources and governance terms, others expressed disappointment over the lack of what they perceived as more biodiversity-specific

language, like keystone species. These responses highlight a tension between resource-oriented and conservation-focused views, suggesting that the BBNJ's language may prioritise economic or political interests over ecological concerns for some stakeholders. This divergence underscores the challenge of framing biodiversity in a way that balances conservation and use in international agreements, further explored in Chapter 7. Together with the interview assessments, the word clouds add to the foundation for the analytical framework used to assess marine biodiversity abstraction in the BBNJ contexts. To begin with, the following section reflects on the various perspectives from these two analyses interviews and Word Clouds).

6.2.2. General reflections from the respondent surveys

The results from the respondents' surveys reveal several insights into the complexities of marine biodiversity and the ambiguities surrounding the BBNJ (Biodiversity Beyond National Jurisdiction) and its objectives. The geographic distribution of survey respondents shows a significant representation from Europe, partly due to the locations of events the author attended, which influenced the ability to conduct interviews. Despite this, the diversity of respondent backgrounds and perspectives provides crucial insights into the nuanced aspects of marine biodiversity.

One key observation is the relatively low familiarity among respondents with essential elements of the BBNJ, such as the United Nations Convention on the Law of the Sea (UNCLOS) and Capacity Building and Transfer of Marine Technology (CB&TT). This indicates potential gaps in understanding core concepts underpinning the BBNJ Agreement. Knowledge gaps among stakeholders can hinder effective participation in marine governance (Cvitanovic et al., 2015). Some delegations' lack of expertise and information on these core aspects suggests an uneven playing field during negotiations. As the literature on BBNJ's key elements grows, stakeholders will increasingly need to rely on this knowledge for informed ratification and decision-making. However, the current focus in the literature on Global North perspectives may not fully address the main concerns of stakeholders, especially in the Global South, perpetuating geographical knowledge disparities (Collyer, 2018).

Various NGOs and international bodies are lobbying for States to sign the new treaty quickly. However, these efforts must be accompanied by clear information on how the BBNJ may or may not address the concerns of different stakeholders. For instance, if delegates are not well-versed in UNCLOS—a regime crucial for the BBNJ's implementation, including defining the geographical

remit where it applies—they may struggle to fully comprehend the legal and conceptual ramifications of the BBNJ Agreement.

Moreover, the lack of a uniform understanding of critical elements impacts negotiations and subsequent implementation. A common understanding is crucial for coherent decision-making, enforcement, and minimising tensions (Beers et al., 2006). The diversity in responses underscores the multifaceted nature of marine biodiversity and the challenges in reaching a consensus on its management within areas beyond national jurisdiction (ABNJ). The varied objectives attributed to the BBNJ Agreement reflect diverse expectations and interpretations of the treaty's purpose, which may pose challenges in prioritising and aligning strategies.

Respondents assigned various meanings to marine biodiversity, highlighting semantic and conceptual ambiguities. This supports the thesis's argument that marine biodiversity discussions extend beyond ecological concerns to include social, geopolitical, and economic considerations. The presence of divergent views, including one respondent stating that marine biodiversity means nothing to them, underscores the need for careful communication and capacity building among stakeholders before and during treaty negotiations.

These findings, explored in depth in the following sections, set the stage for critically examining what marine biodiversity truly signifies within the context of the BBNJ Agreement and its management objectives. The absence of a clear and universally accepted definition of marine biodiversity within the BBNJ framework has led to varying interpretations and expectations of the Agreement's scope and purpose. To fully grasp the BBNJ's objectives and reach, it is essential to carefully analyse the development of critical concepts, such as its package elements, and how these are framed within existing international frameworks and their practical applications.

The online survey results, where respondents identified instruments like the Nagoya Protocol as representative of the BBNJ, underscore the intricate conceptual connections between the BBNJ and other pre-existing agreements. This observation points to a broader interrelationship and potential overlap between the BBNJ and other treaties governing biodiversity and genetic resources. Linking the survey responses to a more detailed textual analysis allows for uncovering more profound, nuanced interpretations that might be overlooked. This transition will reveal how the BBNJ Agreement is positioned within the broader landscape of international environmental governance and how its undefined terms and concepts might influence its implementation and effectiveness.

Cloud 1

Cloud 2

Cloud 3

Cloud 4

Cloud 5

Cloud 6

Cloud 7

Cloud 8

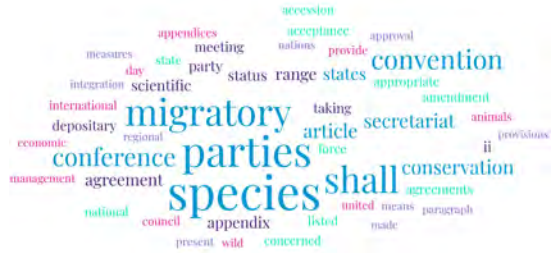

Figure 6.5: Word clouds of ocean frameworks generated from key marine biodiversity-related treaty texts. From 1-8, ICRW, Nagoya Protocol, UNCLOS, CBD, the BBNJ, UNFSA, UNFCC and CMS respectively.

6.3. The scope of marine biodiversity and objectives in the BBNJ

When you hear biodiversity in a phrase, the meaning depends on the speaker, and the phrase bends to their will. Who am I to change it? -Authors' view on biodiversity

Exploring marine biodiversity through various engagements, stakeholders, and documents reveals various perspectives that underscore the complexity of setting objectives within the BBNJ Agreement and in broader international environmental governance. The diverse interpretations and expectations surrounding marine biodiversity arise from numerous social, historical, economic, cultural, and political factors, leading to a multifaceted and often fragmented understanding of this vital concept.

One prevailing bias is to frame biodiversity predominantly as a North-South issue, which can inadvertently downplay or obscure domestic interests and conflicts (Rosendal, 2000). This oversimplification fails to capture the full spectrum of biodiversity management concerns, influenced by the unique attributes, knowledge systems, and governance practices specific to each context. Countries have significant differences in implementing biodiversity objectives domestically or internationally across various biodiversity regimes (Chandra and Idrisova, 2011; Gardner et al., 2012; Obura et al., 2021; Raustiala, 1997a). It is crucial to delve into the causal relationships between factors at play to truly grasp the complexity of marine biodiversity and its governance in BBNJ contexts. By examining the counterfactual scenarios between dependent and independent variables (King et al., 2021), We can better understand how different interpretations and emphases emerge and how they shape the discourse and decision-making processes in the international arena.

The following section delves into these causal relationships to reveal marine biodiversity and objectives in BBNJ contexts.

6.4. Strategic ambiguity

The BBNJ Agreement highlights marine biodiversity as its central theme in both name and objectives, yet it does not define marine biodiversity in its text. According to Article 31 of the 1969 Vienna Convention on the Law of Treaties (VCLT, 1969), the general rule for interpreting generic terms in treaties is to take their ordinary meaning at the time of drafting, considering the context and the treaty's object and purpose (Article 31(1)). Notably, the VCLT guidelines do not suggest using academic writings as a tool for interpreting treaty terms (Dunoff and

Pollack, 2012). Instead, the authoritative interpretation remains tied to the treaty's specific context and goals (Pan, 1997). Paragraphs 2 and 3 of Article 31 of the VCLT clarify that the context includes the preamble, annexes, and any subsequent Agreement, practice, or relevant rules of international law between the Parties. This perspective is crucial as it emphasises that the contexts from which international law emerges are crucial to interpreting treaty concepts.

Article 32[14] (a) and (b) of the VCLT add that if the interpretation of a term leaves the meaning ambiguous or obscure or leads to a manifestly absurd or unreasonable result, the treaty should provide supplementary means of interpretation. This recourse to supplementary means of interpretation could be from external sources or by defining generic terms (Linderfalk, 2007). Interpretation of treaties extends to the authentication of treaty text in multiple languages (Article 33 VCLT). Therefore, if marine biodiversity is not defined in the BBNJ Agreement, it only means that it was considered a clearly understood concept that retains a generic meaning or could easily be interpreted from external sources such as the 1992 CBD (Convention on Biological Diversity). That also depends on whether the courts recognise external sources as legitimate.

There is a vague interpretation of marine biodiversity, despite some stakeholders referencing the CBD definition, which informed some relevant concepts like MGR (Marine Genetic Resources) discussed shortly. The absence of a specific definition leaves stakeholders with an ambiguous concept. Using multifaceted terms like marine biodiversity fosters strategic ambiguity—intentionally employing terms with broad meanings to serve multiple purposes (Leitch and Davenport, 2007). As captured in respondents' interviews, each person can assume their interpretation of this broad concept (see 6.2. Respondent perspectives on marine biodiversity in BBNJ contexts). The ambiguity can allow flexibility in negotiations by accommodating diverse perspectives and fostering consensus, but it can also lead to indecision and lack of clarity on objectives (Bernkopf Tucker, 2005; Denis et al., 2011).

[14] Article 32 on Supplementary means of interpretation: "Recourse may be had to supplementary means of interpretation, including the preparatory work of the treaty and the circumstances of its conclusion, in order to confirm the meaning resulting from the application of article 31, or to determine the meaning when the interpretation according to article 31: (a) leaves the meaning ambiguous or obscure; or (b) leads to a result which is manifestly absurd or unreasonable.

For instance, within the UNCLOS framework, the term marine environment is not explicitly defined, allowing for a broad interpretation (Tang, 2023). Other instruments, such as the ISA Mining Code, attempt to define the marine environment as encompassing the physical, chemical, geological, and biological components, including the seabed, ocean floor, and the airspace above, that interact to determine the marine ecosystems' productivity, state, and quality[15], International courts and tribunals often adopt a broad interpretation of what constitutes the marine environment, adapting to evolving scientific knowledge and prevailing circumstances (Harrison, 2013). For example, the Southern Bluefin Tuna case[16] (New Zealand v Japan) emphasised marine living resources as crucial for environmental protection. In the South China Sea Arbitration case (Philippines v China)[17], the interpretation extended to include marine biodiversity, represented by endangered species like sea turtles, corals, and giant clams. The interpretation of the Chagos Arbitration case (Mauritius v United Kingdom) included ecosystem conservation.

In other words, even without a precise definition of the marine environment, international Agreements like UNCLOS demonstrate that it is still possible to establish a robust legal framework by defining critical concepts within the broader context. For instance, UNCLOS addresses the issue of pollution in Article 1(4) by defining it as the introduction by man, directly or indirectly, of substances or energy into the marine environment, including estuaries, which results or is likely to result in such deleterious effects as harm to living resources and marine life, hazards to human health, hindrance to marine activities, including fishing and other legitimate uses of the sea, impairment of quality for use of seawater and reduction of amenities.

By clearly articulating what constitutes pollution, UNCLOS provides a concrete basis for legal action and enforcement, even without a detailed definition of the marine environment. This approach allows international Agreements to focus on specific, actionable issues, ensuring that

15 see Regulations on Prospecting and Exploration for Cobalt-rich Ferromanganese Crusts in the Area [ISBA/18/A/1, 22 October 2012]

16 see Southern Bluefin Tuna, New Zealand v Japan, Provisional Measures, ITLOS Case No 3, (1999) 38 ILM 1624, ICGJ 337 (ITLOS 1999), 27th August 1999, International Tribunal for the Law of the Sea [ITLOS]

17 South China Sea Arbitration, Philippines v China, Award, PCA Case No 2013-19, ICGJ 495 (PCA 2016), 12th July 2016, Permanent Court of Arbitration [PCA]

the core concerns—such as protecting marine life and human health—are addressed in negotiations and subsequent legal actions. The defined concepts within these Agreements thus serve as the foundation for structured legal frameworks and the implementation of international obligations.

In the BBNJ Agreement contexts, 14 concepts are defined, including Area-based management tools, Areas beyond national jurisdiction, Biotechnology, Collection in situ, Convention [UNCLOS], Cumulative impacts, Environmental impact assessment, Marine genetic resources, Marine protected area, Marine technology, Party, Regional economic integration organisation, Sustainable use, Utilization of marine genetic resources (Article 1 of the BBNJ). The four package elements, MGR and benefit sharing, ABMTs/MPAs, CB&TT and EIA, were identified as the core aspects structuring the negotiations and seemingly providing a more targeted understanding of marine biodiversity and its objectives within the broader ambiguous concept. Scholarship on the BBNJ tends to centre on these elements (see 5.5. Inclusivity through the Scientific Discourse). The thesis contribution to this discourse is critically analysing these core ideas within various socio-legal interpretations of marine biodiversity. This approach prevents misunderstanding or over/underselling the BBNJ Agreement or its objectives if not carefully interpreted.

Multilateral Agreements do not emerge or operate in isolation but are embedded in a broader web of international rules, regimes and actors (Vadrot, 2023). The ambiguity of concepts is thus also connected to existing regimes from which new Agreements emerge. The BBNJ Article 4[18], emphasises this relationship, calling for non-undermining the Convention [UNCLOS], relevant legal instruments and frameworks, and relevant global, regional, sub-regional, and sectoral bodies. Langlet and Vadrot (2023), in their study of "Not undermining who?" examine some of the international organisations and frameworks that the BBNJ framework is connected to. They demonstrate how the development of various provisions and package elements in the BBNJ draft texts is linked to these organisations and frameworks, such as IUCN, FAO, UNEP, CBD, UNFSA and ISA, among others (Langlet and Vadrot, 2023b). The CBD, in particular, is pointed out as having a strong connection to the concepts used in the BBNJ by informing the terms defined in Article 1 of the BBNJ (Langlet and Vadrot, 2023b). However, a critical framework

18 see 12 BBJ Article 4 Exceptions

overlooked in this analysis is the UNCLOS regime and the clause's development. As emphasised in the not undermining clause, UNCLOS is the only framework explicitly mentioned and arguably had the most significant impact on the development of the BBNJ objectives, as discussed below and captured in Article 2[19] on the general objective of the BBNJ.

6.5. Not undermining the legacies of existing frameworks

The ambiguity of the not undermining clause in the BBNJ (Article 4 of BBNJ) leaves a multitude of existing frameworks that could impact the BBNJ implementation (Barnes, 2016; Beringen et al., 2022; Caldeira et al., 2023; Friedman, 2019; Haas et al., 2021; Langlet and Vadrot, 2023b; Qu and Liu, 2022; Quirk and Harden-Davies, 2017; Scanlon, 2018; Wang and Zhang, 2024). However, the UNCLOS regime, signed by over 164 UN member States, most of whom participated in the BBNJ negotiations (Appendix Table 19), was the primary focus in developing the not undermining clause by nearly all government delegation submissions. The Coastal States, viewing UNCLOS as a crucial treaty that safeguards their maritime rights, were particularly vigilant about the potential implications of the BBNJ Agreement on their rights. They advocated for and adjusted provisions to ensure these do not undermine their rights over areas within their national jurisdiction as delineated by UNCLOS, including maintaining rights over the exclusive economic zone (EEZ) and the continental shelf within and beyond 200 nautical miles.

From the argument of not undermining UNCLOS, participants contextualised the clause to highlight their specific interests. For example, despite not having ratified it, the United States ensured that any benefit-sharing regime for MGR aligns with UNCLOS. They were adamant that the BBNJ regime should not impede exploration, scientific research, innovation, or entrepreneurship [as emphasised in UNCLOS], nor should it undermine existing intellectual property rights frameworks. (United States of America, 2022). The International Maritime Organization (IMO, 2022) emphasised its primary authority over Area-based Management Tools (ABMTs) concerning international shipping activities, insisting that any new tools

19 BBNJ Article 2 General objective: "The objective of this Agreement is to ensure the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction, for the present and in the long term, through effective implementation of the relevant provisions of the Convention [UNCLOS] and further international cooperation and coordination.

developed under the BBNJ should complement rather than undermine its established procedures. The International Seabed Authority (ISA) welcomed provisions ensuring that the new BBNJ Agreement would not interfere with the rights and obligations defined under Part XI of UNCLOS concerning the seabed (International Seabed Authority, 2019).

However, one of the most emphasised aspects in developing the not undermining clause was fisheries, with various references to UNCLOS, the 1994 UN Fish Stocks Agreement (UNFSA) and Regional Fisheries Management Organizations (RFMOs). These discussions were driven by the concerns and interests of Pacific Small Island Developing States (PSIDs), the Food and Agriculture Organization (FAO), and RFMOs in attendance. Fishing countries were very vocal about these aspects, emphasising UNCLOS provisions. For example, Iceland, referencing Part XI of UNCLOS and the UN Fish Stocks Agreement as established precedents, argued that the BBNJ should respect and adapt to these existing Agreements. Iceland was particularly concerned that fisheries management regimes under the UNFSA should remain outside the BBNJ's material scope to avoid duplicative or conflicting regulations (Pálsson, 2019).

Critically speaking, few organisations or frameworks were central to developing the not undermining clause. Biodiversity frameworks like the CBD, for instance, were critical for consultations and influential to the BBNJ formulation but received less contention when discussing this clause. The BBNJ Agreement appeared to reinforce rather than undermine the CBD. Arguably, the objectives of the BBNJ align with those of the CBD, as both are, in theory, biodiversity Agreements focused on conservation and sustainable use.

Therefore, while multiple organisations and frameworks will undoubtedly impact the BBNJ (Barnes, 2016; Beringen et al., 2022; Caldeira et al., 2023; Friedman, 2019; Haas et al., 2021; Langlet and Vadrot, 2023b; Qu and Liu, 2022; Quirk and Harden-Davies, 2017; Scanlon, 2018; Wang and Zhang, 2024), the conceptual development of marine biodiversity concepts was strongly influenced by specific frameworks, with UNCLOS playing a critical role in framing underlying concepts alongside other ocean governance regimes, such as the UNFSA. The critical question is what marine biodiversity means in those frameworks. The variety of life carries particular perspectives that transcend just the physicality of life and are used to justify ocean governance regimes. To understand this perspective, it is crucial first to examine what this life (bio) is in the constitution of the sea, the UNCLOS regime.

6.6. Marine biodiversity as resources

The management of BBNJ is complicated by the variety of resources, including economically valuable resources like fish and minerals, marine genetic resources with unknown potential, and the cultural significance of certain species. This diversity necessitates a comprehensive approach to conservation and sustainable use.

Terms like biodiversity or biological diversity were not coined when UNCLOS was concluded. However, UNCLOS has reference to various aspects of what is deemed life, explicitly mentioning economic life[20] (Article 121), human life[21] (Article 146 and 155(2)) and marine life (Article 1 and 193(5)). Additionally, UNCLOS refers to life as a living resource in the marine environment. Notably, the term living resources appears 38 times, used more extensively and with greater detail than any other term that could refer to life more abstractly. However, this does not mean that living resources in UNCLOS can be strictly interpreted to encompass all marine life. The term marine life exists independently in Article 1(4) of UNCLOS concerning the pollution of the marine environment, addressing activities that could have deleterious effects on living resources and marine life. Article 194(5) calls for protecting and preserving rare or fragile ecosystems, the habitats of depleted, threatened, or endangered species, and other forms of marine life. In many texts that refer to the marine environment, it is common practice that broad terms are left fuzzy without any specific meaning (see discussion above on strategic ambiguity).

In policy text, particular distinctions reveal underlying nuances and focal points. For example, the differentiation between terms like living resources and marine life or endangered species and marine life conveys implicit interpretations. In these contexts, living resources or endangered species can arguably be seen as the primary focus of those specific provisions, whereas marine life encompasses all other entities, excluding the former. It is essential for those interpreting treaty texts to recognise these subtle nuances, as they hold unspoken meanings or objectives at the time of treaty negotiations. Thus, while living resources do not necessarily

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20 Article 12 UNCLOS: Rocks which cannot sustain human habitation or economic life of their own shall have no exclusive economic zone or continental shelf.

21 Article 146 on Protection of human life. see also mention in Article 155(2) for the review of the conference

equate to marine life, a nuanced understanding of living resources within UNCLOS is vital for interpreting life concepts and objectives under the UNCLOS regime and subsequently in the BBNJ. The term living resources in UNCLOS appears in combination with the objectives of conservation, management, maintenance, utilisation and exploitation, with the latter exploitation being the most associated term (Figure 6.6). For this thesis, I will briefly examine some of the critical underlying ideas behind living resources as defined by UNCLOS.

Living resources are not defined under UNCLOS (see Article 1 of UNCLOS for the defined concepts). Living resources are first mentioned in Article 21 of UNCLOS, which addresses the conservation of the living resources of the sea. In this respect, one could argue that living resources is a generic term expected to be understood broadly. However, articles 64 to 68 of UNCLOS provide some scope to these resources. They point out highly migratory stocks, marine mammals (particularly cetaceans: whales, dolphins, and porpoises), Anadromous stocks (Species like salmon that migrate from the sea up rivers to spawn), Catadromous species (Species like eels that migrate from freshwater to the sea to spawn), and sedentary species elaborated below. Articles 69 to 73 contain provisions for managing these living resources, including the rights of geographically disadvantaged nations, non-applicability of specific articles, and enforcement by coastal nations. Living resources on the High Seas are addressed in Articles 116 to 120, emphasising state duties and cooperation for their management, and marine habitat protection is discussed in Articles 192 to 196.

Crucial to highlight here is that UNCLOS framers primarily utilised a species approach to drawing the regime on living resources. However, it was not just any species but those associated with utilisation and exploitation found in the water column (see UNCLOS jurisdictional scope and zones in Chapter 2, Section 2.5.1(a)).

UNCLOS goes on to define resources according to article 133(a) as all solid, liquid, or gaseous mineral resources *in situ* in the Area at or beneath the seabed, including polymetallic nodules. Article 133 (b) continues that resources are referred to as minerals when recovered from the Area (see discussion in Section 6.3.5.

Minerals out the bio without the geo). This definition focuses on mineral resources, raising questions about whether it applies to living resources. To explore this phenomenon further, looking at other resource contexts in UNCLOS is crucial.

For example, Article 56 of UNCLOS grants coastal States sovereign rights to explore, exploit, conserve, and manage natural resources, including the continental shelf's living and non-living resources. Article 77(4) further clarifies the natural resources subject to coastal state jurisdiction on the continental shelf, specifying that these include the mineral and other non-living resources of the seabed and subsoil and living organisms of sedentary species. Sedentary species are defined in Article 77(4) as organisms which, at the harvestable stage, either are immobile on or under the seabed or are unable to move except in constant physical contact with the seabed or the subsoil. The definition of sedentary species underscores that living resources, particularly stationary ones, are considered part of the natural resources of the seabed and subsoil and treated similarly to mineral resources in the area. This perception is significant because UNCLOS applies different definitions and legal regimes based on the type of resource (living or non-living) and location.

For instance, Article 77(4) defines sedentary species depending on the harvestable stage, which could be the stage of the lifecycle when the species is harvestable or the particular season at which the species are captured from the water. Therefore, different stages of the same sedentary species, such as mussels, can be interpreted differently (Mossop, 2015). For instance, mussel larvae are free-swimming and found in the water column, which could place them in the High Seas in the context of the BBNJ Agreement. In contrast, adult mussels are sedentary and reside on the seabed (the Area, in BBNJ contexts), which places them under the water column legal regimes. Other benthic organisms, such as molluscs, crabs, and tubeworms found in hydrothermal vents, are also difficult to categorise because their life stages or behaviour can span different jurisdictions or legal geographies (Tyler, 2003b). For example, crabs might migrate between the seabed and water column, or tubeworms may be sedentary but rely on vent ecosystems (Tunnicliffe, 1991). The harvestable stage is often negotiated in international meetings between industrial actors and governments (Campling et al., 2012), determines whether they are sedentary.

Interestingly, article 68 excludes all sedentary species from the regime for marine living resources of the EEZ contained in Part V of UNCLOS. Scholars argue that this was partly because sedentary species were protected under the continental shelf regime before the establishment of the EEZ (Mossop, 2007). However, notably, the sedentary species that UNCLOS refers to in Article 77(4) were not of primary interest to the 77(4) clauses (Mossop, 2015). Minerals had been the focus of the draft article, with the *International Law Commission*

(ILC) failing to distinguish sedentary species as living organisms and minerals (Mossop, 2007). This also explains the structure of that text, mineral [the target] and other non-living resources of the seabed and subsoil together with living organisms belonging to sedentary species [the other] (see discussion above on the use of Strategic ambiguity). However, fish such as Sole and Plaice, the so-called bottom fish living at the bottom and bred there, were included in the living resource regimes (Scott, 1992). However, species categorisation remains ambiguous and cannot be quickly resolved precisely (see discussion in Chapter 4*).* Like other international frameworks, UNCLOS produces definitions that result from international relations and negotiations (Epstein, 2011). Moreover, these may not necessarily be identical to generic (biological) definitions. Definitions can apply to some aspects while providing caveats for excluding others (e.g., economic fisheries).

Scholars have, therefore, defined living resources according to Articles 61-68 and 77 (4) as non-sedentary species found in the water column but may also include sedentary species of the seabed and its subsoil [only] for conservation and management (Mossop, 2017; Rafaly, 2022). This emphasises that UNCLOS gives critical focus to the location of the resource when considering their management, conservation, and exploitation. Essentially, UNCLOS conceives life as a resource in the water column with the seabed and every other lifeform connected to it treated more like a mineral resource (see discussion on Minerals out the bio without the geo). Therefore, Article 133's definition of resources, although it relates to all mineral resources in the Area, generally includes other lifeforms within the broader category of natural resources.

The framers of UNCLOS believed that due to their infinite supply and renewal capacity, inexhaustible natural resources did not require conservation regulation and could be considered *res nullius communius* (Pulvenis de Séligny, 2010). Their focus was on explorable, exploitable, or extractable resources, which could potentially lead to conflict. This also partly explains why the specific nature of the living resources elaborated in Articles 61 to 68 of UNCLOS focuses on conservation, allowable catch, associated species, and jurisdiction over exploitation. Fisheries, which are a critical resource for the livelihoods of most participating countries and can quickly become a point of contention, including for the BBNJ, are a big focus in ocean governance (see discussion below). As per the UNCLOS framework, oceanic life is subject to protection due to its economic nature and potential for yielding conflict.

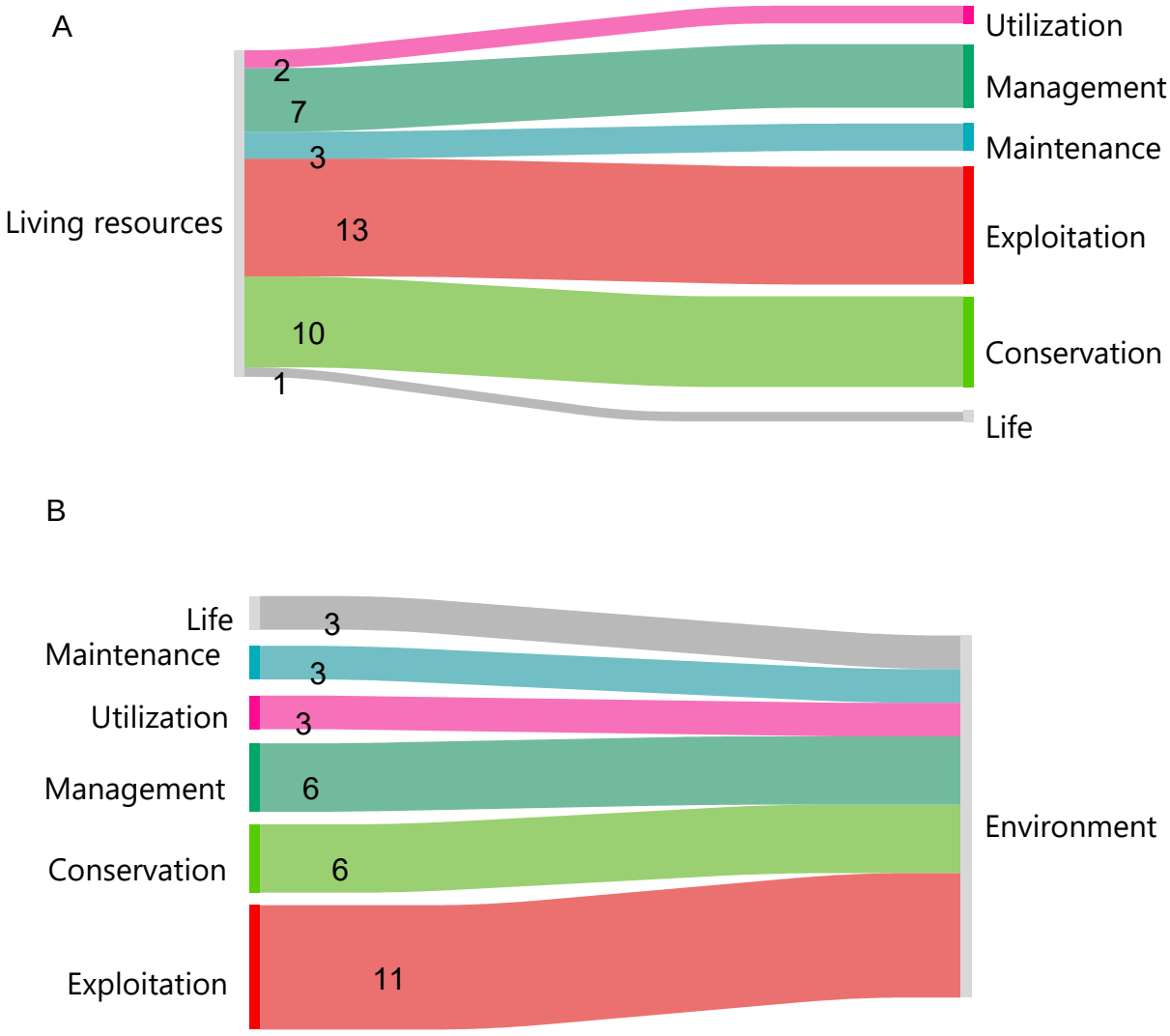

Figure 6.6: The Sankey diagram illustrates the connections between critical themes in UNCLOS: living resources (A), marine environment (B), and themes of life, maintenance, utilisation management, conservation and exploitation. UNCLOS Objectives. Each flow's width represents the frequency with which themes are mentioned concerning each other. A more comprehensive flow indicates a stronger emphasis or more frequent mention of a specific objective in the context of either living resources or the marine environment. This visualisation provides an overview of how UNCLOS prioritises various objectives, showing which themes are most strongly associated with specific goals.

6.7. Fisheries out: our fish is not your marine biodiversity

Among the living resources, fisheries stand out as one of the most critical elements in ocean governance, as reflected throughout this thesis analysis. Despite ocean frameworks, in general, being very shallow concerning environmental issues, the management of economic fisheries has always had distinct governance frameworks (see **Figure 1.1**). The focus on fisheries is partly informed by the role of fisheries in the livelihoods of negotiating parties as well as the potential of sparking ocean disputes that UNCLOS primarily aims to address and remains a predominant value system in international discourse (5.1.2(a) The UN system and its military dilemma). Nonetheless, the regime on fisheries in UNCLOS concentrates on national waters and EEZs, focusing on the High Seas, mainly concerning the conservation and management of living resources in general. During UNCLOS drafting, the lack of specific attention given to fisheries in the High Seas was partly due to the assumption of low biological productivity in these areas, which has been disproven over the years (Swartz et al., 2010). Technological advancements have also increased access to fisheries in ABNJ, and there is now a better understanding of the biological productivity of fisheries in these areas than previously thought (Cochrane, 2021; Vierros and Harden-Davies, 2020).

Most global economic fisheries and fishing activities typically occur in coastal areas within Exclusive Economic Zones (EEZs). However, significant fishing in the High Seas is considered international waters and part of ABNJ (Sumaila and Bawumia, 2014). However, a lot of the economically significant fisheries, like Tuna and associated species, are also transboundary, migrating across EEZs of various countries and the High Seas, necessitating collaborative management in both oceanic zones (Palacios-Abrantes et al., 2020). The establishment of UNFSA in 1995 strengthened regional fisheries management organisations (RFMOs) in response to the need to manage these highly migratory and straddling stocks (Haas et al., 2020). Over the past few decades, fishing activities, including on the High Seas, have steadily increased, attracting equity and environmental concerns (Carmine et al., 2020; Österblom et al., 2022; Sumaila et al., 2016)These issues are why the BBNJ Agreement was negotiated, and they are compounded by climate change, overfishing of some economically significant fish stocks, by-catch of threatened or vulnerable species, and habitat destruction.

However, whereas fish are undoubtedly part of marine biodiversity and crucial for management goals, fisheries are treated differently and distinctly from other aspects of marine biodiversity,

both in theory and practice. Fisheries, in this context, encompass all species typically caught by fishing vessels, including traditional fish of the taxonomic order *Perciformes,* including economic fish like tuna, as well as crustaceans (such as crabs, lobsters, and shrimp) and cephalopods (such as octopus and squid), and associated activities. Fisheries management is characterised by high sensitivity and conflict (see 7.6. Fragile foundations: Navigating potential conflicts from the BBNJ Agreement), both in international negotiations and practices). During the fifth session of the Intergovernmental Conference (IGC) for negotiating the BBNJ Agreement, a delegate from a Pacific small island state (PSID) commented in an interview, "Our fish are not your marine biodiversity" when asked whether fisheries should be integrated into the BBNJ regime. The sentiment raised by the delegate partly prompted inquiries into the perspectives and expectations of fisheries States and stakeholders concerning marine biodiversity and achieving the BBNJ objectives.

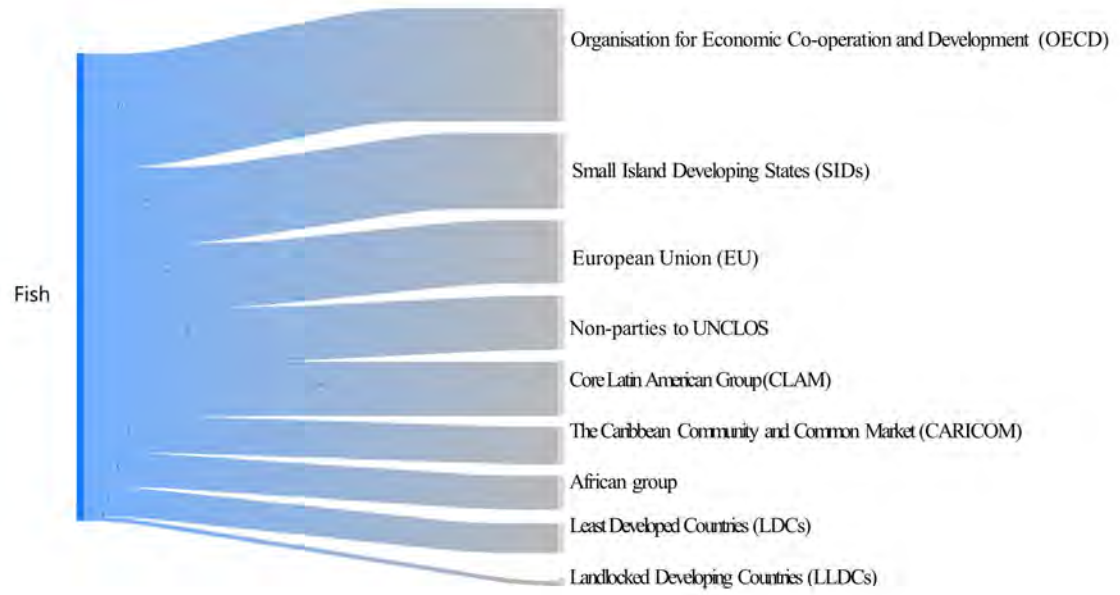

Figure 6.7: Sankey diagram illustrating the frequency of fishery references by various negotiating groups in their statements. The width of each flow indicates how often fisheries were mentioned, highlighting the relative emphasis on this topic by different groups.

Fisheries are often mentioned distinctly from the rest of the elements of marine biodiversity in discussions and texts. For example, during the fifth session's general exchange of views, the Food and Agriculture Organization of the United Nations (FAO) emphasised the

interconnectedness of fisheries management and marine biodiversity conservation (FAO, 2023). They stated that the FAO recognises that the sustainable utilisation of fisheries resources in areas beyond national jurisdiction cannot be achieved without marine biological diversity conservation. This statement has two critical interpretations. The first is that while the primary focus of the FAO here is on the sustainable use of fisheries resources, this goal cannot be isolated from the broader context of conserving marine biodiversity. It underscores the necessity of integrating broader biodiversity objectives into fisheries management practices. On the other hand, the statement also clearly distinguishes between the primary focus, fisheries, and the broader context, marine biodiversity. Moreover, in the same statement, FAO also emphasised that existing frameworks and Agreements, particularly the UN Fish Stocks Agreement, should not be affected by the new Agreement [BBNJ] unless the fisheries involve emergent forms of utilisation, such as bioprospecting (FAO, 2023).

The high sensitivity around fisheries has various dimensions to it. For example, during the Western and Central Pacific Fisheries Commission meeting (WCPFC, 2023), I introduced myself as a conservation biologist focused on environmental issues to one of the delegates. The delegate, looking startled, immediately clarified that the meeting was focused on fisheries rather than the broader environmental context. A seasoned fisheries scholar at the same meeting explained the delegate's uneasiness, noting that fisheries professionals and scholars often do not consider themselves biodiversity conservationists (Author engagements with respondents, 2023). They added that biodiversity scholars are frequently seen as too radical in their approaches, leading to their marginalisation within fisheries circles.

These sentiments highlight a significant divide between fisheries and biodiversity conservation. They also underscore broader tensions between the goals of fisheries management—which often prioritise the sustainable use of fish stocks—and those of general conservation, which emphasise the protection of all species and ecosystems, often advocating for more stringent measures. An analysis of terms associated with fisheries in a sample of fisheries literature also captures this distinction, with words such as "utilisation" and "exploitation" appearing more frequently than "conservation" in the strict ecological sense (Andrews et al., 2021; Avadí and Fréon, 2013; Cordeiro, 2019; Evans et al., 2011; Fytilakos, 2021; Syed et al., 2018; Weber et al., 2019). This distinction becomes even more apparent when addressing the management of a single commercially exploited fish species, such as tuna, within the broader ecological concept of marine biodiversity. Fisheries management seeks to optimise yield and ensure the long-term

viability of specific fisheries, which aligns with the concept of sustainable use in these contexts (Goti-Aralucea et al., 2018; Hilborn, 2007). This approach often prioritises the economic benefits of fish stocks rather than conservation for its own sake, and it may neglect the interconnectedness of ecosystems in the process (Cochrane, 2021).

In contrast to fisheries disciplines, conservation is primarily a crisis discipline focused on the careful preservation, protection, and prevention of exploitation of nature or its attributes, especially when there are impending threats (Meinard et al., 2019; see also Chapter 4, Section 4.6. Biodiversity as a crisis concept). Conservationists and conservation proponents typically prioritise maintaining the health and diversity of entire ecosystems (irrespective of the component and parts), with use as a secondary objective or management strategy. In other words, the emphasis is placed on achieving ecological balance and sustaining the natural processes that support all life on Earth, encompassing a wide range of organisms, not just specific ones like fish. As more species are seen as commercially viable commodities (recently octopus) (Clausen & Clark, 2005; Longo et al., 2015), the rift between fisheries management objectives and traditional conservation in a strict ecological sense will likely increase.

Tensions arise when conservation objectives for nature's sake must meet with those of sustainable use (see next Chapter 7). For example, in fisheries management, a species is deemed sustainable if it can be harvested at a rate that does not compromise its future availability (Blamey et al., 2022; Knudsen and McDonald, 2020). However, if this sustainability assessment does not carefully consider the species' ecological associations and integral role within the broader ecosystem, there can be significant consequences both for the species and the broader system (Bolin et al., 2021; Gebremedhin et al., 2021). The reduction in the population of a single species can trigger cascading effects throughout the ecosystem, such as disrupting predator-prey relationships, altering habitat structures, and impacting the overall health of the marine environment (Crowder et al., 2008). Therefore, many conservationists and fisheries managers agree on a need for a more holistic approach to fisheries management that considers the interconnectedness of species and ecosystems rather than focusing solely on the sustainability of individual species in isolation (Charles, 2023; Fogarty, 2014; Gaichas, 2008).

However, the institutional and policy frameworks governing fisheries and biodiversity conservation have emerged separately, leading to fragmented efforts. Only a few conservation frameworks like CCAMLR, sometimes considered an RFMO but technically not, take on a

broader mandate to include general conservation objectives, like establishing MPAs and fisheries management (Brooks, 2013; Haas, 2021). Fisheries management typically falls under the purview of industry and regulatory bodies such as FAO, focused on economic and food security objectives (Garcia and Rosenberg, 2010; McClanahan et al., 2015). In contrast, biodiversity conservation is usually championed by environmental organisations and government agencies dedicated to protecting natural resources and ecological health. This is partly why fisheries and marine biodiversity conservation often have differing goals, methods, and institutional frameworks. Building a cohesive framework that considers fisheries within broader marine biodiversity objectives comes at a cost. For instance, artisanal communities and small island States heavily rely on fishing for their livelihoods, cultural practices, food security and development needs (FAO, 2024). They, however, often face a disproportionate burden in maintaining fish stocks for their domestic needs, as well as meeting the demands of luxury consumers in high-income countries, due to strict fishing regulations (Hanich, 2012, 2014; Hanich and Ota, 2013). Implementing stringent management measures such as seasonal closures of fishing grounds to allow some species recovery may be a more holistic way for broader marine biodiversity objectives but can impose significant burdens on the communities that need access to these vital resources (Campbell and Hanich, 2015). The burden of conservation exacerbates existing inequalities in managing natural resources, with wealthier fishing countries equipped to adapt to new regulations. At the same time, Small Island States (SIDs) and small-scale and subsistence fishers struggle to cope with changes (Campbell and Hanich, 2015). This disparity contributes to tensions between conservation and fisheries management proponents.

Moreover, fisheries regimes like the IWC, UNFSA, and various RFMOs already have mandates in ABNJ, which set legally binding conservation and management measures mainly for the use of economically important fisheries. Others are generally concerned with all fisheries in a given area, while others specialise in the types of fisheries. For example, the management of highly valued tuna stocks, including bluefin, yellowfin, bigeye, and skipjack, is typically overseen by tuna RFMOs such as the Western and Central Pacific Fisheries Commission (WCPFC) and the Inter-American Tropical Tuna Commission (IATTC) Atlantic cod, a cornerstone of the fishing industry in the North Atlantic, is a primary focus for the Northwest Atlantic Fisheries Organization (NAFO). Recognising RFMOS is significant as these organisations will likely have immense implications on implementing the BBNJ Agreement and its goals. Fisheries

regulated under relevant international law and or are covered in fishing and fishing-related activities were excluded in the regime on MGR, a core aspect of the BBNJ Agreement, unless for the purposes codified in Part II of the BBNJ Agreement such as for bioprospecting (Article 10 (2)).

The Inclusion of fisheries into marine biodiversity objectives in the BBNJ contexts will rely heavily on these RFMOs (**Table 11**). Indeed, scholars already indicate that RFMOs are the crucial existing frameworks not to be undermined in the BBNJ Agreement and will be crucial for establishing a coherent framework for the new Agreement (Haas et al., 2020; Haas et al., 2021). During BBNJ negotiations, sentiments were noted during engagements that fishing nations under RFMOs may find it easier to adopt new conservation and sustainability mechanisms for ABNJ through existing regional frameworks rather than through a new robust BBNJ framework. If key fishing nations do not ratify the BBNJ, RFMOs could play a significant role in implementing some of its key objectives. Some already view the BBNJ as a platform to strengthen existing frameworks rather than as an operational framework itself (Haas et al., 2021). Although RFMOs face challenges, such as issues with transparency and a holistic approach to marine protection (Fischer, 2022), they have established frameworks respected by their member States, which could help implement BBNJ objectives (Haas et al., 2021). For example, RFMOs have already applied strict measures like seasonal closures, exploratory fishing, and bycatch regulation (Scanlon, 2018). The key questions are whether these measures can be expanded to protect other marine biodiversity elements and whether non-RFMO States will perceive RFMOs as legitimate entities to handle the BBNJ mandate. The challenges of scientific knowledge gaps, uneven governance, and the unpredictability of ecological and human impacts are relevant to fisheries management and the BBNJ. However, they are more complex in the BBNJ context due to the diversity of stakeholders and resources involved.

Therefore, while marine biodiversity is often viewed as an all-encompassing concept, it is not entirely inclusive. Governance and management actions are not comprehensive, as they can easily unsettle those who rely on specific elements of this broad concept. Fisheries are among these crucial elements, frequently perceived as distinct from the broader notion of marine biodiversity.

Table 11: Regional Fisheries Management Organizations (RFMOs) and the various countries involved

Focus	RFMO and countries involved
General focus on fisheries management	**Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR)***
	Members: Argentina, Australia, Belgium, Brazil, Chile, China, Ecuador, European Union (EU), France, Germany, India, Italy, Japan, Korea (Republic), Namibia, Netherlands, New Zealand, Norway, Poland, Russia, South Africa, Spain, Sweden, Ukraine, United Kingdom, United States, Uruguay Acceded: Bulgaria, Canada, Cook Island, Finland, Greece, Mauritius, Pakistan, Panama, Peru, Vanuatu
	The General Fisheries Commission For The Mediterranean (GFCM)
	Members: Albania, Algeria, Bulgaria, Croatia, Cyprus, Egypt, European Union, France, Greece, Israel, Italy, Lebanon, Libya, Malta, Monaco, Montenegro, Morocco, Romania, Slovenia, Spain, Syria, Tunisia, Türkiye Non-Contracting Parties: Bosnia-Herzegovina, Georgia, Ukraine, Moldova, Jordan, And Saudi Arabia
	The North East Atlantic Fisheries Commission (Neafc)
	Members: EU, Iceland, Norway, Russia, Denmark On Behalf Of Faroe Islands And Greenland Cooperating Non-Contracting Parties: Bahamas, Canada, Panama
	The North Pacific Fisheries Commission (NPFC)
	Members: Canada, China, The European Union, Japan, Korea (Republic), Russia, Taiwan, United States, And Vanuatu Non-Contracting Party: Panama)
	The Northwest Atlantic Fisheries Organization (NAFO)
	Contracting Parties: Canada, Cuba, Denmark In Respect Of Faroe Islands And Greenland, EU, France In Respect Of St. Pierre Et Miquelon, Iceland, Japan, Norway, Korea (Republic), Russia, Ukraine, United Kingdom, United States
	The South East Atlantic Fisheries Organisation (SEAFO)
	Members: Angola, European Union (EU), Japan, Korea (Republic), Namibia, Norway, And South Africa
	The South Indian Ocean Fisheries Agreement (SIOFA)
	Members: Australia, China, The Cook Islands, The European Union, France On Behalf Of Its Indian Ocean Territories, Japan, The Republic Of Korea, Mauritius, Seychelles, And Thailand; Participating Fishing Entity: Taiwan

Focus	RFMO and countries involved
Specific on tunas and tuna-like species	Non-Contracting Parties: Comoros And India. Kenya, Madagascar, Mozambique, And New Zealand
	The South Pacific Regional Fisheries Management Organisation (SPRFMO)
	Members: Australia, Belize, Chile, China, Cook Islands, Cuba, Ecuador, European Union (Eu), Faroe Islands, Korea (Republic), New Zealand, Panama, Peru, Russia, Taiwan, United States, Vanuatu Non-Members: Curaçao, Liberia
	Commission for the Conservation Of Southern Bluefin Tuna (CCSBT)
	Members: Australia, European Union (EU), Indonesia, Japan, Korea (Republic), New Zealand, Taiwan, South Africa
	Indian Ocean Tuna Commission (Iotc)
	Members: Australia, Bangladesh, China, Comoros, European Union (Eu), France, India, Indonesia, Iran, Japan, Kenya, Korea (Republic), Madagascar, Malaysia, Maldives, Mauritius, Mozambique, Oman, Pakistan, Philippines, Seychelles, Sierra Leone, Somalia, South Africa, Sri Lanka, Sudan, Tanzania, Thailand, United Kingdom, Yemen
	International Commission for the Conservation Of Atlantic Tunas (ICCAT)
	Members: Albania, Algeria, Angola, Barbados, Belize, Brazil, Cabo Verde, Canada, China, Côte d'Ivoire, Curacao, Egypt, El Salvador, European Union (Eu), France (In Respect Of Saint Pierre And Miquelon), Gabon, Gambia, Ghana, Guatemala, Equatorial Guinea, Guinea Bissau, Guinea Republic, Honduras, Iceland, Japan, Korea (Republic), Liberia, Libya, Mauritania, Mexico, Morocco, Namibia, Nicaragua, Nigeria, Northern Ireland, Norway, Panama, Philippines, Russia, São Tomé And Príncipe, Senegal, Sierra Leone, South Africa, St Vincent & The Grenadines, Syria, Trinidad And Tobago, Tunisia, Turkey, United Kingdom, United States, Uruguay, Venezuela); Non-Members: Bolivia, Taiwan, Suriname, Guyana)
	The Inter-American Tropical Tuna Commission (IATTC)
	Members: Belize, Canada, China, Colombia, Costa Rica, Ecuador, El Salvador, European Union (Eu), France, Guatemala, Japan, Kiribati, Korea (Republic), Mexico, Nicaragua, Panama, Peru, Taiwan, United States, Venezuela, Vanuatu); Cooperating Non-Members: Bolivia, Chile, Honduras, Indonesia, Liberia)
	Western And Central Pacific Fisheries Commission (WCPFC)
	Members: Australia, China, Canada, Cook Islands, European Union, Federated States Of Micronesia, Fiji, France, Indonesia, Japan, Kiribati, Republic Of Korea, Republic Of Marshall Islands, Nauru, New Zealand, Niue, Palau, Papua New Guinea, Philippines, Samoa, Solomon Islands, Chinese Taipei, Tonga, Tuvalu, United States Of America, Vanuatu); Territories (American Samoa, Commonwealth Of The Northern Mariana Islands, French Polynesia, Guam, New Caledonia, Tokelau, Wallis And Futuna); Cooperating Non-Members: Curacao, Ecuador, El Salvador, Nicaragua, Panama, Thailand, Vietnam)

*CCAMLR is technically not an RFMO. It has a broader scope, including other marine environment objectives in the Antarctic.

6.8. Minerals out the bio without the geo

Like fisheries, mineral resources represent a critical component of the marine environment and, by extension, marine biodiversity abstractions. From a critical biological perspective, as well as ecological understanding, the biological cannot exist without the geological, bios (life) and geos (non-life) are unavoidably entangled (Povinelli, 2016). This cyclic interdependence explored throughout this thesis underscores the complex interactions between living organisms and their abiotic (non-living) environment. To summarise, the health and sustainability of ecosystems depend on nutrient cycles, habitat formation, and climate regulation, which all involve intricate interactions between living organisms and non-living elements such as minerals and geological formations (Brilha et al., 2018; Gill and Sharma, 2018). Therefore, Effective conservation strategies must consider biological and geological factors and processes to achieve comprehensive environmental protection. Recognising that the biological world cannot exist without the geological world, and vice versa, biodiversity has always been a biotic and abiotic discipline.

However, the governance of marine biodiversity in Areas Beyond National Jurisdiction (ABNJ), and indeed biodiversity in general, presents unique challenges due to the differing perceptions of geological and biological resources. Fisheries, for instance, are recognised as living resources and sometimes equated with marine biodiversity by some respondents (Figure 6.3). In contrast, minerals are distinctly categorised as minable geological resources. Within the framework of UNCLOS, minerals are typically associated with the seafloor and subsoil. At the same time, biological resources are viewed as residing in the water column (refer to the discussion in the section. This distinction also partly explains why sedentary species found on the seafloor were challenging to classify under UNCLOS. They were treated as minerals and, therefore, excluded from the living resource regime of the Exclusive Economic Zone (EEZ) (Mossop, 2007). In essence, the framers of UNCLOS struggled with distinguishing between life and non-life on the seafloor.

The challenge is further complicated by the separate governance principles and frameworks for the water column (High Seas) and the seabed (the Area; see Chapter 2, S2.5.1(b) ABNJ as an

abstract UNCLOS zone). The International Seabed Authority (ISA)[22], established under Article 156 of UNCLOS, is, for example, responsible for regulating all activities in the Area [constituting the seafloor and subsoil]. At the same time, other ocean governance frameworks are primarily concerned with the water column. The ISA oversees exploration and exploitation activities with a mandate primarily focused on mining despite having environmental protection measures (Kirkham et al., 2020; Zalik, 2018). Activities in the Area, such as mining, create disturbances that affect bodies and ecosystems beyond the water column, highlighting the interconnectedness of marine ecosystems (Saputra and Sammler, 2024). The ISA is currently facing significant pressure and criticism over prioritising seabed mining activities over conservation (Ardron et al., 2023; Blanchard et al., 2023; Deberdt and James, 2024; Draugelis, 2020; Rayfuse et al., 2023). The ISA's predicament prompts an important question: Did the distinction between the High Seas and the Area come before the separation of abiotic and biotic resources, leading to the treatment of the Area as a zone of non-life? Or, conversely, did the perception of non-living resources as inherently distinct from living ones shape the way the Area is governed? This question challenges us to consider whether the legal and governance frameworks were influenced by pre-existing notions of oceanic life or non-living components or if those frameworks created the divide.

The BBNJ framework that seeks to address all the bios in the ABNJ is already grappling with the existing mandates in the water column, and ISA's authority in the Area adds more complexity. International organisations often refer to the BBNJ as the High Seas treaty (Mendenhall and Bateh, 2024), maybe as a reflection of the longstanding norm that views ocean life in the water column as separate from the seafloor. The interviews and the scientific discourse on the BBNJ indicate that stakeholders generally view marine biodiversity as limited to living organisms, distinct from geological components, though some recognise the need for ecosystem-based approaches to address the full range of marine environmental issues (Christiansen et al., 2022; Gjerde and Wright, 2019; Lucia, 2019). How to establish ecosystem-based approaches in dynamic and fragmented systems like ABNJ will be the next focus beyond this thesis.

22 the International Seabed Authority, its duties and other mandate are established in Section 4 of UNCLOS articles 156-185

The complexity of these issues raises essential questions about whether the distinctions in marine biodiversity governance are inevitable. With the diverse components of marine biodiversity and the fragmented nature of existing frameworks, implementing holistic approaches may prove challenging in practice. While it may seem practical to focus on specific aspects, such as fisheries or minerals, this approach falls short. Effective governance requires a comprehensive understanding of how various marine ecosystem components interact. As a result, there has been a growing emphasis on studying functional processes in biodiversity (Brose and Hillebrand, 2016; Hillebrand and Matthiessen, 2009; Meyer et al., 2018), and examining the socio-economic and political factors that disrupt these processes (Seddon et al., 2016; Young et al., 2010). However, the not undermining clause (Article 5) and applying the BBNJ framework (Article 10) could potentially limit exploring these factors. For example, activities related to marine genetic resources (MGRs) associated with fisheries are excluded from consideration unless they involve bioprospecting or military activities (Article 10(2) and (3)). Article 10(3) could also be interpreted to exclude activities involving MGRs or the sharing of resulting digital information if related to military purposes, despite the BBNJs principle that all activities related to MGRs and digital sequence information should benefit all States and humanity (Article 11(6)).

6.9. The new marine biodiversity of ABNJ: Marine Genetic Resources

Marine genetic resources (MGR) is one of the most dominant packages in the BBNJ contexts (see discussion in Chapter 5) and arguably the only one with clearly defined utility and tangible attributes to it, explaining the access, benefit sharing and property rights associated with this element (Broggiato et al., 2014; Chiarolla, 2014; Drankier et al., 2012; Leary, 2019b). It is, therefore, somewhat unsurprising that many respondents perceived and equated marine biodiversity as an objective feature of MGR in BBNJ contexts. This conflation of MGR with marine biodiversity was also captured during an exchange with a seasoned scientist at the final BBNJ IGC negotiations. When I asked whether MGR is considered the same as marine biodiversity in the context of BBNJ, they responded affirmatively, Is it not obvious? Further clarifying, we could call it marine biodiversity or marine genetic resources…uhm…do you think that would change the objectives of this treaty [BBNJ Agreement]? What changes from the way marine biodiversity is understood and objectives set when the focus is MGR can be understood from the historical development and application of the genetic resources (GR)

concept in international governance as explored by various scholars (Damania, 2008; Harlan, 1975; Pistorius, op. 1997; Schlegel, 2018; Sedjo, 1992).

The genetic resources (GR) concept in international discourses can be traced back to the 19th century when the practice of hand-selecting superior plant varieties by peasants evolved into a specialised technique managed by geneticists and plant breeders (Duvick, 1996). This transition swiftly led to the commercialisation of enhanced seed varieties and the emergence of a thriving plant breeding industry. Breeders began asserting control over the trade of what they considered their created varieties and pushed for legal protection against unfair practices, including the use of counterfeit seeds and fraudulent use of denominations to protect their intellectual property (IP) rights (Goldman, 2019; Smith, 2019). The need for international protection of intellectual property (IP) became evident when some exhibitors refused to attend the International Exhibition of Inventions in Vienna, Austria, in 1873 because they were afraid their ideas would be stolen and exploited commercially in other countries (Frankel and Gervais, 2016; Geddes, 1887). The United International Bureaux for the Protection of Intellectual Property (BIRPI) established in 1883, which is now the World Intellectual Property Organization (WIPO), was established to help creators ensure that their intellectual works are protected in other countries (Halbert, 2006)Plant breeders relied on these IP rights to assert their claims, introducing patents and extending IP rights into the natural domain.

The widespread development of improved plant varieties in industrial countries led to a significant reduction in the diversity of natural plant varieties in those nations, mainly in the global north (Harlan, 1975). These countries began looking for accessible sources of genetic material from other regions, primarily found in the global south and low-income countries (Merson, 2000b). The industrialised countries that benefited from this practice argued that plant biodiversity in the wild—serving as the genetic material source for their industries—should be considered a common heritage of humanity (Gepts, 2004; Pistorius, op. 1997). Many nations in the global south opposed this notion of a common heritage for their domestic resources, as it granted pharmaceutical and seed companies from these industrial nations unrestricted access to their plant genetic material without requiring them to share any profits from the subsequent commercialisation (Gepts, 2004; Merson, 2000b)

One significant advancement in addressing concerns related to the use of genetic resources was the establishment of the International Board for Plant Genetic Resources (IBPGR) in 1974. This

organisation, which later evolved into the International Plant Genetic Resources Institute (IPGRI) and became part of the International Centre for Tropical Agriculture (CIAT), was created to preserve and distribute plant genetic materials essential for crop development. CIAT's goals were to ensure food security, promote agricultural progress, and protect natural resources and farmers, particularly in lower-income countries (International Food Policy Research Institute, 2024). In 1983, the FAO adopted the Commission on Genetic Resources for Food and Agriculture, initially focusing on plant genetic resources. By 1995, this commission expanded its mandate to include all components of biodiversity relevant to food and agriculture (Sonnino, 2017). Despite these efforts, it is notable that these institutions primarily concentrated on crops, often overlooking the concerns related to benefit-sharing from using natural varieties in other sectors, such as pharmaceuticals.

However, it was the 1992 Convention on Biological Diversity (CBD) and its 2010 Nagoya Protocol, which came into force in 2014, that the issues of economic use of genetic resources (GR) and access and benefit-sharing (ABS) were comprehensively addressed on the international stage (Wolff, 2013). The CBD established a framework for the conservation and sustainable use of biodiversity, while the Nagoya Protocol specifically focused on creating legal and practical mechanisms for ABS. The CBD and Nagoya Protocol marked a pivotal shift by firmly embedding the principles of genetic resource sovereignty within the broader discussions on biodiversity. These Agreements emphasised the importance of ensuring that the benefits from utilising genetic resources are shared fairly and equitably, particularly with the countries and communities that provide these resources.

Based on this brief history, the GR concept evolved from concerns over crop protection and national sovereignty. It encapsulates five core components: monetary profit, biotechnology, intellectual property (IP) rights and patents, benefit-sharing, and conservation of genetic materials and their origins. GR encompasses two critical dimensions—the material itself and its resource potential. The Convention on Biological Diversity (CBD) distinguishes between "genetic material" and "genetic resources" (CBD, Article 2), with genetic material broadly defined as any biological material that includes functional hereditary units. This broad definition implies both intrinsic ecological worth and utilitarian value. In contrast, genetic resources emphasise material with actual or potential use, which frames them as valuable assets whose benefits can be equitably shared. These distinctions inform the concept of MGR within the BBNJ framework. By combining CBD's definitions of genetic material and resources, the

BBNJ Agreement defines MGR as "any material of marine plant, animal, microbial, or other origin containing functional units of heredity of actual or potential value" (BBNJ Article 1, Paragraph 8). This choice reflects an anthropocentric view of biodiversity, similar to UNCLOS, where the environment is primarily seen as a resource for human use rather than for its intrinsic ecological importance (Hargrove et al., 1992).

Marine scientific research (MSR) and technology are foundational to this resource-oriented perspective on biodiversity, especially for the extraction and use of MGR. MSR and technology enable the collection and analysis of genetic material from remote spaces like ABNJ, facilitating access, use and discovery of valuable genetic resources (Broggiato et al., 2014; Broggiato et al., 2018). This capability underpins the BBNJ's emphasis on defining "marine technology" and "biotechnology," where marine technology[23] is linked to the exploration and scientific understanding of marine environments, while biotechnology[24] addresses the industrial application of genetic resources. The distinctions between these technologies underscore the dual role of biodiversity within the BBNJ framework as a subject of scientific inquiry and as a resource with economic potential. The focus on technological capabilities within the BBNJ signals a shift in biodiversity governance, where marine biodiversity is not only a conservation target but also a resource for technological and industrial exploitation.

As global environmental crises intensify, the BBNJ's technology-centred approach reveals a trend in international law, where technological solutions increasingly supplant traditional governance principles. Historically, international law has been reactive, often responding to disasters or crises rather than proactively shaping policy (Chazournes, 2009). Examples include

23 BBNJ Article 1(10): "Marine technology" includes, inter alia, information and data, provided in a user-friendly format, on marine sciences and related marine operations and services; manuals, guidelines, criteria, standards and reference materials; sampling and Underlying approach and theoretical framework equipment; observation facilities and equipment for in situ and laboratory observations, analysis and experimentation; computer and computer software, including models and modelling techniques; related biotechnology; and expertise, knowledge, skills, technical, scientific and legal know-how and analytical methods related to the conservation and sustainable use of marine biological diversity.

24 BBNJ Article 1(3): "Biotechnology" means any technological application that uses biological systems, living organisms, or derivatives thereof, to make or modify products or processes for specific use.

legal developments following world wars (Reisman, 1990; Yoo, 2003) or oil spills (Ellis, 1995; Maywhort, 1971; Mendelsohn, 1969; Schoenbaum, 2012), as well as regulations arising in response to new technologies that allow new forms of exploitation (Barrett, 2006). This pattern highlights a lag between technological advances and regulatory responses, creating gaps that can allow environmental harm to occur before regulations are in place. Within the BBNJ framework, this reactivity underscores the challenge of developing forward-looking regulations to keep pace with technological advancements. The reliance on reactive governance risks delayed responses to environmental threats and prioritised the technological exploitation of biodiversity over precautionary conservation measures.

Furthermore, the reliance on advanced technology within the BBNJ framework raises equity concerns, as it privileges nations with the resources to invest in marine scientific research and biotechnology. Industrialised nations, equipped with technological and institutional capacity, hold significant influence over BBNJ's objectives and implementation strategies, consolidating their role in marine biodiversity governance (Bax et al., 2018; Broggiato et al., 2014; Nurbintoro and Nugroho, 2016). This technological advantage allows these countries to profit from participation, as their capacity to develop marketable products aligns with regulatory demands, making them more likely to engage in and shape international biodiversity agreements (Marcoux and Urpelainen, 2014). In contrast, countries with limited resources depend on provisions like capacity building, technology transfer, benefit-sharing, and Environmental Impact Assessments (EIAs) to access benefits from the use of MGR (Collins et al., 2019; Drankier et al., 2012; Harden-Davies, 2018; Harden-Davies and Gjerde, 2019). This disparity highlights a broader trend in biodiversity governance: the technological and research capacity required to manage marine biodiversity increasingly shapes the legitimacy and prioritisation of specific concepts and objectives, privileging technologically advanced nations in decision-making processes (Vergragt, 2006). This dynamic within the BBNJ framework reveals a significant shift toward a technologically driven, unequal model of biodiversity governance, which may marginalise less technologically capable nations in favour of those with resources to exploit biodiversity as a global asset.

6.10. Conclusion

In summary, marine biodiversity within the BBNJ framework is a complex and multifaceted concept shaped by varied interpretations with significant implications for conservation and

sustainable use. The term “marine biodiversity” remains strategically undefined in the BBNJ texts, allowing flexibility in interpretation to accommodate the diverse interests of participating states. However, this ambiguity may challenge unified conservation efforts. Notably, the BBNJ Agreement is situated within the legacies of frameworks like UNCLOS and the Convention on Biological Diversity, ensuring that it complements rather than conflicts with established international agreements. As a result, these legacies influence the inclusion or exclusion of specific marine biodiversity concepts in the BBNJ context. Under UNCLOS, marine biodiversity can be viewed as a resource, emphasising the need for responsible management, equitable sharing, and sustainable use. The BBNJ framework excludes fisheries and mineral resources from its scope, recognising fish stocks and mineral deposits as separate from the biological assets targeted for conservation, thus preserving states’ rights over these resources under other international agreements. These various interpretations reflect a nuanced approach to marine biodiversity, setting the stage for balancing conservation goals with sustainable resource use. This layered understanding will guide the objectives and approaches of the next chapter, where the implications of these interpretations for global governance and state strategies will be further explored.

----------*End of Chapter 6*----------

Chapter 7: Conservation and sustainable use objectives in the BBNJ

7.1. Introduction

The BBNJ (Biodiversity Beyond National Jurisdiction) Agreement, as defined in Article 2, aims to secure the long-term conservation and sustainable use of marine biodiversity in areas beyond national jurisdictions (ABNJ) through effective implementation of the UN Convention on the Law of the Sea (UNCLOS) provisions and enhanced international cooperation. Previous chapters have highlighted the contested nature of biodiversity within the BBNJ framework, raising questions about the specific biodiversity these objectives address and how they might be achieved. **This chapter examines these conservation and sustainable-use objectives by situating the BBNJ's core elements: 1) Marine Genetic Resources (MGR) and Access and Benefit-Sharing (ABS), 2) Area-Based Management Tools (ABMTs) including Marine Protected Areas (MPAs), 3) Environmental Impact Assessments (EIAs), and 4) Capacity Building and Transfer of Marine Technology (CB&TT), in historical and critical perspectives.**

During the drafting of Article 2, even minor wording choices were hotly debated. Issues included whether to phrase it as a "general objective," whether to specify "long-term" conservation and whether only BBNJ State Parties would be responsible for these objectives (Rena Lee, August 19, 2019). Another point of contention was whether these objectives would be achieved solely through the BBNJ Agreement, through other international laws, or directly under UNCLOS (UNGA Res 59/24 §73, 2005).

Each word in Article 2 carries significant legal weight and has broad implications for the international interpretation and implementation of biodiversity objectives. International tribunals often rely on precise text interpretation, making each phrase critical (Dunoff and Pollack, 2012). The inclusion or exclusion of certain words or phrases can affect the interpretation of the scope and scale of the issue (see also section 7.6. Fragile foundations: Navigating potential conflicts from the BBNJ Agreement). For instance, "general objective" implies a broad, overarching aim encompassing more specific goals not fully spelt out within the BBNJ Agreement. This approach leaves room for flexibility, allowing for potential adaptation to future needs—a crucial aspect in international agreements that must navigate changing environmental and political land/seascapes. Thus, this drafting process illustrates how the language of conservation can function as a discourse on biodiversity, embedding different values and priorities within the objectives themselves.

Similarly, the phrase "long-term" appended implies an enduring, ongoing commitment, appealing to groups interested in intergenerational stewardship through biodiversity management. Although this term and "general" were ultimately included, the proposal to limit responsibility to State Parties was rejected. The decision to avoid limiting the responsibility to BBNJ State Parties further reflects an inclusive approach, potentially expanding these obligations to all states, thereby strengthening global biodiversity commitments**. However, while these language choices provide interpretive flexibility, the fundamental objectives of "conservation" and "sustainable use"—central to defining biodiversity management in this context—remain abstract. This chapter will critically examine how these objectives are framed within the BBNJ Agreement, analysing their feasibility and their different stakeholder interests**.

This chapter is structured as follows: following this introduction, Section 7.1.1 explores the foundational distinctions between conservation and sustainable use in international discourse. Section 7.2 examines the tensions between sustainable use and activities such as scientific research, exploration, and exploitation. Sections 7.3 to 7.5 address the package elements—CB&TT, ABMTs/MPAs, and EIAs—linking them to MGR and ABS, which serve as conceptual anchors in biodiversity discourse. Section 7.6 highlights potential conflicts arising from differing interpretations of biodiversity concepts within BBNJ, emphasising the need to avoid these disputes in light of past governance challenges. Section 7.7 concludes this chapter.

The following introduction subsection extends this introduction by exploring the inherent tension between conservation and sustainable use.

7.1.1. Conservation vs sustainable use in international discussions.

In international discourse, "conservation" and "sustainable use" often appear in tandem, suggesting preservation, though preservation and conservation are not synonymous. Preservation embodies a non-anthropocentric stance, advocating for justice for all life forms through democratic, legitimate processes that honour the intrinsic right of nature to exist (Harden-Davies et al., 2020; Treves et al., 2019). Conservation, however, is generally understood as a more human-centred concept that allows for using nature/resources as long as this use does not degrade or deplete the environment (Vucetich et al., 2018). The variability in conservation's meaning—as encompassing ideas of use, depletion, degradation, or ecological health—creates space for scientific and policy interpretations to shift depending on the group advocating it (Desbureaux, 2021; Marçal and Macedo, 2014). However, because conservation

shares some preservation principles, it can be misinterpreted as strictly non-exploitative (Vucetich et al., 2018; see also discussion in section 6.7. Fisheries out: our fish is not your marine biodiversity). Policymakers thus emphasise pairing conservation with "sustainable use," evoking ideas of responsible management often referred to as sustainability.

The concept of sustainability, often attributed to the 1987 Brundtland Report *Our Common Future* (Imperatives, 1987) (though it did not coin the term) highlights equity and environmental ethics in human-nature relationships (Mitlin, 1992; Mulligan, 2017). It stresses the need for both quantitative and qualitative development measures to recognise that unchecked growth degrades the environment (Mitlin, 1992). Post-Brundtland, sustainability has become a key metric in resource-use assessments, guiding frameworks like the UN Sustainable Development Goals (SDGs) and the 2030 Agenda (Chichilnisky, 1999; Hajian and Jangchi Kashani, 2021). However, while sustainability calls for actionable commitment, it lacks precise definitions for what should be preserved or utilised (Jabareen, 2008), leaving ambiguity around the beneficiaries of these policies.

In the UNCLOS framework, for example, the term "sustainable" appears only concerning Maximum Sustainable Yield (MSY) in Article 61[25] and 119[26], linking sustainability to the capacity of marine populations to regenerate as they are harvested. MSY thus reflects an anthropocentric view of sustainability as a means of incentivising resource management (Hutton and Leader-Williams, 2003), which contrasts with non-anthropocentric perspectives that argue for reduced or non-use as critical to sustainability or conservation. While strategic for human-centred governance, the emphasis on sustainable use in UNCLOS can overshadow preservation goals, leading to conflicts over what marine biodiversity management should prioritise. The more management involves resource use, the less preservation it typically entails (Smith et al., 1993). As Steinberg (2001) notes that embedding sustainability in ocean governance presents oceans as assets for economic growth, sidelining preservation for human utility. Critically, the concept of sustainability grapples with what should be used and what should be preserved.

In the BBNJ contexts, strictly speaking, the European Union (EU) was one of the main, if not the primary advocate, for conservation as the main objective of the BBNJ framework, achieved

25 see UNCLOS Article 61(3): Conservation of the living resources

26 see UNCLOS Article 119(1): Conservation of the living resources of the high seas

through establishing Marine Protected Areas (MPAs) (see 7.4. Pursuing conservation and sustainable use through ABMTS/MPAs). Conversely, most lower-income and less industrialised countries primarily advocated for sustainable use as the core objective (UNGA Res 59/24 §73, 2005). Tensions arose as stakeholders attempted to balance conservation with sustainable use. Strict conservation measures can sometimes have negative socioeconomic impacts on local communities, leading to resistance and non-compliance with proposed biodiversity management strategies (Iacarella et al., 2021; Matseketsa et al., 2022). On the other hand, more flexible, use-based approaches may lack the necessary protections and power to regulate activities, particularly in the face of imminent threats or significant environmental degradation (Ardron et al., 2014; Ding et al., 2019). These tensions between sustainable use and preservation illustrate the diversity of discourses shaping marine biodiversity management.

The following sections will explore how the BBNJ Agreement navigates these interpretations, examining which objectives and interests are prioritised with which management approach.

7.2. Sustainable use vs. scientific research, exploration, and exploitation

In the context of the BBNJ (Biodiversity Beyond National Jurisdiction) Agreement, sustainable use is defined as utilising biodiversity at a rate that avoids long-term declines, preserving its potential for future generations. This definition, taken directly from the Convention on Biological Diversity (CBD Article 1(13)), is notable because most terms within the BBNJ Agreement remain undefined, leaving interpretive gaps. The International Union for Conservation of Nature (IUCN) initially opposed this inclusion, arguing that sustainable use already carries nuanced definitions across various frameworks relevant to the BBNJ Agreement. For example, IUCN's Category VI Marine Protected Areas (MPAs) defines use as limited, non-industrial resource use compatible with conservation, potentially clashing with broader interpretations. This definition divergence suggests that embedding the CBD's version within the BBNJ Agreement may inadvertently undermine existing conservation frameworks.

Despite these concerns, BBNJ negotiators opted to include a definition for sustainable use, underscoring how varied interpretations of this term can serve diverse agendas. The Holy see, during negotiations, highlighted the range of meanings sustainable use holds for different actors, from environmental treaties to commercial enterprises. For instance, the International Cable Protection Committee (ICPC) argued that submarine cables, which contribute to global connectivity with minimal ecological impact, exemplify sustainable ocean use, particularly benefiting developing nations. Similarly, the International Council for the Exploration of the

Sea (ICES) referenced sustainable use encompassing various ocean activities. At the same time, the United States emphasised sustainable use as a foundation for supporting the blue economy. These divergent views reveal the complexity of defining sustainable use, mainly when it is a policy instrument balancing conservation with economic and developmental interests.

The breadth of sustainable use interpretations in BBNJ negotiations reflects broader debates on what ocean activities qualify as sustainable in the biodiversity discourse. Delegates often favoured an expansive interpretation, suggesting that sustainable use extends across ocean zones, accommodating interests beyond conservation. However, the BBNJ Agreement's definition offers limited clarity, using sustainable use as a broad, catch-all phrase without detailing which activities it covers. This lack of specificity reveals a tension within the discourse of biodiversity management: while the Agreement seeks to promote both conservation and sustainable use, it provides limited guidance on defining the boundaries of sustainable activities. The resulting ambiguity in what counts as "sustainable use" highlights a central discourse within biodiversity management, where actors must negotiate compromises that reflect their varied motivations and priorities.

Navigating this ambiguity necessitates reliance on specific instances within the BBNJ Agreement, where particular forms of use, such as research and development on MGRs, are defined. For example, Article 19(4) of the BBNJ defines utilising marine genetic resources as conducting research and development on the genetic and/or biochemical composition of marine genetic resources, including through the application of biotechnology. This definition aligns with the Nagoya Protocol's, situating sustainable use within Marine Scientific Research (MSR) and technology development (Article 2 of the Nagoya Protocol). This targeted use definition illustrates the BBNJ Agreement's emphasis on scientific research as a sustainable activity. It frames biodiversity within a utilitarian discourse that emphasises knowledge creation and technological progress as critical benefits of ocean management.

Article 8 (3) of the BBNJ Agreement calls for Parties to promote international cooperation in MSR and the development and transfer of marine technology, consistent with UNCLOS (United Nations Convention on the Law of the Sea), to support the objectives of the BBNJ Agreement. UNCLOS provides the foundational framework for MSR (Part III, Articles 238 to 265), tacitly adopted by the BBNJ. UNCLOS grants coastal states control over MSR in their territorial waters and extended economic zones (Articles 245 and 56 para 1(b.ii)). At the same time, High Seas research enjoys freedom under Article 87 of UNCLOS (see also Article 7 of the BBNJ). However, defining MSR as sustainable use presents challenges, as UNCLOS lacks

clarity on "peaceful purposes" of which MSR is part (Article 240), creating ambiguity around activities classified as MSR. For example, the U.S. excludes hydrographic surveys considered by scientists as a form of research from MSR (Bateman, 2005; Nordquist et al., 2009). This exploration is beyond the scope of this thesis. However, this perspective illustrates a complex dimension of biodiversity discourse: the recognition of biodiversity research as a public good is complicated by geopolitical concerns over who benefits and who is involved, highlighting the power dynamics that shape biodiversity governance. For these states, MSR is not merely about advancing scientific knowledge but carries implications for sovereignty, equitable benefit-sharing, and control over valuable biodiversity resources.

The critical challenge is that MSR is also the precursor to exploration and exploitation (Glaviano et al., 2022; Xiao and Yang, 2012). For example, the International Council for Environmental Law (ICEL) emphasised avoiding burdensome review requirements that could deter research and investment. Similarly, Brazil's delegation delegation noted that strict monitoring could escalate research costs, reducing their ability to participate in MGR development. This illustrates the dual role of research as both scientific and potentially commercial in biodiversity governance. Article 19(4) of the BBNJ implicitly suggests that these early stages of exploration are forms of sustainable use.

Moreover, MSR within ABNJ faces contradictions regarding state-operated vessels, particularly those with military affiliations. UNCLOS and the BBNJ Agreement exclude warships, military aircraft, and state-owned vessels on government non-commercial service, arguably including those relating to biodiversity research (Articles 96 and 96 of UNCLOS; Article 4 of the BBNJ). However, during BBNJ negotiations, the EU argued that exempting government-operated research vessels would skew fair participation in MGR activities. The EU proposed distinguishing between military and other state-operated vessels, particularly within Part II (concerning MGRs), so that research vessels used solely for MGR-related purposes remain within BBNJ's regulatory scope (European Union and its Member States, 2022). This stance reflected the EU's commitment to consistent regulation within MGR activities, suggesting that maintaining oversight of such state-operated vessels is crucial to achieving common standards for sustainable use.

The distinction between exempt and regulated vessels highlights why defining "utilisation" in the context of MGRs is essential. Key provisions in the BBNJ, such as Capacity Building and Technology Transfer (CB&TT) (Articles 40-46) and benefit-sharing (ABS) (Article 14), are activated solely by MGR use as defined in Article 1(14). By focusing on CB&TT and ABS

obligations to MGRs, the BBNJ agreement limits this biodiversity objective of sustainable use to MGR. This approach reflects a discourse that positions biodiversity as a global common good accessible to all yet still subject to structures that define the inclusion and exclusion of some biodiversity aspects. Lower-income states, particularly from the Global South, often lack the resources and technologies necessary for MGR research and development, creating an asymmetry in who can benefit from biodiversity policies. CB&TT and ABS provisions address these disparities, shifting the biodiversity discourse towards a more inclusive framework that acknowledges the technological and economic gaps between states. However, this goal remains challenging in practice as mistrust lingers among states with fewer resources, who view biodiversity research by wealthier nations as potentially exploitative rather than purely scientific (Mohammed, 2017; Tolochko and Vadrot, 2021; Turra, 2021). As defined within the Agreement, sustainable use is framed by varied, sometimes conflicting, interests, reflecting a negotiation of values around what biodiversity should represent and for whom it should benefit—the following section focuses on CB&TT as a critical element in defining and understanding the BBNJ objectives.

7.3. Capacity building and technology transfer as a BBNJ biodiversity objective

The core provisions of CB&TT are codified in Part V Articles 40-46 of the BBNJ Agreement. The main objectives of CB&TT in the BBNJ are to assist Parties, particularly developing States, in effectively implementing the Agreement through enhanced cooperation, capacity-building, and technology transfer while promoting equitable participation and knowledge sharing for the conservation and sustainable use of marine biodiversity in ABNJ (Article 40[27]). This package was among the earliest topics discussed during the BBNJ negotiations and was also the first provision to be concluded. Initially, these CB&TT seemed a standalone package, but they quickly evolved into cross-cutting concerns woven into various aspects of the Agreement (Tessnow-von Wysocki and Vadrot, 2020). CB&TT became a central focus, particularly for lower-income and less industrialised States, which saw these provisions as critical to their ability to engage in ABNJ governance (see 5.5. Inclusivity through the Scientific Discourse).

The prioritisation of CB&TT from the earliest stages of BBNJ negotiations and its subsequent integration into other Agreement components reveals its discursive importance: CB&TT is a practical requirement and a vehicle for democratising access to biodiversity governance. For

[27] see BBNJ Article 40 on objectives

lower-income States, these provisions underscore the promise of equitable engagement in ABNJ, illustrating how biodiversity discourse is entwined with issues of justice, access, and capacity (Martin et al., 2013; Shmelev, 1998).

Despite the apparent practicality of CB&TT provisions, implementing them has proven challenging (Turra, 2021), which raises questions about the efficacy of biodiversity commitments. Historically, similar provisions like in UNCLOS (e.g., Articles 143, 144, 150(d), 244) have remained mainly aspirational, with limited enforcement (Long, 2007; Minas, 2018).

)The BBNJ Agreement addresses these historical gaps by defining operational modalities in Articles 42 and 43 and establishing a monitoring and review system in Articles 44 and 45. However, whether these provisions will effectively meet their objectives remains uncertain. As expressed on the official BBNJ website, capacity building is prominently featured among core initiatives (United Nations Division for Ocean Affairs and the Law of the Sea, 2023; Figure 7.1), yet interviews during the fourth and fifth Intergovernmental Conferences (IGCs) suggest lingering scepticism among lower-income States. This hesitation underscores how the discourse around biodiversity governance intersects with concerns about the operationalisation and credibility of international commitments. The biodiversity discourse, in the context of the BBNJ, is as much about managing expectations, trust, and equitable governance as it is about ecological outcomes

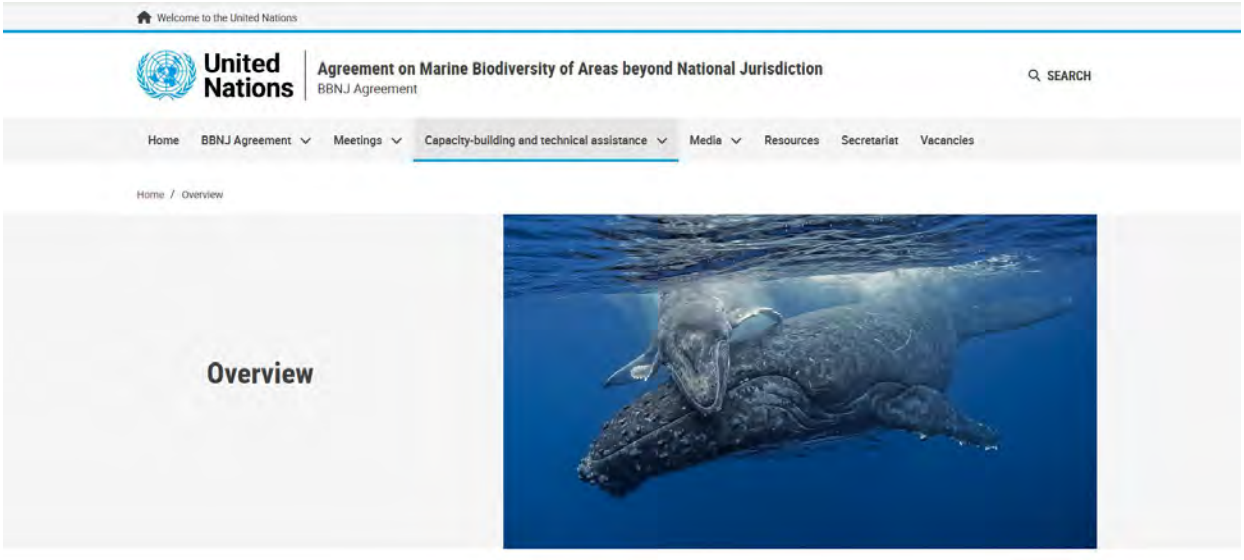

Figure 7.1: The new BBNJ website has a separate tab for capacity building and technical assistance

The CB&TT framework within the BBNJ Agreement reflects competing narratives within biodiversity discourse, particularly regarding the responsibilities of high-income industrialised states, high-income high-income industrialised states and lower-income states. Traditionally, countries with marine scientific research (MSR) and technological capacity have driven CB&TT efforts (Harden-Davies et al., 2022). During BBNJ negotiations, high-income States tended to favour voluntary, flexible approaches, whereas lower-income States advocated for binding commitments to secure consistent support (Harden-Davies et al., 2022; Tessnow-von Wysocki and Vadrot, 2020). The compromise reached—a flexible framework adaptable to State needs and regional contexts—illustrates the tension between cooperative ideals and practical implementation within biodiversity governance. The creation of a broad, regularly updated list of CB&TT initiatives by the Conference of Parties (COP) seeks to maintain relevance and adaptability (Annex II), highlighting how biodiversity discourse, in this context, balances idealism with pragmatic considerations of State capacity and willingness. However, the reliance on voluntary action ultimately emphasises the ongoing struggle within biodiversity discourse to reconcile inclusivity with enforceable commitments.

Finally, CB&TT provisions are integral not only to capacity-building but also to capacity-building and achieving broader BBNJ objectives like conservation. As the successful establishment and management of Area-Based Management Tools (ABMTs) depend on state resources, the discourse around CB&TT is linked to the broader discourse of achieving biodiversity conservation objectives. Through this lens, CB&TT provisions become more than technical assistance; they are foundational to realising biodiversity goals, as they enable developing States to participate meaningfully in conservation initiatives. The subsequent section will further investigate the conservation provisions within the BBNJ Agreement through ABMTS, extending the discourse analysis to examine how conservation goals shape and are shaped in these global contexts.

7.4. Pursuing conservation and sustainable use through ABMTS/MPAs

The European Union (EU), having positioned itself as a global leader in conservation (Afionis and Stringer, 2012; Elliott and Breslin, 2011), consistently promoted conservation as a primary objective within the framework of the BBNJ Agreement. In particular, the EU advocated for Marine Protected Areas (MPAs) as the most comprehensive tools for managing biodiversity. In a 2019 intervention, the EU and its member states argued that:

"Only MPAs (at least at this point) provide for holistic management of all activities [and] *impacts in a particular defined area with a specific conservation objective"* (European Union and its member States Interventions on 27-29th March 2019).

This reflects a discourse in which MPAs are positioned not just as spatial tools but as foundational to achieving conservation aims in areas beyond national jurisdiction, aligning with the EU's broader environmental policy commitments, such as the European Green Deal (Vela Almeida et al., 2023).(Afionis and Stringer, 2012; Elliott and Breslin, 2011). Through this focus on MPAs, the EU aims to direct BBNJ discussions towards a conservation infrastructure on the High Seas.

Notable proponents of MPAs during the BBNJ negotiations included the High Seas Alliance, the International Union for Conservation of Nature (IUCN), and WWF International, emphasising MPAs as vital to achieving long-term conservation, positioning them above any other Area-Based Management Tools (ABMTs). The BBNJ framework was an opportunity to operationalise MPAs beyond mere "paper parks," addressing issues of ineffective or nominal conservation efforts (Bynke, 2024; Santo, 2018). The IUCN, for example, advocated for a strict definition of MPAs that excludes sustainable use objectives, arguing that "the primary objective of conservation" should take precedence in MPA management to align with international standards and avoid dilution of conservation goals (IUCN, 2019).

As outlined in Part III, Article 17(a), the BBNJ emphasises the need to protect and preserve the marine environment, with MPAs as critical instruments for achieving these objectives. According to Article 1(1) of the BBNJ, an ABMT is defined according to article 1(1) of the BBNJ as a "tool, including a marine protected area, for a geographically defined area through which one or several sectors or activities are managed to achieve particular conservation and sustainable use objectives with this Agreement." An MPA is a geographically defined marine area designated and managed to achieve specific long-term biological diversity conservation objectives. It may allow, where appropriate, sustainable use provided it is consistent with the conservation objectives (BBNJ Article 1(9)).

However, establishing provisions for ABMTs and MPAs, now Part III of the BBNJ Agreement, proved the most contentious element, highlighting a significant rift even among high-income, industrialised nations (from ethnographic notes and experiences). Countries like the United States, Russia, and China expressed concerns that MPAs could act as restrictive measures

limiting access to valuable marine areas. The International Cable Protection Committee (ICPC) raised similar concerns, noting that MPAs might impose restrictions on submarine cable operations, a sector crucial to global communications but often overlooked in marine conservation discussions (ICPC, 2018). The EU contended with these assertions, arguing that MPAs should not be seen as rigid "no-take" zones but should be able to support limited sustainable use if aligned with conservation goals (European Union and its member States Interventions, 2019). This opposition highlights the diversity of viewpoints within biodiversity discourse, as different stakeholders balance conservation priorities with freedom of access in areas beyond national jurisdiction.

Moreover, the effectiveness of MPAs depends on enforcement and management, a challenge amplified in the high seas, where international governance mechanisms are limited. Effective MPA management requires rigorous monitoring measures and controlled access, an ambition often hindered by the Freedom of the High Seas and Common Heritage (CHP) principles (Chircop et al., 2010; Cremers et al., 2020; Dunn et al., 2018; Rife et al., 2013). Controlling access in ABNJ raises significant legal and moral questions in the BBNJ discourses (Aryuni et al., 2023; Campbell et al., 2022; Christiansen et al., 2022; Emily Jones et al., 2024; Leary, 2019b; Massimi, 2024; Papastavridis, 2020; Ridings, 2018; Scovazzi, 2016; Toledo and Bizawu, 2020; Vadrot et al., 2022; Wang, 2021; Wang and Chang, 2020). These tensions illustrate the challenges in applying conventional conservation models—developed predominantly within national boundaries—to ABNJ, where stakeholders must negotiate collective responsibility and equity, especially across Global North-South dynamics (Campbell et al., 2022; Vadrot et al., 2022).

Historical perspectives on MPAs reveal additional complexities, as protected areas have frequently been tools of selective control by colonial or elite interests, especially in low-income regions (Bluwstein, 2021; Domínguez and Luoma, 2020; Zaitchik, 2018). For Indigenous and local communities, MPAs proposed by global entities or elites can evoke concerns over restricted access and control (Adams and Mulligan, 2003; Pomeroy et al., 2005; Pomeroy, 2007), emphasising that biodiversity discourse in the BBNJ must consider social and cultural dimensions alongside conservation science. These concerns demonstrate how interpretations of conservation are shaped not only by ecological goals but also by historical and sociopolitical contexts, reinforcing the thesis's examination of biodiversity as a layered discourse.

Critics also question the effectiveness of MPAs as a one-size-fits-all solution that may not be suitable for open-ocean areas or for highly migratory species like tuna, which traverse vast

oceanic expanses (Foley, 2022; Gentner, 2016; Hamilton). Given the spatial and ecological fluidity of ocean environments, fixed MPAs may not adequately protect biodiversity, often resulting in "paper parks" that lack enforcement in remote regions (Bustamante et al., 2014; Campbell et al., 2012; Guidetti et al., 2008; Leenhardt et al., 2013). This limitation prompts a reevaluation of biodiversity discourse, suggesting that spatially bounded conservation may be insufficient for addressing the expansive, interconnected challenges of marine biodiversity (Gjerde and Rulska-Domino, 2012; Matz-Lück and Fuchs, 2014; Relaño Écija, 2022).

To enhance the effectiveness of ABMTs and MPAs, the BBNJ Agreement includes a set of criteria for establishing these areas, focusing on ecological factors like uniqueness, biological productivity, and vulnerability to climate change (Visalli et al., 2020). The EBSA (Ecologically or Biologically Significant Areas) framework, alongside other protective designations like Particularly Sensitive Sea Areas (PSSAs)[28] and Areas of Particular Environmental Interest (APEIs)[29], seeks to ensure that conservation efforts are scientifically robust (Humphries and Harden-Davies, 2020; Johnson et al., 2018). EBSA's seven criteria are uniqueness or rarity, particular importance for species' life-history stages, importance for threatened, endangered, or declining species or habitats, vulnerability, fragility, sensitivity, or slow recovery, biological productivity, biological diversity, and naturalness.[30] However, biodiversity discourse around ABMTs and MPAs must also grapple with the reality that fixed boundaries may be incompatible with the high-seas, interconnected, fluid ecosystems (Maxwell et al., 2015; Steinberg and Peters, 2015).

Scholars and negotiators alike recognise that ABMTs and MPAs must be interconnected to achieve their conservation goals effectively (Dunn et al., 2019; Hammond and Jones, 2021; Santo, 2018; Tessnow-von Wysocki and Vadrot, 2022). However, creating dynamic, connected MPAs remains a significant challenge (Santo, 2018). One of the core issues is that EBSAs, which are essential for the establishment of ABMTs and MPAs, often extend across the national jurisdictions of coastal States, making it challenging to implement connected and dynamic

[28] see IMO Assembly Resolution A.982(24). Revised Guidelines for the Identification and Designation of Particularly Sensitive Sea Areas (PSSAs).

[29] see International Seabed Authority (ISA), Decision of the Council relating to an environmental management plan for the Clarion-Clipperton Zone.

[30] see CBD Decision UNEP/CBD/COP/DEC/IX/20.

protection measures (Huang et al., 2020; Johnson et al., 2021; Popova et al., 2019; Toma, 1994). Article 18 of the BBNJ Agreement further complicates the situation by stipulating that ABMTs, including MPAs, must not include areas within national jurisdiction. This restriction focuses on establishing ABMTs and MPAs on ABNJ, limiting potential extensions to national waters. Additionally, Article 26(2) mandates that any ABMT or MPA established within a coastal state's national jurisdiction under the BBNJ must immediately cease to be in force, further emphasising the spatial limitations in the BBNJ.

These limitations are compounded by the fragmented nature of ocean governance, posing additional challenges to the BBNJ's conservation objectives, as ABNJ spaces are subject to different management protocols across jurisdictions, leading to governance silos (Santo, 2018). The BBNJ's reliance on spatial categorisation prompts rethinking biodiversity management toward functional, ecosystem-based approaches rather than fixed territorial boundaries, as current practices fail to address the complexities of marine ecosystems (Hillebrand and Matthiessen, 2009; Meyer et al., 2018). This call for reimagining conservation strategies reflects a critique of traditional, land-centric governance mindsets, underscoring the need to adapt biodiversity discourse to the fluid realities of oceanic environments (Pinsky et al., 2018; Sebuliba, 2024).

7.5. Environmental Impact Assessments (EIAs)

The package elements discussed earlier frequently portray use and conservation as inherently conflicting goals. However, Environmental Impact Assessments (EIAs) introduce a framework that acknowledges the necessity of human activities while also mandating conservation actions. EIAs are widely recognised as essential tools for managing and mitigating the adverse impacts of human activities on the environment (Oude Elferink, 2012). Because EIAs are generally accepted as a legal obligation, their status as a regulatory requirement rarely stirs controversy or opposition (Gillespie, 2008). In this way, EIAs offer a structured method to align use with conservation, directly addressing the central thesis of examining biodiversity as a discourse that balances human needs with environmental protection.

In the BBNJ Agreement, the core EIA framework is detailed in Part IV, articles 27-39, which strives to reconcile these seemingly conflicting objectives. Article 27 outlines several

critical goals of the EIA: operationalising the provisions of UNCLOS related to EIAs[31], ensuring that activities in areas beyond national jurisdiction (ABNJ) are assessed to prevent, mitigate, and manage significant adverse impacts[32], considering cumulative impacts[33], incorporating strategic environmental assessments[34], achieve a coherent EIA framework for activities in ABNJ[35], and building capacity among Parties[36]. These objectives reflect a comprehensive approach to balancing use and conservation in ABNJ.

The reference to UNCLOS is crucial partly because EIAs for activities in the marine environment are already regulated under UNCLOS, for example, under Articles 204, 205, and 206. These articles oblige States to assess and monitor the potential effects of activities conducted within their jurisdiction or control that could result in significant and harmful changes to the marine environment or other States[37]. This linkage underscores the importance of integrating UNCLOS provisions into the BBNJ framework. It highlights the need to critically analyse the EIA provisions within both frameworks to ensure they effectively address both use and conservation objectives. There are already a few cases at the International Court of Justice (ICJ) involving EIAs, such as the Gabçíkovo-Nagymaros Project case (1997)[38], the Nuclear

[31] BBNJ Article 27(a)

[32] BBNJ Article 27(b)

[33] BBNJ Article 27(c)

[34] BBNJ Article 27(d)

[35] BBNJ Article 27(e)

[36] BBNJ Article 27(f)

[37] see Certain Activities Carried Out by Nicaragua in the Border Area (Costa Rica v. Nicaragua) and Construction of a Road in Costa Rica along the San Juan River (Nicaragua v. Costa Rica), Judgment, I.C.J. Reports 2015, pp. 665-742. Available online: https://www.icj-cij.org/public/files/case-related/150/150-20151216-JUD-01-00-EN.pdf (accessed on 7 December 2022).

[38] see Gabčikovo-Nagymaros Project, Hungary v Slovakia, Judgment, Merits, ICJ GL No 92, [1997] ICJ Rep 7, [1997] ICJ Rep 88, (1998) 37 ILM 162, ICGJ 66 (ICJ 1997), 25th September 1997, International Court of Justice [ICJ]

Tests case (1995)[39] and the Pulp Mills case (2007)[40]. According to the ICJs ruling, for instance, in the Gabcikcovo-Nagymaros case, the State's obligation to undertake the EIA process was considered to implement the duty to prevent transboundary harm (Bekker, 1998). In a case brought before the ICJ by Costa Rica against Nicaragua 37[37], Costa Rica claimed that Nicaragua failed to conduct an EIA for its dredging activities. However, the court ruled that since no significant risk was demonstrated, Nicaragua was not obligated to conduct an EIA (Cogan, 2016). What is considered significant is relatively abstract and ambiguous, heavily relying on the interpretation of facts of each case by court judges and experts (Brewer, 1998; Peat, 2014a). For instance, in the Pulp Mills case [40], the ICJ ruled that conducting an EIA is a requirement under general international law when a proposed activity could have significant adverse impacts in a transboundary context or on a shared resource. These rulings reinforce the principle that in ABNJ, where no single nation holds jurisdiction, EIAs are inherently transboundary, adding complexity and emphasising the need for a cohesive BBNJ framework to address biodiversity issues.

However, despite over 50 years since UNCLOS's adoption, a universally agreed standard for EIA processes, content, or criteria remains elusive (Maulida, 2022).

The BBNJ negotiations thus presented a crucial opportunity to create a unified EIA procedure, yet fell short as the responsibility and discretion for conducting EIAs have primarily been left to individual States (Maulida, 2022; Sebuliba, 2024). The BBNJ EIA process (**Table 12**) closely resembles traditional EIA protocols (Hollick, 1986; Weston, 2000). Russian delegates, for instance, questioned the necessity of a supranational EIA process in ABNJ if it largely mirrored existing domestic and international norms. Most Western countries expressed reluctance to depart from these norms, demonstrating the persistent challenges of establishing a unique regulatory framework for ABNJ.

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[39] see Request for an Examination of the Situation in Accordance with Paragraph 63 of the Court's Judgment of 20 December 1974 in the Nuclear Tests (New Zealand v France) case, Order, [1995] ICJ Rep 288, ICGJ 58 (ICJ 1995), 22nd September 1995, International Court of Justice [ICJ]

[40] see Pulp Mills on the River Uruguay, Argentina v Uruguay, Order, Provisional Measures, ICJ GL No 135, [2006] ICJ Rep 113, (2006) 45 ILM 1025, ICGJ 2 (ICJ 2006), 13th July 2006, United Nations [UN]; International Court of Justice [ICJ]

One advancement the BBNJ attempted was the introduction of specific thresholds to trigger EIAs, as outlined in Article 30. Here, an EIA is required if a planned activity may have more than a minor or transitory effect on the marine environment or if impacts are unknown. These thresholds consider factors such as activity type, duration, and location, with particular emphasis on ecologically significant areas, such as EBSAs (Ecologically or Biologically Significant Areas) or VMEs (Vulnerable Marine Ecosystems (BBNJ Article 30(d)). Additionally, cumulative impacts and the potential for significant pollution or harmful changes to the marine environment are critical in determining the need for a full EIA (BBNJ Article 33(e)). However, some scholars argue that thresholds are limited as frameworks for addressing biodiversity impacts. Hillebrand et al. (2020, 2023) suggest that thresholds often lack empirical grounding, limiting their relevance and applicability, as they may fail to capture the complexities of ecosystem responses to human pressures, thus impacting the effectiveness of biodiversity conservation objectives (Hillebrand et al., 2020; Hillebrand et al., 2023).

While the BBNJ's thresholds are intended to clarify EIA requirements, this approach risks overlooking nuanced ecological impacts, potentially resulting in inadequate protections for vulnerable ecosystems or unnecessary regulatory requirements. The BBNJ framework could incorporate more flexible and adaptive approaches, such as continuous environmental assessments informed by real-time data and ecosystem dynamics, to address these limitations. Incorporating Strategic Environmental Assessments (SEAs) into the BBNJ framework is one such adaptive measure, assessing environmental risks of broader policies, plans, and programs early in the planning stages rather than project by project (Hammar et al., 2024). This broader perspective helps to address cumulative impacts, providing a holistic view that can support more proactive environmental governance (Craik and Gu, 2022; Doelle and Sander, 2020; Gjerde et al., 2021).

However, the reliance on state-driven EIAs within the BBNJ framework underscores a significant limitation. EIAs are to be conducted by the proposing State, granting it discretion over assessment scope, decision-making, and implementation of mitigation measures (Articles 27-39 of the BBNJ). This reliance on state authority may lead to inconsistent practices, especially given states' diverse capabilities and interests with overlapping jurisdictional claims. There are debates about whether EIA processes can function as effectively as they do in domestic and transboundary settings (Knox, 2002; Schrage, 2008; Tesli and Husby, 1999). Small Island Developing States (SIDS), the G77 (excluding China), and CARICOM advocated a supranational EIA process to address these inconsistencies, but this proposal was not adopted.

Developed nations, including New Zealand, voiced concerns about supranational authority slowing decision-making. Affluent states sought to minimise administrative burdens in environmental protection by adopting a domestic-driven EIA process. As captured in New Zealand's (2019) intervention in an EIA informal working group:

> *New Zealand agrees with many others, including the EU, Australia and Canada, that following the EIA, States would decide whether an activity could proceed based on criteria laid out in the implementing Agreement. We would not support decision-making by the BBNJ COP or other international bodies for several reasons. First, this would be inconsistent with UNCLOS Article 206, which places this obligation on States. Secondly, we are concerned about delays and inefficiencies if an international body makes decisions. For example, New Zealand relies on two submarine cables for its telecommunications. It could not wait for a year for a COP to meet and decide if a cable repair could proceed following a review of an EIA for such an activity.*

New Zealand also supported the idea that EIA could be conducted at a regional level and only backed the review of draft EIAs for major projects by a BBNJ Conference of the Parties (COP) or a scientific body as long as the final decision-making authority remains with the state that has jurisdiction over the proposed activity. These perspectives highlight the influence of state authority in biodiversity governance.

While collective mechanisms like the BBNJ Conference of the Parties (COP) and Scientific and Technical Body (STB) could offer standardised EIA guidelines and review processes, reliance on national transparency and process consistency remains critical. Moreover, some States like Russia still expressed concerns that involving specialised bodies like the STB after a national EIA process can easily be politicised and create a hierarchical structure (United Nations, 2023). These concerns made it challenging to internationalise EIA rules and establish trust in any meaningful collective mechanism (Li and Zhang, 2024). The reliance on individual state policies mirrors UNCLOS negotiations, favouring state political perspectives.

The BBNJ framework's provisions for public participation, including consultation and access to information (Articles 33(4) and 48(3)), emphasise inclusivity but lack specificity. The term "public" is broadly defined, encompassing Indigenous communities, civil society, and scientists, yet its inclusiveness remains ambiguous. Similar frameworks, such as the

International Seabed Authority, have been criticised for vague participation processes that hinder effective engagement from broader stakeholders (Lallier and Maes, 2016; Morgera and Lily, 2022). The ambiguity within the BBNJ framework highlights a recurring challenge in biodiversity discourse: achieving transparent and inclusive governance mechanisms that respect diverse perspectives.

Table 12: Key Elements of the Environmental Impact Assessment (EIA) Framework as specified in various articles of the BBNJ Agreement

Element	Reference	Description
Objective of the EIA	Article 28	Establish processes for EIA to prevent, mitigate, and manage significant adverse impacts on the marine environment.
Screening thresholds for conducting EIA	Article 30	EIA is required if the activity may have more than a minor or transitory effect on the marine environment.
EIA process	Article 31	Steps include Screening, Scoping, Impact Assessment, Mitigation, Public Consultation, and Reporting.
Public notification and consultation	Article 32	Ensure timely notification, public participation, and consideration of comments in the EIA process.
EIA report content	Article 33	Must include a description of the activity, potential impacts, mitigation measures, and public consultation outcomes.
Decision-making	Article 34	The decision to authorise an activity must consider the EIA and ensure all reasonable efforts are made to prevent significant adverse impacts.
Monitoring and reporting	Articles 35 & 36	Monitor authorised activities for adverse impacts and periodically report the findings.
Review of authorised activities	Article 37	Review impacts, especially unforeseen ones, and adjust decisions or activities accordingly.
Strategic environmental assessments (sea)	Article 39	Consider conducting SEAs for plans and programs in areas beyond national jurisdiction.
Collaboration and adoption of standards	Article 38	Develop and implement standards and guidelines for EIA through collaboration with relevant bodies.
Exemptions from EIA	Article 29	Activities may be exempt from EIA if assessed under other legal instruments or frameworks with equivalent standards

In conclusion, the implementation challenges for EIAs within the BBNJ framework reveal the complexities of decision-making in ABNJ, where scientific, institutional, and normative factors converge (Maulida, 2022). The BBNJ Agreement represents a significant step in balancing use and conservation. However, its reliance on state-driven processes and vague public participation guidelines signal the persistent difficulties of creating cohesive environmental assessments in international waters. Refining the BBNJ's EIA framework will require a commitment to flexible, adaptive methods, incorporating empirical data and promoting cross-jurisdictional collaboration. Addressing these challenges will be essential to establishing biodiversity discourse as a balanced tool for both human and environmental interests in ABNJ, aligning with the thesis's central aim of understanding biodiversity as a multifaceted concept shaped by diverse stakeholder priorities.

Having explored the potential framework for marine biodiversity and the objectives outlined in the BBNJ Agreement, the next section will examine the fragile system currently in place for resolving maritime disputes. If states or other stakeholders interpret the BBNJ provisions in conflicting ways, disputes could arise that strain the existing mechanisms for maritime conflict resolution. These mechanisms, which are already delicate, may struggle to handle the complexities introduced by varying interpretations of marine biodiversity and its goals in the BBNJ contexts, where clear precedents and enforcement structures are limited.

7.6. Fragile foundations: Navigating potential conflicts from the BBNJ Agreement

The previous section critically analysed the various ways marine biodiversity is understood and the objectives associated with it in the context of the BBNJ (Biodiversity Beyond National Jurisdiction) processes. It explored stakeholders' differing perspectives and the tensions arising from these interpretations. Additionally, it highlighted potential conflicts that could emerge under various interpretations of marine biodiversity under BBNJ's package measures. This section further explores the importance of interpretation within the BBNJ framework. Proper interpretation is crucial because it shapes how the provisions of the BBNJ will be implemented and enforced. **This section examines the challenges that could arise if conflicts over interpretation occur, potentially requiring reworking dispute resolution mechanisms**.

In managing global commons, significant efforts should be invested in preventing conflicts, given the substantial ripple effects they can have—affecting other interests or political matters unrelated to the original issue (Bakaki, 2016; Steinsson, 2017). This proactive approach is

crucial in the BBNJ-ABNJ context, where diverse stakeholders interact with conflicting values, political considerations, and worldviews (Brum et al., 2017; Kohler et al., 2019; Titley et al., 2021). The perception of ABNJ as free spaces governed by the principles of shared heritage and freedom of the high seas turns these areas into arenas for military, commercial, and strategic geopolitical interests (Mazza, 2010; Riddervold, 2018). While the BBNJ is intended to provide a coherent framework to address environmental challenges in these ABNJ spaces, it also adds complexity to existing tensions and has the potential to trigger conflicts, mainly if it is seen as undermining existing frameworks (Gjerde and Yadav, 2021; Langlet and Vadrot, 2023b). Balancing proposed mechanisms, such as ABMTs and EIAs, to meet conservation goals while avoiding conflicts within existing governance frameworks is difficult. Differences in applicable laws or policies due to varying national contexts and interpretations further complicate this effort (Blythe et al., 2021; Haas et al., 2022; Piantavigna, 2017). New Agreements must minimise these points of contention to enhance coordination, coherence and cooperation (Menkel-Meadow, 2016). States might abstain from ratifying the BBNJ, seek other favourable forums, or veto measures proposed in the BBNJ Agreement (Mondré, 2015; Schiffman, 2008). This section will explore scenarios where issues might arise under each BBNJ measure, offering insights into how these potential conflicts could be avoided.

Achieving environmental objectives becomes increasingly fragile and prone to failure, especially with the lack of effective mechanisms for resolving disputes and enforcing compliance (Balint, 2011; O'Leary and Bingham, 2003). The current frameworks in ABNJ lack standard compliance mechanisms, with existing models that evolve to address specific challenges (Ewell et al., 2020; Fischer, 2022). While disagreements during negotiation may indicate active stakeholder engagement, practical disputes can quickly lead to division among parties and hinder conservation efforts (Ostrom, 1990). It is crucial to address conflicts promptly to avoid delaying conservation initiatives (O'Leary and Bingham, 2003). Given that the BBNJ aims to cover more aspects than previous Agreements under UNCLOS, such as the UN Fish Stocks Agreement (UNFSA), the potential for conflicts is high. While the BBNJ may undergo further refinement, such as through additional annexes, examining scenarios that may lead to conflicts is crucial at this stage.

This section's analysis is relevant to scholars, governments, policymakers, diplomats, and conservation organisations. It provides a framework for anticipating and addressing potential conflicts, contributing to successfully implementing the BBNJ objectives. Furthermore, it invites scholars in international law and environmental studies to explore related topics, such

as the role of customary law in treaty interpretation and the implications of emerging legal frameworks on global environmental governance, all within the focused context of the BBNJ Agreements specific package of measures.

The section analysis is divided into three main sub-sections. The first section provides a historical overview of the evolution of ocean conflicts related to ABNJ and the challenges of addressing those conflicts within existing mechanisms. The second examines those mechanisms in the BBNJ contexts, highlighting potential gaps. The last section examines scenarios that could result in conflicts, drawing from all the analyses in this thesis and the connections between the BBNJ Agreement and other existing frameworks.

7.6.1. Evolving contexts of ocean conservation conflicts in ABNJ

Conflicts in ABNJ (Areas Beyond National Jurisdiction) primarily involved a few States concerning local authority, navigational rights and resource utilisation, particularly in the fisheries domain (Churchill, 2019; McGregor, 1995). Over time, these disputes have grown more complex, involving more stakeholders and extending further offshore.

7.6.1(a) Historical/ traditional conflicts

A prominent historical example is the Cod Wars (1950s-1970s), an extended conflict between the United Kingdom (UK) and Iceland over fishing rights for Cod in the North Atlantic (Johannesson, 2004; Steinsson, 2016). The livelihoods of Icelanders depended heavily on Cod, and they were willing to stand firm in their claims. The UK perceived Iceland's extension of its fishing boundaries to 12 nautical miles as encroaching on traditional British fishing grounds and the freedom of the High Seas, leading to a protracted conflict (Johannesson, 2004). The acknowledgement of Iceland's claims brought about a resolution to the conflict (Johannesson, 2004). However, resolving the conflict highlighted the complexity of dealing with disputes further offshore, involving prolonged negotiations, compromises and various actors like NATO, the Organisation of European Economic Co-operation, and UNCLOS negotiations (Steinsson, 2016).

Similarly, in 1995, a clash between Canada and Spain over a demersal species, the Turbot (*Scophthalmus maximus*), occurred off the Newfoundland coast, resulting in the Turbot War (Gustedt and Joyner, 1996). Rooted in similar principles of historical rights, the Canadians argued that Turbot had relocated outside their Exclusive Economic Zone (EEZ) to deeper waters and hence had to retain specific quotas for this species. Considering Turbot as

an unexplored stock, Spain raised claims based on the freedom of the high seas, exposing gaps in international fishery law (Soroos, 1997). Like the Cod Wars, an Agreement was reached among Canada, Spain, and the European Union, with the European Union receiving a larger share of the allowable turbot catch to settle the dispute (Soroos, 1997).

Ongoing conflicts with historical roots involve a series of disputes and conflicts related to managing and exploiting tuna fisheries in the Pacific Ocean, commonly known as the Tuna Wars (Aqorau, 2014; Tarai, 2015). In the past, for instance, there was overfishing of North Atlantic bluefin tuna, driven by competition among high-income nations, particularly Japan, the United States, and European countries, leading to a significant decline in the species populations at the expense of other users (Block, 2019). This prompted international conservation measures and quotas under Regional Fisheries Management Organizations (RFMOs) such as the International Commission for the Conservation of Atlantic Tunas (ICCAT), which led to the recovery of this stock (Sissenwine and Pearce, 2017). By 2023, over 18 RFMOs were responsible for managing more than 48 fisheries stocks in the High Seas. Several fisheries wars and environmental concerns persist (Adolf, 2019; Willis, 2017), and their resolution is sought through these RFMOS (Haas et al., 2019).

The Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR) was established to address ecosystem imbalances related to over-harvesting and bioprospecting of Antarctic krill (Hemmings et al., 2012). CCAMLR has been crucial in establishing the first High Seas Marine Protected Areas (MPAs) (Brooks, 2013). However, achieving equal economic and social benefits remains challenging, with some questioning the overall effectiveness of RFMOs (McCluney et al., 2019).

7.6.1(b) More complex and emerging issues

More intricate scenarios have emerged in recent decades, encompassing multifaceted issues and involving many States. This complexity poses challenges in addressing resulting conflicts and environmental concerns. For instance, though rooted in history, the South China Sea conflict has evolved into a more intricate scenario marked by high tensions among multiple States in the region and beyond (Thao, 2023). These tensions encompass various issues, including fisheries, territorial sovereignty claims, differing interpretations of UNCLOS delimitation principles regarding maritime boundaries, norms in the High Seas, the militarisation of disputed features, and competition for other valuable resources (Dutton, 2011; Hwon, 2023; Rim and Platte, 2023). The complexities are further exacerbated by confrontations involving regional

power projection on the High Seas, entwined with the imperative to ensure the safety of sea channels for communication (Yee, 2011). The conflicts are considered highly intricate, with no single dispute settlement mechanism proposal that can effectively address the multifaceted issues at hand (Nabih Amer et al., 2024; Wang, 2001).

Militarised conflicts have always posed complex challenges. The piracy off the coast of Somalia, for instance, remains a complicated issue as armed groups hijack commercial vessels for ransom and recede to ABNJ (Sumaila and Bawumia, 2014).

Environmental issues

Recently, attention has shifted to the environmental crisis, with biodiversity loss, plastic pollution, and climate change emerging as urgent issues that could lead to conflict while remaining inadequately addressed by current ocean governance frameworks (Churchill, 2019). For example, concerning biodiversity loss, existing ocean governance frameworks were primarily designed to deal with individual species, as argued in the previous section. This inadequate approach is already problematic to achieve, especially when dealing with highly migratory species (Caddell, 2023) and does not become any more accessible with the increasingly emphasised ecosystem-based approach (Rayfuse et al., 2023). Similar challenges arise when dealing with global warming, raising average surface temperatures and drawing significant attention to the decreasingly icy poles (Arctic and Antarctica) (Notz, 2009; Parkinson, 2004; Serreze and Meier, 2019). The thawing of permafrost in these regions could release billions of tons of methane gas, further intensifying climate change (Hansen, 2004). The melting ice caps have also opened up new High Seas areas, leading to potential conflicts among nations, including Russia, Canada, Denmark (Greenland), Norway, and the United States. These conflicts stem from competition over control of newly accessible territories for fisheries, maritime trade routes, and the potential for oil, gas and mineral exploitation (McPherson, 2015).

The exploration and extraction of resources in offshore areas have a history marked by disasters, exemplified by incidents like the Deepwater Horizon and Exxon Valdez oil spills, which had catastrophic effects on marine ecosystems and fisheries (Barron et al., 2020). While these incidents occurred within EEZs, their consequences extended across various zones, including the ABNJ (Kark et al., 2015; Popova et al., 2019). Managing the aftermath and addressing the consequences of these events underscored the complexity of environmental dispute settlement, involving multiple stakeholders with differing claims and interests (Craig, 2011). These gaps

in the international framework for exploiting offshore oil and gas resources mean that a catastrophe in ABNJ spaces might spell unprecedented disasters (Wright et al., 2016c).

In recent decades, the Solwara 1 Project, aspiring to be the world's first large-scale deep-sea mining initiative, attracted global attention within Papua New Guineas EEZ (Wedding et al., 2013). Focusing on the extraction of copper and gold, the project has faced criticism from local communities and Pacific nations due to environmental concerns that could have far-reaching consequences, impacting the entire region and polluting the ecosystem (Bustos-Gallardo, 2013; van Putten et al., 2023). In response to these concerns, several countries have advocated postponing deep-sea mining projects, leading to a moratorium initiated by the island States of Fiji, Palau, and Samoa. (Reuters, 2022; Seas At Risk, 2023; Steiner, 2009). This collective action has resulted in a precautionary pause on deep seabed mining exploitation until 2025, allowing the ISA to develop new regulations for exploitation (Ngum and Baiye, 2023). Opinions about the legality of the moratorium differ, with some States supporting the temporary pause, while others perceive it as a hindrance to development (Phillips, 2019; Singh, 2021). Questions persist about the legal implications if the mining project proceeds and negatively impacts the ocean ecosystem and how to address potential conflicts and compensate for damages (Amon et al., 2022).

The accumulation of plastic waste in the North Pacific Gyre, an ABNJ, is already raising concerns regarding responsibility for cleaning up plastic debris and reducing plastic pollution at its source (Oral, 2021). At the resumed fifth session of the UN Environment Assembly (UNEA-5.2), a historic resolution was adopted to develop an international legally binding instrument on plastic pollution, including in the marine environment. The application and impact of the treaty on plastics in the ABNJ are yet to be seen (United Nations Environment Programme, 2024).

Emerging technologies

Finally, emerging technologies, including genetic material collection, deep-sea surveillance, and mining, present opportunities and tensions in ABNJ (Boschen et al., 2016). While these technologies offer the potential for conservation and sustainable resource management, they also pose conundrums for environmental concepts and management (Rogers et al., 2021). The contrast between the necessity of technology strictly for research, sustainable use and preservation and the industrial use of similar technologies for resource exploration and

extraction reflects the ongoing struggle to balance scientific, commercial, and conservation interests (Dwivedi et al., 2022)States' obligations can quickly shift with the introduction of new technologies, as also confirmed by the Seabed Disputes Chamber of the International Tribunal for the Law of the Sea (ITLOS) in the advisory opinion on the Responsibilities and Obligations of States Sponsoring Persons and Entities concerning Activities in the Area.[41] The ITLOS advised that the obligation to conduct an EIA can be triggered in situations where the use of new technologies is expected to occur.

7.6.2. Challenges in addressing environmental disputes under existing frameworks

Various frameworks exist to address potential disputes related to conservation in ABNJ. However, these frameworks are characterised by fragmentation, complexity, and a lack of enforcement mechanisms (Merrie et al., 2014). This fragmentation extends to addressing *biodiversity issues, which vary* depending on the frameworks' institutional contexts, stakeholder priorities, and intended management outcomes. As earlier noted, various frameworks exist to address environmental issues in ABNJ (see introduction section, **Figure 1.1**), each bringing different interpretations and priorities to biodiversity management

In general, implementing Agreements or frameworks related to UNCLOS, such as UNFSA, utilise UNCLOS' dispute settlement mechanism while offering flexibility to address specific challenges. For instance, the UNFSA regime has bolstered the role of RFMOs, employing performance reviews and consensus-driven frameworks for addressing potential conflicts (Haas et al., 2019; Haas et al., 2020). Many RFMOS adopt this cooperative approach, successfully reaching consensus in fisheries management and resolving disputes within a collaborative framework (Goldsworthy and Brennan, 2021). This focus on fisheries management through consensus-driven frameworks reflects a discourse centred around the sustainable use of biodiversity for economic benefit, aligning with the priorities of fisheries stakeholders.

However, when issues extend beyond the specific scope of these frameworks, the challenges become more complex and difficult to address. For instance, broader conservation mandates like addressing climate change, implementing area-based protection strategies, or dealing with non-fisheries-related aspects introduce new layers of complexity for RFMOS (Haas, 2021;

41 Responsibilities and Obligations of States sponsoring persons and entities with respect to activities in the Area (Advisory Opinion) ITLOS Reports 2011, 10 (Seabed Advisory Opinion)

Wright et al., 2017). These issues introduce broader, ecosystem-focused discourses on biodiversity that require consideration of cumulative impacts and non-fisheries aspects. For example, climate change impacts on marine ecosystems extend to fish stocks, habitats, and biodiversity in ways that traditional fisheries management frameworks like RFMOs were not originally designed to handle.

These instances underscore how the discourse surrounding biodiversity expands and evolves when new ecological realities necessitate interdisciplinary approaches and inter-agency cooperation. Conservation tools such as area-based management tools (ABMTs) like Marine Protected Areas (MPAs) begin to conflict with existing rights, in this context, fishing rights or other maritime activities, leading to disputes (Chircop et al., 2024; Matz-Lück and Al-Hajjaji, 2024; Nong Hong, 2019; Wen Duan, 2024). The contrasting views of biodiversity as a sustainable resource or a set of ecological values requiring preservation create a discursive tension that complicates management efforts. This complexity reflects diverging perspectives on whose interests biodiversity management should serve—whether the fishing industry, conservationists, or broader societal and environmental well-being.

Moreover, 'non-fisheries' issues, such as marine pollution or the protection of marine genetic resources, fall outside the primary focus of traditional fisheries Agreements, underscoring the need to adapt or consult other multilateral Agreements to manage conflicts (Haas, 2021), requiring adaptation or consulting other multilateral Agreements to manage conflicts. However, these broader mandates often require coordinated efforts across multiple sectors, jurisdictions and stakeholders, creating complex challenges for any given governance regime. For example, the ISA (International Seabed Authority), responsible for enforcing environmental protection, equity and public trust through the CHP (common heritage principle) in ABNJ, faces ongoing criticism for not meeting these expectations (Campbell et al., 2021; Cinquemani, 2019; Willaert, 2021). ISA has also been criticised for falling short concerning public participation, access to information and decision-making, particularly concerning environmental impact assessments (Ardron, 2018; Ardron et al., 2023; Lallier and Maes, 2016).

CCAMLR, recognising the inadequacy of its dispute settlement mechanisms, recommended adopting the binding procedures outlined in Part XV of UNCLOS (CCAMLR, 2018). The UNCLOS dispute settlement regime provides a broad structure that includes binding and non-binding procedures like conciliation, special arbitration, or recommendation from CLCS or binding procedures (Part XV of UNCLOS). Binding procedures leverage courts, such as the arbitral tribunals, the International Tribunal for the Law of the Sea (ITLOS), and the

International Court of Justice (ICJ). As the principal judicial organ of the United Nations, the ICJ has jurisdiction over disputes arising from the interpretation and application of international law, including UNCLOS, when parties to the dispute accept its jurisdiction. One notable institution born from UNCLOS is the ISA, responsible for regulating mineral-related activities on the international seabed (see UNCLOS Part IX, Section 4 and Article 156), and the Seabed Disputes Chamber (SDC) under ITLOS in Part XI of UNCLOS (Samata, 2023). They address disputes between States and involve non-state actors and contractors (Davenport, 2022).

However, the UNCLOS regime faces challenges in addressing environmental disputes, as elaborated in the following subsection (7.6.3.). Advisory opinions have been sought from the ITLOS (Tanaka, 2013); see also footnote[41]). Similarly, in 2023, states submitted a request for an advisory opinion from the ICJ on their obligations under international law to protect the climate system from greenhouse gas emissions and the legal consequences for states that cause significant harm to the environment[42]. Particular concerns are on climate change impacts on small island developing States (SIDs) and vulnerable populations[42]. However, international courts are faced with challenges in addressing critical environmental issues due to their complexity (Bodansky, 2023; Tigre, 2023). Addressing environmental issues in international law has always been peripheral.

For instance, The ICJ established a seven-member Chamber for Environmental Matters in 1993. However, no cases have been brought before this ICJ's Chamber since its establishment in 1993 (ICJ, 2006). The chamber was likely dissolved in 2006, as no voting for new members occurred after the chamber's initial three-year term (Chartier, 2018). Chartier (2018) argues that this does not necessarily mean the court failed and suggests a proper assessment to carefully consider the reasons for its establishment and dissolution (Chartier, 2018). Arguably, from various state disputes involving environmental matters, no two States have ever agreed that a given dispute is essentially environmental. Environmental-related disputes often have an additional element that drives adjudication, for instance, involving trade (Knox, 2004) or armed conflicts (Schmitt, 2013). The varied perspectives concerning environmental objectives create challenges. For example, different nations prioritise conservation goals differently, leading to disagreements over implementing protection strategies or enforcing conservation action. Activities such as military drills on High Seas persist and are deemed legitimate by some States despite potential

42 see Report of the International Court of Justice: 1 August 2022-31 July 2023. A/78/4

violations of conservation and the principle of Common Heritage (CHP) (Caron and Scheiber, 2009; Guntrip, 2017).

In extreme cases, parties can opt to withdraw from treaties, as demonstrated by Japan's departure from the International Whaling Commission (ICW) in 2018 (Kojima, 2019). Japan contended that its whale catches were essential for scientific research and approved under the ICW, but the ICJ ruled otherwise, compelling Japan to cease its activities (Hirata, 2005). Some pro-whaling nations criticised ICW decisions, claiming they were influenced more by political and emotional factors than scientific knowledge (Hirata, 2005; Wold, 2020). Emotional considerations cannot be ruled out in the broader conservation discourse (Batavia et al., 2021). Some States are accused of employing spurious science and bad-faith arguments to oppose conservation measures already supported by the majority (Campbell, 2012; Edwards, 2013). Environmental management remains vulnerable to domestic interests and political dynamics without transparent mechanisms.

States are, therefore, hesitant to refer international environmental disputes to legal adjudication, often favouring non-legal methods of dispute resolution (Sidaway, 2013; Weidner, 1998). For example, with environmental issues like climate change, ozone depletion and air pollution—States have established non-contentious procedures [based on State interests, strengths and preferred work environment] primarily with an administrative function (Cameron et al., 1996; Francesca Romanin Jacur, 2016; Sands, null; Yamineva and Romppanen, 2017). The challenge with these non-binding, peaceful settlements is that they offer no guarantees that disputes will not resurface when circumstances change (Koskenniemi, 1991), or may lead to further environmental degradation.

Some scholars argue that there is a need for the creation of an independent international environmental court to deal with environmental issues explicitly (Lehmen, 2015). However, this court would likely face similar challenges with the evolving nature of the environmental crisis and diversity of interest. In ABNJ, where there is a lack of precise enforcement mechanisms (Schiffman, 2008), a comprehensive framework to address issues in these spaces leaves dispute settlement to ad-hoc arrangements (Barnes, 2020). Therefore, it is crucial to consider what challenges the BBNJ might face if conflicts arise and how States might navigate potential solutions.

7.6.3. The fate of dispute settlement in the BBNJ Agreement under UNCLOS

While it was generally agreed that the BBNJ Agreement needed a dispute settlement mechanism, it was not easy to set up and reach consensus (Shi, 2020). The dispute resolution mechanism within the new BBNJ Agreement is predominantly delineated in Part IX of the Agreement. The regime begins with Article 56, underscoring the need for parties to cooperate to prevent disputes. Analogous to UNCLOS, the regime continues to stress the duty for parties to resolve disputes through various peaceful methods[43], respecting their autonomy to opt for the most suitable approach (Articles 57-58 of BBNJ). Notably, Article 58 emphasises that the disputes pertain to the interpretation or application of the Agreement. Article 59 introduces the concept of *disputes of a technical nature.*

There is no definition of technical disputes in international law. A similar phrasing is used in UNCLOS Article 130, addressing measures for avoiding or eliminating delays or other technical traffic issues in transit. Addressing issues of a technical nature, such as delineating the continental shelf limits (Article 76 of UNCLOS), proves to be complex. Disputes of a technical nature can hardly be addressed in courts without expert witnesses. In the UNCLOS regime, a court or tribunal appoints scientific or technical experts to address such disputes before making any binding decisions (Peat, 2014b; Shi, 2020). Therefore, although the experts lack the right to vote (Article 289 of UNCLOS), they play a critical role in the decision-making process. However, the court's employment of qualified experts is expensive and time-consuming (Peat, 2014b). This underscores the significance of Article 59 of the BBNJ, which States;

> *Where a dispute concerns a matter of a technical nature, the Parties concerned may refer the dispute to an ad hoc expert panel established by them. The panel shall confer with the Parties concerned and shall endeavour to resolve the dispute expeditiously without recourse to binding procedures for the settlement of disputes under Article 60 of this Agreement.*
> (BBNJ 2023: article 59)

43 Article 57 of BBNJ: Parties have the obligation to settle their disputes concerning the interpretation or application of this Agreement by negotiation, inquiry, mediation, conciliation, arbitration, judicial settlement, resort to regional agencies or arrangements, or other peaceful means of their own choice.

To begin with, all environmental issues, especially in the contemporary contexts of ABNJ, are arguable and technical. Whether determining ABMTs, implementing MPAs, monitoring activities or evaluating impacts, the processes involve complex technical subjects (e.g., scientific, ecological, and broader societal issues). Consequently, it is presumable that most disputes arising from the BBNJ could easily be characterised as technical and require experts. Seeking recourse from UNCLOS courts, where involved parties have to pay for the expert fees, creates a burden for conflicting parties.

The BBNJ Agreement adopted an ad hoc arrangement[44] as a cost-effective solution, similar to UNFSA (Shi, 2020). These arrangements are typically temporary and designed to address specific issues as they arise, allowing for flexibility in response to environmental changes and evolving technologies. In the BBNJ context, conflicting parties can form their panels without resorting to compulsory measures. However, a significant challenge is the lack of obligation for parties to share findings or the causes of disputes if such arrangements are used. This would be crucial, especially in ABNJ, where shared responsibility is critical for management. This limitation could restrict discussions to countries with the necessary technical capabilities, excluding others. To address this, parties should clearly define what constitutes a technical dispute of general concern that requires compulsory dispute resolution and when to use non-binding mechanisms for environmental issues. Parties could seek such clarity during COP meetings.

Up to Article 59, the BBNJ Agreement appears to establish its unique dispute settlement mechanism while borrowing language and concepts from UNCLOS. However, the core of the dispute settlement mechanism in the BBNJ Agreement, which details the procedures for settling disputes and directly aligns it with UNCLOS, resides within Article 60. Article 60 applies *mutatis mutandis* - replicating provisions borrowed from one instrument (in this context, UNCLOS) into another (BBNJ) with necessary adjustments that do not alter their substantive content and scope (Fellmeth and Horwitz, 2021). For example, this practice has historically been employed in UNFSA and regional fisheries management organisation Agreements (RFMOS) to provide access to Part XV[45] (Bankes, 2021; Scovazzi, 2013). Article 60(1) of the

44 ad hoc arrangement refers to a solution or system that is created specifically for a particular situation or issue, rather than being part of a pre-existing or formal structure.

45 Part XV of UNCLOS forms its core dispute settlement mechanism

BBNJ explicitly mentions that the dispute mechanism tied to the interpretation or application of the Agreement must conform to Part XV of UNCLOS[45]. Article 60(2) then extends provisions from Part XV and Annexes V, VI, VII, and VIII[46] of UNCLOS to parties to the BBNJ Agreement that are not parties to UNCLOS.

These two paragraphs (1 and 2) of article 60 primarily emphasise the relevance of the UNCLOS framework as the treaty that carefully needs to be understood within the BBNJ context. The paragraphs, however, also indicate a dilemma for countries that wish to become part of the BBNJ Agreement but are not parties to UNCLOS. For example, at the 5th IGC, Türkiye continued in its BBNJ textual proposal, opposing the direct inclusion of UNCLOS' dispute settlement provisions, arguing that Türkiye is not a party to UNCLOS (Türkiye, 2022). Türkiye maintained that adopting the dispute resolution procedures outlined in Part XV of UNCLOS *mutatis mutandis* in the BBNJ Agreement was unacceptable and undermined the spirit of an all-inclusive BBNJ framework. Türkiye further emphasised that procedures such as arbitration and conciliation, institutions established under UNCLOS, such as ITLOS, and any provision allowing the COP to seek their advisory opinions would not adequately address the concerns of Non-Parties to UNCLOS. Türkiye then called for the BBNJ Agreements dispute settlement procedures to accommodate the legal status of non-UNCLOS parties (Türkiye, 2022). Similar concerns were also raised by the USA, indicating that the USA will not accept any obligations arising from the UNCLOS under the BBNJ Agreement. The USA argued that it would instead make sense to reference obligations directly in the BBNJ, mirroring Part XV of UNCLOS (United States of America, 2022).

Some of these concerns led to the development of Article 60, paragraphs 5,6,7 and 8 of the BBNJ Agreement. These paragraphs give freedom to Parties to the BBNJ, but not UNCLOS, to freely choose their means of settling disputes concerning the interpretation or application of the BBNJ Agreement. Paragraph five goes ahead and relists the four dispute settlements, which are ITLOS, the ICJ, Annex VII arbitral tribunal, and Annex VIII special arbitral tribunal, per the request of non-UNCLOS party members. It was also the U.S.'s suggestion for the technical edit to add that these States can declare their preferred dispute settlement mechanism when

46 Annexes V, VI, VII, and VIII of UNCLOS pertain to different aspects of dispute resolution: conciliation, the statute of the International Tribunal for the Law of the Sea (ITLOS), arbitration, and special arbitration, respectively. Together with the International Court of Justice (ICJ), these annexes constitute the compulsory dispute settlement mechanisms outlined in Article 287 of UNCLOS.

signing, ratifying, approving, accepting or acceding to the BBNJ Agreement. This would allow non-parties to UNCLOS to join the BBNJ Agreement (United States of America, 2022). Parties that do not make such declarations shall then be deemed to have accepted Annex VII arbitral tribunal of UNCLOS (Article 60(6), to which if parties to a dispute have not accepted the same procedure, Annex VII arbitration is the default body to settle the dispute unless the parties otherwise agree. Türkiye supported the proposal, suggesting that Article 287, paragraphs 6 to 8, of UNCLOS, addressing the selection of procedures, should only be applicable voluntarily. Consequently, Article 287, paragraphs 6 to 8, of UNCLOS apply to declarations made under Article 60(5) of the BBNJ Agreement (Article 60(6)).

Paragraph 7 of Article 60 of the BBNJ also allows non-parties to exclude disputes that are set out under Article 298 of UNCLOS[47], a provision that also applies to UNCLOS parties. Lastly, paragraph 8 of article 60 of the BBNJ Agreement then emphasises that the procedures for settlement of disputes in the BBNJ shall not prejudice other procedures for which parties have agreed as participants in a relevant legal instrument or framework or as members of a relevant global, regional, sub-regional or sectoral body concerning the interpretation or application of such instruments and frameworks. States seeking favourable mechanisms could evade binding procedures crucial for minimising environmental damage.

The BBNJs dispute mechanism, along with references to other instruments, primarily emphasises that new Agreements operate within existing frameworks (Langlet and Vadrot, 2024). Consequently, these new Agreements may inherit both the advantages and constraints of the existing frameworks. To grasp the legal landscape of international marine environmental law, it is essential to understand how these various Agreements interact with UNCLOS, given its foundational role (Rayfuse et al., 2023). This also applies to the UNCLOS dispute settlement mechanism, which is relevant, particularly in the context of the BBNJ under UNCLOS.

There is a large body of literature on the positives and challenges of the UNCLOS dispute settlement mechanism concerning the environment (Churchill, 2019; Doelle, 2006; Harrison, 2013; Klein, 2005, 2014, 2016; Koskenniemi, 1991; Kunoy, 2021; Magnússon, 2015; Nguyen,

47 Article 298 excluded disputes including; those related to the interpretation or application of Articles 15, 74, and 83 concerning sea boundaries or historic bays or titles, disputes already addressed by a conciliation commission report, sea boundary disputes resolved through an Agreement between parties, disputes settled under a binding bilateral or multilateral Agreement, and disputes involving military activities, including those by government vessels and aircraft in non-commercial service, as well as law enforcement activities related to the exercise of sovereign rights or jurisdiction

2021b; Oude Elferink et al., 2023; Phan and Nguyen, 2018; Rayfuse et al., 2023; Treves, 2007). Some scholars address the efficacy of UNCLOS' dispute settlement mechanisms (Klein, 2014), challenges in addressing contemporary issues like climate change (Doelle, 2006) and potential expansion and limitations of UNCLOS (Churchill, 2023; Klein, 2016), while others look at issues of litigation, bindingness, finality, and compliance (Phan and Nguyen, 2018). One of the critical aspects relevant to this thesis is that UNCLOS courts and provisions on the marine environment are considered so specialised that only a limited number of conservation issues are likely to reach the relevant court chambers (Churchill, 2023; Nguyen, 2021b). For instance, the UNCLOS regime on the marine environment, as exemplified in Article 192, only provides a general obligation to protect the marine environment. This has led to the interpretation that the regime is generally advisory or non-binding (Churchill, 2016). Moreover, excluding activities like nuclear testing and waste disposal in the High Seas from environmental treaties leaves management gaps, allowing States to potentially undermine proposed measures by exploiting these exemptions (Chang et al., 2022; ITLOS, 2005). This leaves the marine environment at the mercy of flag States and principles such as due regard (Kiss and Shelton, 2004; Xiao, 2024).

The compulsory dispute settlement mechanism that results in binding decisions under UNCLOS court jurisdictions is considered one of the unique strengths of UNCLOS to overcome some of the above environmental challenges (Oude Elferink et al., 2023), as elaborated below. However, the exact scope of this jurisdiction under Article 288(1) is not clearly defined, with UNCLOS tribunals exhibiting inconsistency in interpreting the criteria for their jurisdiction (Attia, 2023; Delfino, 2019; Kunoy, 2021). According to Article 288 (1) of UNCLOS, the courts have compulsory jurisdiction over any dispute concerning the interpretation or application of UNCLOS provisions submitted to them according to Part XV. This could also be interpreted as a jurisdictional limitation that prevents courts from going beyond the scope provided for in UNCLOS (Nguyen, 2021b). The parties involved in a dispute must agree to the court's jurisdiction (Article 282 of UNCLOS), and the court can only address issues that these parties refer to (Boyle, 1997). That primarily means that if the parties do not present any cases to the courts, there is no need for such hearings. This also means that environmental damages can go unreported, partly explaining the dissolution of the ICJ Chamber for Environmental Matters due to a lack of activity (Chartier, 2018).

However, once parties to a dispute agree to a UNCLOS courts' jurisdiction, the courts can expand the interpretation of Article 288(1) to read into UNCLOS other external rules and

standards of international law (Churchill, 2023; Nguyen, 2021a, 2021b). Nguyen, for instance, notes that various provisions in UNCLOS allow consulting other frameworks using the rules of reference technique. Nguyen demonstrates that by applying Article 293(1) alongside the concept of due diligence, Article 192 of UNCLOS has been used as an entry point for incorporating rules from the broader body of international environmental law into UNCLOS. For example, in the South China Sea arbitration[49], Article 293 was cited when the tribunal examined the general provisions of Part XII of UNCLOS[48]. The Philippines argued that China violated environmental protection provisions, particularly Article 192, which imposes a general obligation on States to protect the marine environment. Given the broad language of Article 192, the tribunal used other Part XII provisions and external treaties, like the Convention on Biological Diversity (CBD) and the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), to interpret its obligations. Although the tribunal acknowledged it had no jurisdiction over CBD or CITES violations, it used these treaties to clarify terms in Articles 192 and 194. The tribunal concluded that China's actions, including harvesting endangered species, violated these UNCLOS articles (see complete discussion in Nguyen). The same approach could be used within the context of BBNJ. UNCLOS courts could reference and incorporate practices and procedures from existing environmental/ocean frameworks that are better designed to deal with the environment.

Notably, UNCLOS was ratified by 195 states and is considered a regime that can establish generally accepted norms, procedures, and practices. However, for the rules of reference decisions to become binding, they must also meet the generally accepted or global threshold. As Argued by Nguyen in the South China Sea arbitration,[49] the Annex VII arbitral tribunal considered Article 94(5) of UNCLOS, which pertains to flag States' duties, to determine what constitutes generally accepted international regulations, procedures, and practices[49] ((Nguyen, 2021b). The Philippines argued that the International Maritime Organization (IMO) recognised the Convention on the International Regulations for Preventing Collisions at Sea (COLREGs) as generally accepted[49]. The tribunal agreed, noting that with 156 contracting parties representing over 98% of the global tonnage, the COLREGs meet the required general acceptance standard (Nguyen, 2021b). The tribunal's decision illustrates how widely ratified

48 Part XII of UNCLOS concerns the protection of the marine environment

49 see South China Sea, Arbitral Award on Merits, supra note 8, para. 1063

international Agreements can meet the threshold of general acceptance under UNCLOS. This sets a precedent for how other international regulations could be incorporated into other regimes, reinforcing UNCLOS' role as a regime for establishing binding global maritime norms and practices. The case also underscores the importance of broad international endorsement (ratifications) in determining the binding nature of such norms.

To conclude this section, the BBNJ Agreement under UNCLOS holds the potential to streamline and unify global ocean governance (Haas et al., 2022) by enhancing coordination and alleviating treaty congestion through its dispute settlement mechanism (Caddell, 2023). Integrating external frameworks within the BBNJ context could address some environmental issues, but significant challenges remain. A fundamental dilemma is whether conservation disputes will be reported promptly enough to prevent irreversible environmental damage and whether parties will be willing to submit these to compulsory jurisdiction. Furthermore, these disputes may become entangled with technical, social, and political issues, making separating environmental concerns from broader agendas difficult. UNCLOS courts will also need to navigate jurisdictional limitations carefully. The BBNJ Agreement, therefore, emerges on a fragile foundation where anticipated conflicts could spell significant environmental harm. On the other hand, the absence of conflicts could indicate that states are avoiding accountability for environmental responsibilities in ABNJ, potentially opting for more favourable forums while environmental damage continues unchecked.

7.6.4. Conclusion and returning to fragile basics

The BBNJ Agreement represents a critical international effort to govern marine biodiversity in Areas Beyond National Jurisdiction (ABNJ). Managing biodiversity in these zones poses significant challenges due to their legal and ecological complexity, as explored in this chapter. Environmental harm in ABNJ is notoriously difficult to address once it occurs, emphasising the importance of establishing rigorous compliance mechanisms. These compliance challenges bring to light the need to rethink how biodiversity is conceptualised and managed in these global spaces, prompting a reevaluation of foundational principles in environmental governance. Article 7 of the Agreement codifies multiple principles to guide biodiversity management, including; a) the polluter-pays principle, b) the principle of the common heritage of humankind as stated in UNCLOS, c) freedom of marine scientific research and other high seas freedoms, d) the principle of equity and fair sharing of benefits, e) the precautionary principle or approach, f) ecosystem approaches, g) an integrated approach to ocean management, h) an approach that

enhances ecosystem resilience, including against climate change and ocean acidification, while maintaining ecosystem integrity and carbon cycling, i) use of the best available science and information, j) incorporation of traditional knowledge from indigenous peoples and local communities where available, k) respect for obligations related to the rights of indigenous peoples and local communities in marine biodiversity conservation, l) prevention of transferring damage or pollution between areas or types, m) full recognition of the unique circumstances of small island developing states and least developed countries, and n) acknowledgement of the special interests and needs of landlocked developing countries. While a full exploration of these principles is beyond the scope of this thesis, it is essential to underscore some of the underlying fundamental concepts that should serve as a foundation for future analyses of biodiversity objectives in global contexts.

One of the fundamental concepts that should shape the BBNJ's approach to biodiversity is the precautionary principle, which embodies a forward-looking stance toward environmental protection. This principle is not only a scientific but also a political and ethical imperative, suggesting that the unknown risks to biodiversity warrant preventive action (Rechnitzer, 2022a, 2022b). Within the biodiversity discourse, this principle implies that ecosystems should be protected proactively rather than reactively, addressing potential ecological harm before it occurs. The prevention principle is further supported by two theories: the free-space theory and the ignorance theory (Balzano and Sheppard, 2002).

The free-space theory advocates setting aside relatively unpolluted marine areas as essential reserves for biodiversity, which could regenerate and offset environmental degradation. In the BBNJ context, MPAs could fulfil this role, but the inherent variability of ocean ecosystems complicates this strategy. The other prevention principle is the ignorance theory, which emphasises minimising human interventions in the marine environment, advocating for the use of cutting-edge science and technology to mitigate risks to biodiversity (BBNJ Article 7(c, i)). However, this reliance on advanced technologies and knowledge underscores equity issues in ABNJ. Without capacity building and technology transfer (BBNJ Article 7(d)), technologically advanced nations may disproportionately benefit from biodiversity management, highlighting inequalities in this discourse. Nonetheless, since our knowledge of environmental impacts is often incomplete, the prevention approach collectively allows enforcing the precautionary, as well as the no harm principle (BBNJ Article 7(e)), fundamental principles in a technological age (Andorno, 2004; Tanzi and Kolliopoulos, 2015). However, these principles are not binding and thus do not carry enforceable legal implications.

A somewhat enforceable concept is the polluter-pays or cost allocation principle (article 7 (a)), which introduces an economic dimension to the biodiversity discourse by holding polluters financially responsible for environmental harm. This principle aligns with a neoliberal approach to biodiversity, framing nature as an entity with costs and benefits that can be quantified and assigned to responsible parties. However, this economic framing raises questions about feasibility and equity, particularly in complex ecosystems like ABNJ. Identifying polluters, assessing cumulative impacts (BBNJ Article 1(6)[50]), and assigning monetary value to ecological degradation is fraught with challenges.

The discourse of *ecological scarcity*, as presented by (Muhl et al., 2019), further complicates this principle. Two types of scarcity are particularly relevant: 1) cumulative scarcity, in which limited resources are eventually exhausted, as in the depletion of oil fields and ratio scarcity, which involves systemic damage when extraction or pollution exceeds critical thresholds (Muhl et al., 2019). These concepts challenge the idea of individual accountability within biodiversity discourse, as pollution and resource use in ABNJ often involve multiple sources and cumulative impacts. Activities like deep-sea mining and offshore drilling highlight this dilemma, as their localised impacts can disrupt biodiversity in the entire ABNJ system. While economically rational, the polluter-pays approach may overlook the social and ecological complexities inherent in shared marine environments.

Alternative ecosystem-based and integrated ocean management approaches have gained traction in response to these limitations. These frameworks suggest a more nuanced view of biodiversity, where environmental harm is managed with consideration for diverse stakeholder needs and cumulative effects (BBNJ Article 7 (d, f, g, h, j, k, m, n). Such approaches aim to transcend traditional boundaries in biodiversity governance, emphasising interconnectedness across social and ecological systems. However, establishing such frameworks in the fragmented ABNJ governance system presents multiple obstacles. The BBNJ framework reflects a terrestrial mindset that often views environmental governance through the lens of fixed territorial boundaries (Peters, 2020). This mindset is evident in the perspectives of landlocked and small island states, which highlight the limitations that land-based ideologies impose on ocean governance. The next Chapter will delve into these perspectives, drawing on first-hand

50 Article 6(1) of the BBNJ: Cumulative impacts" means the combined and incremental impacts resulting from different activities, including known past and present and reasonably foreseeable activities, or from the repetition of similar activities over time, and the consequences of climate change, ocean acidification and related impacts.

accounts from LLDC delegations. These viewpoints will help broaden concepts shaping biodiversity understanding in governance in ABNJ contexts, highlighting nuanced factors that must be overcome to address the environmental crisis.

7.7. Chapter 7 conclusion

This chapter has emphasised the complexity of achieving conservation and sustainable use objectives for marine biodiversity under the BBNJ Agreement. While the BBNJ seeks to establish common ground for protecting marine life and promoting sustainable practices in ABNJ, this chapter has shown that the path to these objectives is fraught with obstacles. The main challenges lie in balancing ambitious conservation goals with the realities of sustainable use, particularly in a space where numerous interests and stakeholders intersect.

A core insight from this chapter is that while the BBNJ framework introduces promising tools—MPAs, EIAs, CB&TT, and ABS—each tool presents unique challenges when applied to ABNJ. For instance, traditional MPAs and other ABMTs are difficult to implement and monitor in open ocean spaces, where enforcing regulations requires cooperation and considerable resources. As such, these conservation measures risk becoming symbolic gestures unless they are supported by effective enforcement mechanisms and a strong commitment from states to uphold them.

In sustainable use, this chapter has shown that the BBNJ's emphasis on benefit-sharing and technology transfer is essential for ensuring that all predominantly low-income countries can participate meaningfully in marine biodiversity management. However, achieving this goal is complex, as it depends on building trust among nations, overcoming knowledge and technology transfer gaps, and addressing the underlying inequalities that often hinder cooperative conservation efforts. Without equitable access to resources and capacity-building opportunities, the goal of sustainable use risks being co-opted by more powerful states, undermining the inclusive and collaborative spirit that the BBNJ aims to foster.

This chapter underscores conservation and sustainable use as deeply interconnected goals that cannot be pursued in isolation. Realising these objectives will require governance models that are flexible, inclusive, and responsive to ABNJ's unique challenges. These models must go beyond traditional, static approaches, embracing adaptive strategies for evolving ecological and socio-political realities. The next chapter will explain how static models continue to challenge global marine biodiversity conservation and sustainable use.

----------*End of Chapter 7*----------

Part 3: The future of biodiversity governance

Chapter 8 answers Objective 3 and Chapter 9 on the conclusions and outlook

Chapter 8: Biodiversity and Landlockedness

8.1. Introduction

This thesis has demonstrated that biodiversity, initially rooted in biological sciences, has become intertwined with a complex web of social, economic, technological, political, and epistemic factors. This complexity is especially evident in the governance of Areas Beyond National Jurisdiction (ABNJ), where spatial limitations compound the governance challenges. Drawing from the previous chapters, the central issue of understanding biodiversity and its governance in ABNJ is primarily the geographical contexts in which governance occurs, in this instance, the ABNJ.

Minimal human engagement within these vast ocean spaces creates a disconnect between those who govern and the ecosystems they seek to protect. Unlike terrestrial environments where humans have direct physical interactions, ABNJ lacks such engagement for the majority of the people (Schuldt et al., 2016), including scientists and policymakers. As a result, understanding of these spaces is heavily influenced by the daily spatial interactions on land rather than any direct experiences with the oceanic (Lübker et al., 2023).

However, governance of the oceans at a distance or through mediated experiences, e.g., through digital tools, adds to the subjective nature of human perceptions, emphasising certain aspects of the oceanic space while neglecting others (Ciccoricco, 2015; Hayward, 2013, 2013; Sammler and Lynch, 2021a). This selective mediation, coupled with the terrestrial bias from which human governance concepts emerge, influences policy and decision-making, reinforcing frameworks that may not be suited to the unique challenges of addressing the environmental crisis (Peters, 2020; Robbins, 2020). Because the concepts of biodiversity we are talking about are landed and governance is from terrestrial perspectives, it is, therefore, crucial to take a moment and reflect on the context through which landed beings attempt to understand and govern life farther away from their terrestrial homes. **This chapter, therefore, aims to (re)examine and (re)imagine ocean space from which biodiversity discourses are defined and redefined through a landed perspective.**

Perceptions of space and the natural world are not static; they are continually evolving and shaped by daily experiences, beliefs, and ideologies (Robbins et al., 2022). Similarly, concepts and practices of biodiversity are not fixed mental images but ongoing reconstructions shaped by spatial experiences (Cerda and Bidegain, 2018; Fischer and Young, 2007; Robbins

et al., 2022). This chapter, primarily based on my article published in *Frontiers in Marine Science* (Sebuliba, 2024), takes an empirical approach to broaden the spatial concept of being landlocked, traditionally tied to countries without direct access to the ocean, to demonstrate how individuals and societies may feel detached from or connected with the sea, regardless of whether they reside in coastal or inland areas. This sense of connection or detachment significantly influences their interactions, perceptions, and the regulatory suggestions they make concerning ocean environmental issues.

The chapter is structured into four main sections. The first section introduces the concept of being landlocked, drawing from the BBNJ negotiations and Rena Lee's metaphorical ship during the final BBNJ negotiations for adopting the treaty text. The second section describes how countries become landlocked and the implications of this condition. The third section delves into these consequences of landlockedness, specifically within the context of the BBNJ framework. It draws upon engagements with landlocked countries (LLCs) to discuss how these nations navigate the challenges of participating in global marine governance. This section underscores LLCs' unique perspectives and concerns concerning the BBNJ negotiations and their impact on global biodiversity management.

Moving beyond the traditional state-centric view, the third section broadens the concept of landlockedness to encompass other perspectives. It considers how non-state actors, communities, and individuals might experience a sense of landlockedness even when geographically coastal. This section introduces new dimensions of the concept, highlighting how cultural, economic, and political factors can contribute to feelings of disconnection from the ocean, influencing environmental stewardship and policy-making. The fourth section presents a provocative idea that the ocean can be seen as landlocked. This metaphorical landlockedness refers to how the ocean is increasingly enclosed by human activities, regulations, and territorial claims, limiting its dynamism and connectivity. This section advocates for a renewed emphasis on systems approaches in governance to address the ocean's complex challenges. The chapter concludes with introducing the "bio-ocean", the view that the ocean is not separate from land nor biodiversity but a living entity shaped by and shaping life on this planet.

8.2. Coming onshore: The Landlocked Ocean

Rena Lee, the Singaporean president of the Intergovernmental Conferences (IGCs) responsible for negotiating the BBNJ (Biodiversity Beyond National Jurisdiction) Agreement, employed a compelling metaphor to capture the essence of the negotiation process. She likened the culmination of these negotiations to a ship finally reaching shore. This powerful image symbolises the successful end of a long, challenging journey toward finalising the Agreement text. This metaphor of a vessel arriving at shore not only signifies the conclusion of the BBNJ negotiations but may also be used to introduce the concept of a landed view of the Agreement's objectives, what I call the ***landlocked ocean***.

The landed view in this context can be interpreted as the tangible realisation of the BBNJ's goals—an embodiment of the Agreement's principles and aspirations as they transition from abstract discussions and negotiations to concrete, actionable outcomes. Just as a ship's arrival marks the beginning of its engagement with the land, the BBNJ's landing represents the point at which the Agreement's objectives are grounded in real-world implementation. Notably, I am using the idea of *landing* and not *oceaning* because the negotiations and implementation of the BBNJ Agreement are all happening and are informed through landed processes. By using the concept of landing rather than oceaning, I draw attention to how the BBNJ Agreements' goals were perceived and are now being brought into practical reality through processes deeply rooted in terrestrial rather than oceanic contexts. The landed view suggests a shift from the theoretical and diplomatic realms into ocean governance's practical and enforceable realities. My positionality—I come from a landlocked country and work in a coastal state —inspires this exploration, as do the various perspectives obtained during the BBNJ negotiations.

As explored in the previous chapters, multiple insights were gleaned from engagements with different stakeholders during the BBNJ negotiations. However, some of the most reflexive insights emerged from delegates of landlocked countries (LLCs). These insights will frame the rest of this chapter.

Landlocked countries (LLCs) are defined by UNCLOS (United Nations Convention on the Law of the Sea) simply as "States without a sea coast" (UNCLOS, 1982). Of the 195 sovereign States recognised by the United Nations, 44 are landlocked. These nations, often called "geographically disadvantaged States," face unique challenges due to their lack of direct access to the ocean (Uprety, 2006). The seemingly straightforward geographic descriptor has profound

legal, economic, and geopolitical implications, influencing how these countries participate in global ocean governance (see Chapter 5.3.2.

Geographical proximity to the coast). Coastal States typically hold an advantaged position, exerting more significant influence in maritime affairs due to their proximity to the sea, a source of immense wealth through trade and offshore resource access (Franckx, 2005; Warner and Rayfuse, 2008). This proximity not only shapes a State's rights and responsibilities in ocean matters but also plays a significant role in its identity and influence in international relations (D'Arcy, 2008; Vaha, 2023).

However, the analysis of BBNJ Agreement contexts reveals that being landlocked goes beyond LLCs. Primarily, this revelation emerged through the grievances of LLC delegations concerning the neglect of the common heritage principle (CHP) meant to foster collective responsibility and equity in ABNJ governance (Vadrot et al., 2022). Upon closer examination, *landlockedness* is rooted in broader issues of ocean governance, which affect all nations, with or without direct access to the sea. **This chapter delves further into what it means to be *landlocked* in the context of global commons governance, which goes beyond landlocked states.**

In international discourse, categorising States into simple categories, such as *coastal* or *landlocked*, tends to obscure the complex realities of how nations interact with and exploit space and resources beyond their borders (Steinberg, 1999a, 1999b, 2001). These categories fail to account for the diverse legal, physical, and cultural factors that underpin nations and their interests over time (Ball, 2019; Lenin, 1917/2016; Machiavelli et al., 1532/2020; Rousseau, 2019). The geopolitical classifications fall into the trap of presenting complex issues as overly straightforward, creating rigid categories (Dahlberg, 2015) and encouraging adherence to static and closed modes of thinking (Bedolla, 2005; Steinberg and Peters, 2015). In the context of nation-states, borders depicted on maps as simple lines give a misleading impression of finality and permanence (Diener and Hagen, 2012; Murphy, 2010; Wimmer, 2013). These seemingly fixed boundaries foster divisions in the human mind (Battistella, 2001; Feinberg, 2014; Mannov, 2013; McAllister, 2020), tying values, interests, and influence predominantly on cartographic spatial characteristics (Elden, 2013a, 2013b; Faye et al., 2004; Mathews, 1997). The spatial aspects then obscure other underlying factors that dictate access and use of space and resources over time (Peters, 2014; Sammler, 2020a).

Contesting these fixed and immutable ideas are the oceans, which introduce depth and movement into the conventional geopolitical framework (Elden, 2013a; Steinberg and Peters, 2015). The fluidity and vastness of the oceans challenge rigid governance frameworks built from the Westphalian state-centric model of the 1600s (Elden, 2013a). Oceans challenge traditional governance models based on fixed socio-political borders by introducing complex issues that require dynamic solutions (Peters, 2020). These challenges include managing migrating species (Maxwell et al., 2015; Pinsky et al., 2018; Stahl et al., 2020), maintaining interconnected ecosystems (Mahler and Pessar, 2001; Sardar, 2010), navigating the intricate geopolitical landscape of ABNJ (Mazza, 2010). The oceans reveal a fundamental disconnect between socio-political borders and the dynamic criteria for effective environmental management (Dallimer and Strange, 2015; Harvey et al., 2017). In ABNJ governance, the overlapping jurisdictions and diversity of stakeholders make rigid classifications problematic, as they need to accommodate the shifting realities of the global commons. Legal and practical contradictions emerge when addressing borderless risks like climate change or biodiversity in ABNJ (Goldin and Mariathasan, 2014). Traditional concepts and modes of governance struggle to keep pace.

The framers of UNCLOS introduced principles like the CHP (Common Heritage of Humankind) in ABNJ to move beyond simplistic geographical distinctions of States and foster a sense of collective responsibility (Noyes, 2015). Ignoring the CHP principle leads to fragmented policies (Dallimer and Strange, 2015; Hirsch, 2020), hinders collective action (Vadrot et al., 2022), and diminishes the relevance of international or global contexts (Liverman, 2016; Sentance and Betts, 2012). This neglect perpetuates a state-centric system ill-equipped to address complex global issues (Hughes and Vadrot, 2019; Tapscott, 2014). The system exacerbates inequalities for disadvantaged groups whose interests rely on the collective will of the global community[51] (Linnell, 2016; Vihma et al., 2011). While ocean governance dates back to ancient times, even predating the formation of many contemporary States (Johnston, 1988), it is still heavily influenced by how terrestrial borders are conceptualised between countries. Peters (2020: 4) highlights this by stating that

> *modes of demarcating space do not belong at sea but have been transported there from the land and landed logic... This landed ontology and territorial*

[51] see also Chapter 5: section 5.1.2. on what the global community means)

geo-philosophy is an underlying discourse of ocean governance so powerful that it is rarely questioned.

This chapter supports this notion by asking what it truly means to be landlocked. This analysis focuses on the landlockedness of ocean governance frameworks, exploring the role of landlocked States in BBNJ negotiations. It demonstrates how entrenched land-sea relations inform and are reinforced by legal frameworks, shaping our understanding of ocean concepts and governance alongside historical, social, economic, and political factors.

The following section will first introduce the consequences of being landlocked.

8.3. The consequences of becoming landlocked

States become geographically landlocked, influenced by wars or disputes leading to secession and territorial loss adjacent to the sea. Examples include Ethiopia losing a coastline when Eritrea gained independence, resulting in a protracted disagreement (Iyob, 1995), South Sudan's secession from Sudan in 2011, leaving the former without a coastline (Branch, 2013), and Bolivia's loss of land and sea access to Chile following the War of the Pacific in 1904 (John, 2009). In other cases, imperial border policies imposed by European colonisers, such as the Berlin Conference of 1884-85 for predominantly present-day Africa, resulted in new borders and the consequence of countries like Uganda becoming landlocked (Yao, 2022)

This landlocked predicament bears several consequences, and countries sometimes take detrimental steps to the point of bloodshed to avoid becoming landlocked, as was the case for Bolivia (John, 2009). Others negotiate access corridors to the sea, such as the *Polish corridor* that Poland acquired from Germany to gain access to the Baltic Sea (Hartwell, 2023). The consequences of lack of sea coast or access include bargaining with the coastal neighbour(s) to access goods and services across the latter's territory (Faye et al., 2004). As an easement of access, the LLC must collaborate with or compensate the neighbours for the necessity of trade or passage and any damage caused (Bangura, 2012). Such arrangements sometimes result in a *permanent legal servitude of passage* or a *prisoner dilemma,* where rights of innocent passage and transit are restricted and dependent on the coastal States requiring the LLC to cooperate and depend on their coastal neighbours (Bangura, 2012; Wilmore, 1986).

This was the case for the Nepalese in the fall of 2015 and Afghans in 2011, who faced blockades and access restrictions, triggering fuel and humanitarian emergencies, as a result of strained relations with their coastal neighbours (Budhathoki and Gelband, 2016; Jones, 2007b). Super-

giant States with significant overseas territories and control over ocean resources and trade create further barriers for LLCs without similar influence (Cawley, 2015; Krause and Bruns, 2016).

In international ocean governance discussions, the landlocked designation reinforces the dominance of coastal States in oceanic affairs. Although UNCLOS establishes a jurisdictional framework where sovereignty diminishes with distance from the coastline (Sammler, 2020b), coastal States still hold significant control in extended zones (UNCLOS Articles 56-68), creeping their jurisdiction into various zones, including the ABNJ, due to adjacency (Chircop, 2011; Davis and Wagner, 2006; Molenaar, 2021; Mossop and Schofield, 2020; Su, 2021). They wield control and influence over the maritime domain through baselines along the coast upon which other maritime zones are derived (Jayakumar et al., 2014).

For instance, before 1900, many LLCs could not operate vessels flying their flag because some coastal States had refused to recognise this right (Sohn et al., 2014). France, Britain, and Prussia, in particular, argued that LLCs lacked seaports and warships and could not effectively control their merchant vessels (Churchill et al., 2022). Although UNCLOS provisions, especially those related to general rights of access, innocent passage, freedom of transit and navigation, and exploitation of marine resources (Articles 124-132), granted LLCs access to the sea, obtaining approval from coastal States was a formidable challenge (Churchill et al., 2022). The access provisions of UNCLOS have become less practical for states without explicit access to coastal ports or the right to access the territories between LLCs and the sea.

Moreover, the UNCLOS negotiations would predominantly focus on the use of the oceans by coastal States within their Exclusive Economic Zones (EEZs) and Continental Shelves (CS) (Roach, 2021a). Provisions for other States, like LLCs, to exploit *surplus* resources in coastal States EEZ under UNCLOS Article 69 are complicated, relying on the economic and geographic circumstances of all States involved under Articles 61 and 62 (Dahmani, 1983; Punal, 1992). Generally, access provisions were aimed at maintaining peace among States but also served as a diplomatic ploy for disadvantaged LLCs, particularly those from the Global South, to feel included in ocean management (Kaye, 2006; Wani, 1981). The vaguely defined ocean excess was left for landlocked States such as ABNJ, where principles such as the CHP and FOH (Freedom of the High Seas) apply.

Notably, there is always a lack of homogeneity on various issues, even among LLCs (Table 13). High-income LLSs, especially in Central and Western Europe, such as Switzerland, have

historically shown less interest in access and transit provisions than developing [low-income] landlocked countries (LLDCs). This is partly due to high-income LLSs having access and transit interests regulated in regional or bilateral Agreements (Schimmelfennig et al., 2015), along with technological and economic investments granting them an advantage in ocean negotiations (Lane and Pretes, 2020). These high-income States, like Switzerland, tend to be more interested in issues of resource exploitation by their counterparts.

Furthermore, several higher-income countries in the LLC category also manage to operate ocean-going commercial vessels under their flags, e.g., Azerbaijan, Bolivia, Czech Republic, Ethiopia, Kazakhstan, Laos, Luxembourg, Moldova, Mongolia, Paraguay, Slovakia, Switzerland, Turkmenistan (Tuerk, 2020; Figure 8.1). These factors show that administrative practices and infrastructure, rather than geographical distance, critically define the status of States (Boulhol et al., 2008; Faye et al., 2004; Rodrik et al., 2004; Sharma, 2020). This nuanced perspective underscores the complex dimensions of *landlockedness*, revealing an interplay between geographical, social, economic, and historical factors in defining their interests in international discourse. Therefore, we need to think of *landlockedness* as not a straightforward (meta)physical or (meta)legal condition but as a categorisation that reproduces ideas about resource use and access. These dynamic perspectives are yet to be fully acknowledged and integrated into international policy debates (Peters et al., 2022).

8.4. The BBNJ-landlocked case

In contrast to prior international discussions on oceans, the BBNJ specifically centred on ABNJ and was expected to offer a more balanced platform, especially for landlocked developing states (LLDCs), that often take a back seat in ocean governance. Despite collective ownership of ABNJ, LLDCs hold a unique position due to their economic needs (Faye et al., 2004), and limited capacity to access resources in these oceanic areas. This position grants them the privilege of presenting balanced views on ocean governance, exercising caution regarding environmental impacts, and compassion for other lower-income states that rely on the ocean for their developing needs, such as SIDs (Small Island Developing States). Affluent counterparts, like Switzerland, have a greater capacity to access these spaces and often adopted a critical stance towards similarly affluent States seeking to extend influence in ABNJ based on geographical advantage during the BBNJ negotiations.

The BBNJ negotiations, however, encountered a “joint-decision trap” (Scharpf, 1988), where the pursuit of national interests over collective action overtook the need for consensus on critical

issues. Consequently, the distinctive voices envisioned for LLCs or LLDCs gradually diminished. Initially, all States expressed environmental concerns, particularly those vulnerable to sea-level rise, such as SIDs and disadvantaged States (geographically and economically) like LLDCs. As negotiations progressed, enthusiasm for ecological issues waned, shifting towards benefit-sharing. This shift at first seemingly reflected an extractive perspective, perceiving ABNJ as empty spaces with untapped resources (Lambach, 2021), as each State sought a share in this perceived wealth.

However, further examination and interviews revealed additional factors, including a lack of trust in high-income and industrialised States. As discussed concerning EIAs, many high-income and industrialised countries sought autonomy and a reduced burden in EIA procedures despite their history of overexploitation and environmental degradation (Menton et al., 2020). Paradoxically, as more States sought their independence from collective action, environmental concerns and arguments related to the CHP decreased, leaving LLDCs without agency.

During the general exchange of views at the 5th BBNJ IGC, Mr Udaya Raj Sapkota, representing the Nepal delegation, emphasised the need for an inclusive international regime for the conservation and sustainable use of biological resources, advocating for the CHP (Sapkota, 2022). Interviews with representatives from various LLDCs revealed that the neglect of environmental protection and CHP left access and benefit-sharing (ABS) as the primary BBNJ element for establishing a level field. Representatives expressed pressure to participate despite limited interest due to a perceived lack of legitimate interest (pers. comm). As recorded in the author's field notes (some responses paraphrased for clarity), one delegate articulated,

We are generally not expected to participate in ocean discussions. Other States claim to have more legitimate interests than we do.

Another stated that we are expected "just" to show up.

Despite the author's persistent assertion that BBNJ discussions pertained to ABNJ, and therefore, all States have a legitimate interest and should voice their concerns, one respondent provided an interesting response:

It all begins in the geographical bloc. There are many interests, and ours are of least concern to other members.

The respondent further explained that the blocs are interconnected on many levels, giving an example of the African group, which generally aligns with the Group of 77 (G77) and China. In essence, the respondent conveyed that,

> *You have to understand that most landlocked States are just developing and are located in Africa and Asia. If other States* [in the bloc] *were to address some of our crucial interests, they may need to compromise at the expense of their priorities while other Western powers assert their interests.*

Exploring the dynamics of negotiation blocs reveals factors contributing to divisions, further isolating low-income States and hindering collective action. In international negotiations, like climate change (UNFCCC, 2023), many low-income States negotiate within blocs to strengthen their influence. However, countries sometimes break away from their blocs to advocate for their interests, as their needs may not always align with those of the group (Plantey and Meadows, 2007). This practice is common, notably with the United States, which often acts independently despite its ties with other countries (Gelfand and Dyer, 2000).

Political dynamics, shaped by internal and external events, can encourage individualistic stances (Crump, 2011). For instance, Russia's isolation from Western blocs due to the war in Ukraine led to a more solitary stance during the BBNJ IGCs, with Russia showing empathetic support toward the African Group (AG), G77, and China. Other countries, including the United Kingdom, Canada, Mexico, Brazil, Indonesia, Korea, Japan, and China, also asserted specific interests, balancing cooperation with opposing interests from their negotiating groups. For example, China cautiously advocated for a more focused EIA process, differing from the G77's broader approach. This tension between negotiating within blocs and acting independently weakens the influence and agency of disadvantaged states within those groups, whose strength lies in the collective voice of the majority.

As one respondent pointed out, the bloc's hierarchies and dynamics lead some delegates or countries to be leaders and others to be followers, spectators, givers, or takers. The marginalisation of certain States leads to *self-landlocking*, where delegates feel isolated or constrained, hindering their full participation in international ocean negotiations. The proximity to the sea is a crucial determinant of who holds a significant voice, underscoring the impact of fixed geographical considerations in international negotiations.

Two significant categories emerge: interest groups, representatives from powerful nations, institutions, and regional blocs that drive discussions and influence decisions and expressions

of solidarity. While all States and blocs represent a spectrum of interests, representatives of many landlocked States often find themselves confined to the role of expressions of solidarity, constrained by dynamics within their respective blocs or broader negotiations.

In response to a query about whether this dynamic is specific to being a small developing Landlocked State or merely a Landlocked State, one respondent articulated,

> *...does that matter ... the key idea here is that our views do not matter. You have that label* [of being landlocked], *and it sticks with you*

They felt forced to carry the border with them (Carter and Goemans, 2011; Shachar, 2020).

When asked why you participated in the negotiations, another respondent replied,

> *...we all came for environmental protection in ABNJ; is not that the main focus* [of the BBNJ]?

Another implied that it was about diplomacy.

> *We support their needs* [referring to other members of the bloc]*, and we hope they will support ours on another occasion.*

Another LLDC delegate expressed:

> *While we lack a coastline and the economic influence to voice our concerns as effectively as counterparts like Switzerland can, we know our shared responsibility for the oceans. As responsible global citizens, the situation is frustrating.*

To echo some of the sentiments from landlocked participants, the author gave an oral submission(s) on behalf of a delegate from an LLC, which was part of a geographical bloc (both removed in this final version on request) (Sebuliba, 2023). The author emphasised the challenge of restricting the ocean when States repeatedly refused to leave the EIA scoping (now Article 31(b) of the BBNJ) open to unforeseeable impacts (Box 1: Author's submission on behalf of an LLDC Delegation on EIAs during the resumed fifth IGCs).

"We are not landlocked by our own choosing. It is history that bestowed favour upon some while overlooking others. For us, it played out in the corridors of Berlin, where certain nations etched borders without considering our perspective. We have adapted to this reality, grappling with the uncertainty of a scenario where our coastal companions, once friendly, can turn indifferent. Living at the mercy of those who stretch their dominion to pursue their own agendas within our shared legacy. We are restricted in access and influence over these realms. We come to these global negotiations with a sense of solidarity, to address matters that touch us all, in one way or another. The degradation of the High Seas will undoubtedly reverberate across us all.

Throughout this BBNJ process, it became evident that the marine environment and its non-human inhabitants are confronting a paradox of becoming imprisoned by their own waters. Their boundaries have been defined; their fate left in the hands of States—some of which have a track record of environmental negligence. The destiny of the High Seas hinges on whether these nations choose to mend their ways and take essential measures to safeguard these realms, or if they persist in safeguarding their self-expanding interests, regardless of environmental concerns.

The scope of an open EIA, adaptable to encompass unforeseen impacts, serves as a precautionary stance toward an uncertain future for the High Seas under state governance. Those nations with limited capacities, entertaining the notion that allowing high-income countries to oversee the High Seas as per their domestic policies and conditions will benefit them, should brace for impact. We may all be witnesses to an unparalleled environmental catastrophe" (Sebuliba, 2023).

Box 1: Author's submission on behalf of an LLDC Delegation on EIAs during the resumed fifth IGCs.

After the submission, participants, including representatives from affluent States, were willing to discuss the clauses further. However, some members within the geographic bloc internally opposed the submission, not due to concerns about the EIA scope but rather questioning why the LLC was now expressing its views. The question of who has a voice and can express opinions in international negotiations still haunts effective governance (Tessnow-von Wysocki and Vadrot, 2020). In this context, the statement was perceived as overshadowing the entire

bloc, even though the LLC was entitled to its own opinion. The head of the LLC delegation, satisfied with the submission, cautioned against subsequent submissions without consulting the bloc. The delegate emphasised that low-income LLCs face challenges expressing their opinions on oceanic matters, stating that;

> *Landlocked States within the bloc are not expected to have a voice, and speaking may raise concerns about whose interests you represent. Other members may believe you have been influenced by external States pushing their agendas,* the delegate explained.

When I met another delegate at the consulate, they shared why they were not attending these BBNJ negotiations, as I pointed out empty seats without delegates;

> *I led the delegation and participated in the last three negotiations. I quickly realised it was not about protecting marine biodiversity in shared space. I doubt the BBNJ is about common heritage; it is every state for itself. If you are landlocked and developing, there is little for you in these negotiations, maybe benefit-sharing, which I doubt works. In fact, our foreign ministry no longer wants to send delegations or technical support, expressed the delegate* (some paraphrasing may have been included for clarity).

This frustration is evident in the generally low participation or absence of many LLCs during ocean negotiations and in formulating their national policies towards ocean governance. For instance, Gallo et al. (2017) evaluating ocean commitments to the 2015 Paris Agreement, LLCs scored the lowest in terms of including specific marine topics in their NDCs compared to their coastal counterparts. Coastal States, however, also displayed varying levels of commitment to ocean-related issues influenced by historical and political factors. Many countries, even those heavily dependent on the ocean for food, jobs, and revenue, seemingly overlook critical marine aspects (Gallo et al., 2017). This could be due to several factors, including low income and *landlockedness*.

With limited contributions to offer and much at stake, a new international principle—use it or lose it—appears to drive negotiations and policies regarding the marine environment. Similar to the BBNJ negotiations, States increasingly focus on and debate access and benefit-sharing arrangements and are seemingly less concerned about the provisions aimed at protecting the

marine environment. New forms of *flags of convenience* (Lillie, 2004) will also emerge without addressing such issues.

Having introduced the concept of *landlockedness* and its implications for countries, the next section (following the figure and table) will expand this perspective beyond state borders.

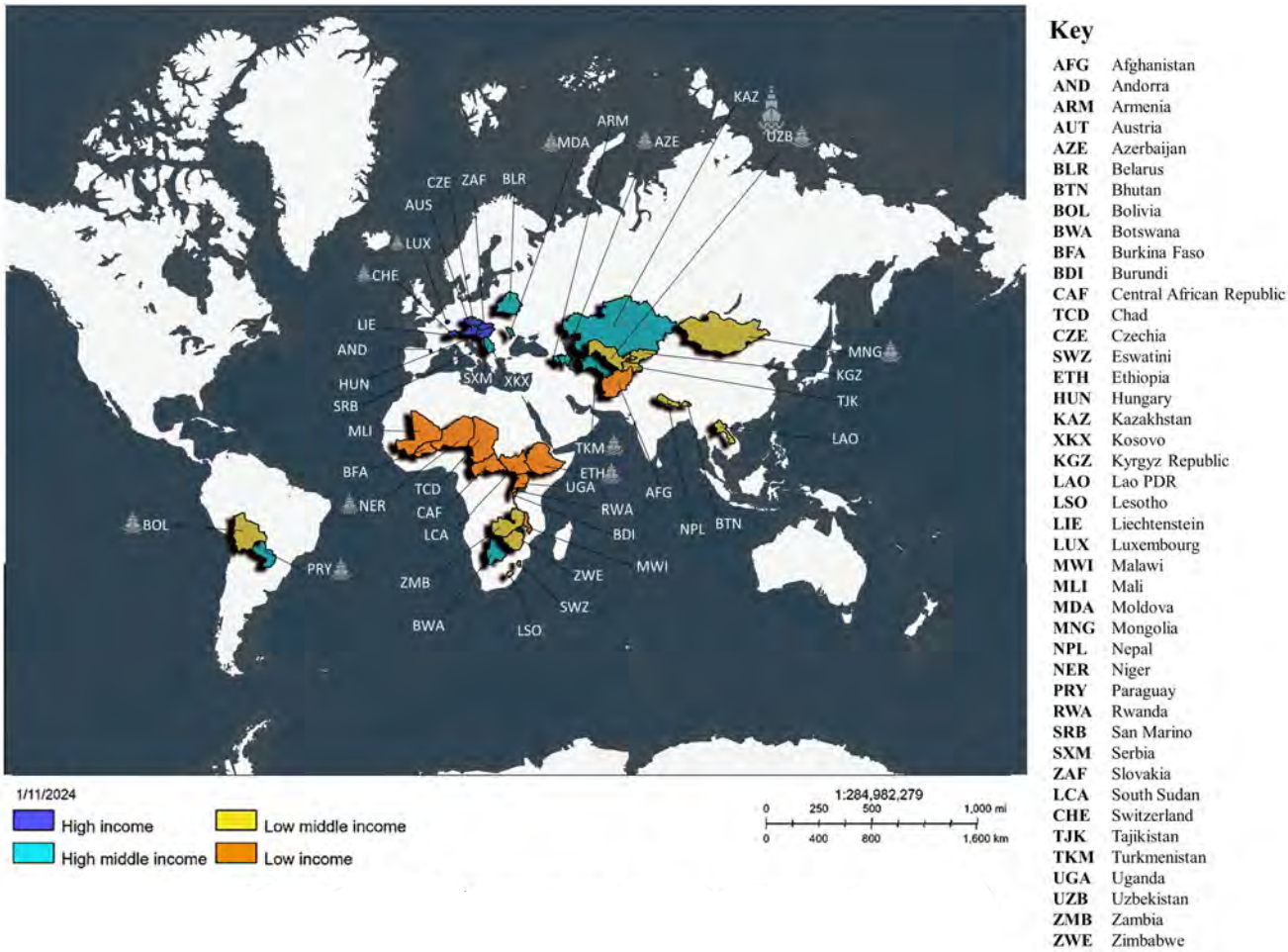

Figure 8.1: Landlocked States categorised by income group. States operating ships are identified with a ship symbol next to their acronym. The ship data source can be found at https://www.marinevesseltraffic.com. Refer to **Table 13** for the corresponding acronyms and the respective number of ships

Table 13: Comparison of Landlocked States by region, area, population, and income based on Gross domestic product per capita (GDPPC) in dollars and maritime presence based on the registered number of all ship types by flag.

Region	Abbr.	Country	Area (km^2)	Pop. (1000s)	GDPPC	%-World	Inc. grp	MP
SA	AFG	Afghanistan	652860	41129	356*	B	LI	0
ECA	AND	Andorra	470	80	41993	A	HM	0
ECA	ARM	Armenia	28470	2780	7018	B	UMI	0
ECA	AUT	Austria	82409	9043	52085	A	HM	0
ECA	AZE	Azerbaijan	82658	10175	7762	B	UMI	296
ECA	BLR	Belarus	202910	9209	7888	B	UMI	0
SA	BTN	Bhutan	38117	782	3560*	B	LMI	3
LAC	BOL	Bolivia	1083300	12224	3600	B	LMI	42
SSA	BWA	Botswana	566730	2630	7739	B	UMI	0
SSA	BFA	Burkina Faso	273600	22674	830	B	LI	0
SSA	BDI	Burundi	25680	12890	259	B	LI	0
SSA	CAF	Central African Republic	622980	5579	427	B	LI	0
SSA	TCD	Chad	1259200	17723	717	B	LI	1
ECA	CZE	Czechia	77270	10526	27223	A	HM	0
SSA	SWZ	Eswatini	17200	1202	3987	B	LMI	0
SSA	ETH	Ethiopia	1000000	123380	1028	B	LI	13
ECA	HUN	Hungary	90530	9684	18390	A	HM	1
ECA	KAZ	Kazakhstan	2699700	19622	11492	B	UMI	108
ECA	XKX	Kosovo	-	1762	5340	B	UMI	0
ECA	KGZ	Kyrgyz Republic	191800	6803	1655	B	LMI	0
EAP	LAO	Lao PDR	230800	7529	2054	B	LMI	0
SSA	LSO	Lesotho	30360	2306	970	B	LMI	0
ECA	LIE	Liechtenstein	160	39	1975045*	A	HM	0
ECA	LUX	Luxembourg	2590	651	125006	A	HM	200
SSA	MWI	Malawi	94280	20405	645	B	LI	0
SSA	MLI	Mali	1220190	22594	833	B	LI	0
ECA	MDA	Moldova	32850	2592	5714	B	UMI	157
EAP	MNG	Mongolia	1553560	3398	5046	B	LMI	457
SA	NPL	Nepal	143350	30548	1337	B	LMI	0
SSA	NER	Niger	1266700	26208	585	B	LI	816
LAC	PRY	Paraguay	397300	6781	6153	B	UMI	40
SSA	RWA	Rwanda	24670	13777	966	B	LI	0
ECA	SRB	San Marino	60	34	54983*	A	UMI	14
LAC	SXM	Serbia	87460	6760	9538	B	HM	0
SSA	ZAF	Slovakia	48110	5432	21257	A	UMI	0
LAC	LCA	South Sudan	610952	10913	1072**	A	UMI	0
ECA	CHE	Switzerland	39516	8770	93260	A	HM	30
ECA	TJK	Tajikistan	139960	9953	1054	B	LMI	0
ECA	TKM	Turkmenistan	469930	6431	8793	B	UMI	61
SSA	UGA	Uganda	199810	47250	964	B	LI	0
ECA	UZB	Uzbekistan	425400	35648	2255	B	LMI	0
SSA	ZMB	Zambia	743390	20018	1457	B	LMI	0
SSA	ZWE	Zimbabwe	386850	16321	1677	B	LMI	0

Key

SA	-South Asia	Pop.	-Population up to 2022
ECA	-Europe & Central Asia	GDPPC	-Gross Domestic Product per Capita
MENA	-Middle East & North Africa	A-	-GDPPC above world average
EAP	-East Asia & Pacific	B-	-GDPPC below world average
ECA	-Europe & Central Asia	**	-Values from 2015
SSA	-Sub-Saharan Africa	*	-Values from 2021
LAC	-Latin America & Caribbean	Inc. Grp.	-Income group
NA	-North America	MP	-Maritime presence (all ship types by flag)
Abbr.	-Country acronym		

8.5. Landlocked beyond State borders

The BBNJ negotiations revealed that landlockedness is a nuanced concept beyond physical geography. It represents a broader condition of separation or isolation from the ocean, particularly in remote areas like the ABNJ, where, for most people, access is limited. Interestingly, most groups lacking physical access to the sea may not be seen as landlocked but can face or exhibit landlocked experiences, while others, though geographically landlocked, may enjoy certain ocean-related rights and privileges (Antón et al., 2014; Vrancken and Tsamenyi, 2017). For example, Palestinians in Gaza, despite having a coastline, are often subjected to border blockades that severely limit their access to the sea and its economic resources, effectively placing them in a *landlocked* category (al-Shalalfeh et al., 2018; Drysdale, 1987; Isaac, 2010).

This perspective challenges traditional notions that proximity to the sea guarantees access or a relationship with the ocean (Foley, 2022). It highlights that mobility, access rights, and socioeconomic factors transcend physical borders and are influenced by internal and external government policies (Birtchnell et al., 2019; Khanna, 2016). For example, coastal and marine resources and spaces are increasingly regulated, often in the name of conservation or development, further restricting access to the ocean for particular groups (Clark, 1997; McClanahan et al., 2005; McClanahan et al., 2015). Privatisation of beaches and restricted access to ocean knowledge exacerbate these disparities (Alterman and Pellach, 2022; Koulouri et al., 2019; Welby, 1986; Worm et al., 2021), demonstrating that physical proximity to the ocean does not always translate into freedom of access.

Although oceans are recognised as “global commons” (Buck, 1998) and intricately woven into daily lives, they remain largely unseen and unexplored by many (Levin et al., 2019). While

nearly 60 million people globally are directly engaged in fisheries and up to 600 million livelihoods depend on fish/aquaculture (FAO, 2022, 2024), the oceans remain elusive to most (Urbina, 2019). Even scientists equipped with advanced technology have limited access, limiting their explorations to coastal areas, the ocean surface, and some parts of the deep sea (Rock et al., 2020). The vast expanses beyond the coasts, particularly ABNJ, remain a mysterious realm accessible to very few (Urbina, 2019).

Despite the physical distance, individuals can maintain a connection to the ocean through various means, such as rivers, historical associations, memories of maritime journeys, stories, visual impressions from past encounters, media portrayals, imagination, education-derived knowledge, a sense of global citizenship, or legal rights like those provided by CHP (Mohulatsi, 2023; Peters and Steinberg, 2019). The ocean holds different meanings for different people, ranging from its predominant perception as a resource in policy circles (Steinberg, 1999b), to island identities, waves for surfing, and an endlessly beautiful blue world (Braverman and Johnson, 2020; D'Arcy, 2008). Physical isolation is not necessarily permanent; even non-human species like fish, previously considered *landlocked,* can come into secondary contact (Tulp et al., 2013; Vanhove et al., 2011). States are not abstract entities but are composed of individuals (Jackman et al., 2020) who can share everyday experiences and connections despite geographical disparities. Viewing states as all-encompassing fixed entities overlooks a more extensive set of interconnected issues that must be overcome for effective ocean governance.

In this context, landlockedness reveals the dual challenge of viewing the sea as separate from land, ignoring their interconnections, or governing the sea the same way as land, perpetuating the failed landed logic. Traditionally, the land is seen as stable, familiar, and foundational to a human society, where countries are delineated, homes are built, crops are grown, and appropriate human thought (Leopold et al., 1992). In contrast, the ocean is associated with dynamism, fluidity, and mystery, representing the unknown, the unpredictable, and a space of constant movement (Conrad and Hunt, 2007; Elden, 2013a; Peters, 2020; Saputra and Sammler, 2024; Steinberg, 2001; Steinberg and Peters, 2015). This is deeply ingrained in mental duality, which perceives land and sea as distinct entities (Mannov, 2013). However, land and sea characteristics of stability and change are interconnected in numerous ways, from physical flows and seepages to human activities and imaginaries (Christopher L. Connery, 2001; Peters and Steinberg, 2019).

Thus, the sea surrounds the land, making it *ocean-locked*, and the land surrounds the seas, making it a *landlocked ocean*, yet they mix up to form a continuum of a dynamic system.

Viewing and governing the sea as a separate entity from land ignores these interactions and the impacts of the terrestrial influences, such as shipping and plastic pollution in the watery world. However, governing the sea in the same way as land allows a transfer of terrestrial challenges and logic into the ocean without scrutiny (Peters, 2020). Both perspectives contribute to the ocean itself, both materially and metaphorically, to appear *landlocked*. Geographically, oceans are surrounded by land; conceptually, their governance and representation have been dominated by terrestrial frameworks—what Peters (2020: 4) calls a "landed ontology and territorial geo-philosophy." Oceanic spaces, like land, are governed and understood through terrestrial logics that often fail to capture the complexity and fluidity of ecosystems.

Landlockedness, therefore, is not solely about geographical distance; it is a dynamic relationship that involves social, economic, and geopolitical factors. In practice, it is a state of mind that permeates the lives, daily experiences, and governance processes. It affects relationships with the sea—shaping how States and individuals understand, care for, communicate with, or even manage the oceans. New forms of *landlockedness* can emerge, even causing ecosystems to appear landlocked due to static boundaries. The current international focus on states and geographical distance overlooks the complexity of this *landlocked* dilemma.

As countries are marginalised, whether physically landlocked or otherwise, the focus shifts away from collective action and environmental goals to advocate for individual state interests. However, given that the UN and international law require the existence of statehood and its elements *ex facto jus oritur* (Kunz, 1956), it is crucial to recognise that States are dynamic compositions of individuals with shared experiences and establishing a value-based framework for negotiations from the outset. States can focus on contributing to common issues rather than being constrained by traditional terrestrial logic and interests. For instance, identifying potential violations of universally agreed-upon human and non-human rights through specific management options can be a focal point (Harden-Davies et al., 2020; Morgera et al., 2023). If, for instance, a management approach requires that the rights of a few humans or non-humans override the rights of many and vice versa, how should those particular rights of affected communities be duly protected across the board? The negotiating States could then align themselves with the rights they believe should not be undermined and justify management options for protecting affected communities. This approach encourages a shift towards a more interconnected, value-based Underlying approach and theoretical framework. It establishes a more trustworthy system that protects shared values rather than solely relying on individual

State interests that evolve. Such an approach would have to be established earlier in preparatory committees, as these committees lay the framework for intergovernmental negotiations.

In essence, addressing ocean challenges on a global scale requires thinking beyond the binaries, prioritising collective interests (Benzie and Persson, 2019; Nguitragool, 2014; TFDD, 2023), embracing alternative methods and perspectives (Sammler, 2020a; Smith, 2012), and transcending static political ideologies that favour the dominance of some while marginalising others (Jost et al., 2022; Titley et al., 2021; Weber et al., 2021).

8.6. Conclusion: Deviating from concepts or contexts?

In conclusion, I argue that the challenges of operationalising biodiversity, including in ABNJ, stem from the complexity of its ecological concepts and the diverse and nuanced contexts in which it is applied. The notion of "landlockedness," when viewed as more than a geographical condition, exposes limitations in current governance frameworks, including biodiversity. While ecological understandings of biodiversity, such as through the concept of species, may hold relatively stable meaning within disciplines like ecology or evolutionary biology, these definitions are significantly reshaped as they cross into political, social, and economic spheres. Similarly, governance frameworks face distinct operational challenges when considering biodiversity from land to sea, particularly in shared regions like ABNJ. Concepts often rooted in terrestrial governance structures—characterised by static borders and clear jurisdictions—are transferred uncritically to ocean governance. This "landed logic" applied to marine environments restricts biodiversity management by imposing terrestrial-based, rigid perspectives on dynamic ocean ecosystems.

This oversight results in biodiversity governance that often reflects power dynamics, resource control, and stakeholder interests instead of ecological realities. When treated through a landlocked lens, biodiversity can become a tool for negotiating power and resources rather than a measure of ecological integrity. Consequently, the biodiversity concept is fragmented across contexts, creating inconsistent understandings and governance strategies. In many cases, biodiversity becomes a subject of negotiation between scientific, political, and economic forces, each with conflicting agendas. For example, scientific perspectives on the ecological significance of species are often reshaped by policymakers who may commodify biodiversity, viewing it primarily in terms of economic value rather than ecological necessity. This commodification weakens biodiversity's ecological meaning. As policymakers pursue simplified frameworks to reach consensus, essential ecological nuances are sidelined.

Scholars like Norberg et al. (2022) argue that while the scientific debate is crucial for environmental science to progress, I argue that biodiversity management cannot succeed if it remains disconnected from broader social, economic, and political realities. Different stakeholders—ecologists, policymakers, local communities, and industries—frequently operate with divergent understandings of biodiversity, leading to superficial agreements when universal interpretations are assumed, masking deeper conflicts.

To address these challenges, biodiversity governance must be recontextualised, recognising that biodiversity concepts cannot be managed as objective, fixed truths. Instead, biodiversity should be approached as a context-dependent concept influenced by diverse ecological, social, and economic conditions. Conservation policies, for example, often overlook the needs of local communities that rely on natural resources, risking conflict by restricting access to resources without fully considering local dependencies. Conversely, delays in conservation actions may irreversibly harm ecosystems. Recognising biodiversity's contextual dependencies could enable conservation efforts to balance local resource needs and environmental protection.

The reluctance to embrace biodiversity's contextual and "landlocked" nature highlights a psychological dissonance within scientific and policy circles, rooted in a preference for stable, universal frameworks over complex, context-sensitive approaches. Expanding biodiversity management to integrate Indigenous knowledge and alternative governance systems would demand humility, adaptability, and a break from traditional hierarchies, ultimately strengthening conservation efforts by valuing sustainable, locally informed practices.

In conclusion, landlockedness offers a lens through which we can critically assess biodiversity governance, emphasising the importance of context, interconnection, and adaptability. A context-sensitive approach that integrates scientific, indigenous, and community perspectives can strengthen biodiversity conservation efforts. Effective biodiversity management will require us to transcend static, land-based logic, adopting dynamic and inclusive strategies that respect ecological complexity and human needs. This will foster resilience in biodiversity governance, paving the way for sustainable conservation strategies that are attuned to the realities of our interconnected global ecosystem.

Chapter 9: Conclusion, contributions and future perspectives

In this thesis, I contribute substantially to understanding the complex relationships between humans and the environment, particularly as humans confront an urgent ecological crisis that demands immediate and sustained action. The diversity of life on Earth—its species, ecosystems, and essential functions—is deteriorating at an alarming rate, undermining the resilience necessary for ecosystems to adapt to environmental changes. Habitat destruction and climate change are accelerating, driving species extinction to catastrophic levels, a crisis that underscores the need for a deeper understanding and protection of our shared planet

This thesis addresses this urgent challenge by examining how biodiversity—a central scientific concept that drives environmental policies —is defined, contested, and implemented. With the imminent adoption of a new global treaty on biodiversity beyond national jurisdiction (BBNJ), specifically designed to protect the oceans, Earth's largest and most endangered habitat, a critical understanding of biodiversity goals becomes even more crucial. The BBNJ aims to establish a legal framework for the conservation and sustainable use of marine biological diversity in areas beyond national jurisdiction, thereby filling a critical gap in current biodiversity governance. I argue that assuming shared objectives without critically analysing embedded underlying stakeholder perspectives risks unintended objectives, such as industrial exploitation of genetic material that may not reflect what scientists aimed to achieve with these biodiversity concepts.

Although promoted as a global imperative, the chapters above have identified the competing interpretations of biodiversity across political and social arenas, revealing how different stakeholders shape governance and influence who benefits from biodiversity policies. I contribute to understanding how these stakeholders gain legitimacy and positions of power to influence these biodiversity discourses. This exploration adds critical insight into how biodiversity is politically shaped and contested by legitimising specific stakeholders and perspectives, such as from economists or other scientists, while excluding others, such as from Indigenous communities. As such, biodiversity concepts are not universally understood or applied. In the face of deepening planetary crises, understanding these divergent views is essential for creating policies that genuinely protect life in all its forms.

A significant contribution of this work lies in its interdisciplinary approach (Chapters 2 and 3), integrating social and natural science perspectives to explore biodiversity governance in an increasingly fragmented environmental discourse. Reflecting on my position as a researcher, I

combined insights from both fields to address potential biases and underscore the need for a balanced, rigorous analysis of biodiversity discourses. This stringent approach is crucial, particularly in areas beyond national jurisdiction (ABNJ), where gaps in governance pose heightened risks.

The thesis advances the fields of critical geography and political ecology, providing a nuanced analysis of the power dynamics shaping biodiversity within spatial interactions, with a focus on ABNJ. Often neglected in biodiversity literature, I demonstrate that these areas are ecologically essential and shaped by contentious socio-political decisions. For instance, in examining the unresolved boundaries of the extended Continental Shelf (CS), I show how economic and political interests supported by existing ocean laws like UNCLOS determine how the spatial elements of biodiversity are defined and implemented. Using a socio-legal framework, I argue that adaptive legal structures must address these shared spaces' complex and evolving environmental crises.

Incorporating Science and Technology Studies (STS) perspectives, the thesis reveals how social and political forces shape scientific understandings of biodiversity. By deconstructing how "scientific" knowledge is strategically mobilised in biodiversity negotiations and practices, I show that scientific concepts and practices are socially constructed and are susceptible to manipulation. I contribute a critical view of social scientific research by examining how spatial and scientific discourses are co-opted to establish normative frameworks. This insight is crucial because, without a critical lens on scientific discourse, biodiversity policies risk being skewed toward the agendas of powerful actors like industries, which can use science to support their objectives rather than genuine ecological needs.

Media and communication studies further contribute to this analysis by examining how language shapes biodiversity understanding, is used to gain consensus, and masks underlying biases. For instance, I show how biodiversity is strategically not defined in the BBNJ contexts, allowing stakeholders to assume common objectives, while specific elements like MGR are defined to suit economic imperatives. This thesis calls for greater transparency in communicating biodiversity definitions, metrics, and goals whilst garnering public support for ecological action.

The thesis grounds its discussion in a historical constructivist approach, tracing how biodiversity has evolved as a concept shaped by social, political, and scientific forces from its earlier roots in ecology and evolutionary biology (Chapter 4). I argue that biodiversity is not a

fixed scientific term but a flexible, contested discourse. This analysis documents the power dynamics that have repeatedly influenced its meaning, revealing that even scientific concepts like “phylogeny” have been leveraged for political agendas. Tracing biodiversity’s evolution has demonstrated that biodiversity can be used as a tool for political agendas as much as scientific understanding.

This argument extends to understanding how and why biodiversity has become a “crisis concept,” frequently invoked to justify urgent conservation actions. This crisis concept frames biodiversity as a pressing and urgent issue that requires immediate and drastic conservation actions. I show how this framing is crucial for biodiversity to remain a relevant concept yet allows reducing biodiversity to measurable indicators that often marginalise broader ecological and cultural values. This critique underscores a vital contribution of this thesis: calling for a broader nuanced understanding of biodiversity that does not oversimplify its environmental and social dimensions.

In examining the implications of biodiversity discourse on global governance, mainly through the BBNJ negotiations, I illustrate how powerful actors—states, international institutions, and stakeholders—use their positions to shape biodiversity goals to fit their strategic interests (Chapter 5). These actors gained influence primarily through established frameworks like the UN and are legitimised through national delegations. This analysis reveals that these frameworks’ efficiency and power disparities impact global biodiversity policy, often favouring powerful entities like industrial nation-states from the global North over less influential voices such as landlocked nations or indigenous groups. The thesis argues for more inclusive governance models that acknowledge the existence of alternative approaches and marginalised stakeholders, which are essential to effective conservation, primarily as governments work to protect some of the world’s most vulnerable habitats.

Chapter 7 further highlights the selectivity within BBNJ negotiations, where economic and political sensitivities dictate which aspects of biodiversity are prioritised or excluded. For instance, while biodiversity is often presented as an inclusive, universal concept, I showed that certain elements—like fisheries and minerals—are routinely included or excluded when they pose economic or social sensitivities. This chapter also contributes to a critique of traditional modes of biodiversity governance like Marine Protected Areas (MPAs), which often prove inadequate when overlapping governance needs, multiple stakeholders, and complex economic interests converge. There is a pressing need to shift toward ecosystem-based conservation, which is more adaptable to the unique challenges of ABNJ. However, this thesis shows that

states' geopolitical and historical tensions challenge this progress. This thesis advocates for interdisciplinary insights, blending ecological studies with history and cultural analysis to find ways of navigating these challenges. Refining theories of environmental change is vital to ensuring timely and effective intervention.

Additionally, I contribute to legal scholarship on the complexities of biodiversity interpretations in addressing ocean conservation conflicts through existing ocean dispute settlement frameworks like UNCLOS. I argue that without careful integration, the BBNJ risks adding to this fragmented ocean dispute settlement mechanism, which is already struggling to deal with these environmental issues. I contribute to a critical perspective on the risks associated with piecemeal governance, demonstrating that effective biodiversity management requires frameworks that balance new and legacy governance structures. Without this balance, the effectiveness of global biodiversity governance will be compromised, limiting the potential for cohesive action. There is a need for adaptive, context-sensitive governance structures to manage ABNJ's complexities.

I finally argued in Chapter 8 that many of these governance limitations in the ocean stem from a terrestrial bias—a concept I termed the "landlocked ocean." Through insights for landlocked states during BBNJ negotiations, I illustrated how human perspectives on ocean governance are shaped by land-based concepts and experiences, leading to restrictive, outdated policies that fail to reflect the ocean's unique needs. I further argue that transferring rigid land-based concepts, which have sometimes been ineffective on land such as protected areas, into ABNJ governance in the form of MPAs has created a static framework ill-suited to the complex and dynamic challenges of marine environments. By linking the geographical landlockedness to biodiversity, I contribute a renewed perspective on the influence of terrestrial bias on ocean policy, arguing that innovative marine governance depends on challenging and revising these ingrained perspectives. In particular, I indicate that the practice of governing the ocean as a static and bounded territory, which does not work well for terrestrial ecosystems, is also not a good starting place for marine biodiversity management.

The overarching argument of this thesis is that biodiversity is a complex, scientifically and socially constructed discourse shaped by historical contexts, power dynamics, and the interests of influential actors. My contributions include a historical critique of biodiversity's contested evolution, demonstrating power dynamics in global governance, and analysing how terrestrial biases influence marine policy. This thesis makes a distinctive contribution to the BBNJ and social sciences literature by advancing a nuanced discourse analysis that examines how

concepts like biodiversity are understood, negotiated, and implemented globally. By situating biodiversity as a socially constructed discourse shaped by historical, political, and geographical contexts, this research expands the BBNJ literature beyond purely ecological or legal frameworks, integrating critical social science perspectives that reveal the complex interplay of ecologies, power and influence in global environmental governance. These contributions have important implications for both theoretical debates and practical policy-making. The way spaces are defined and understood determines management actions. Through its final critique of static, terrestrial-biased frameworks and concepts, this work calls for a reimagined governance paradigm that embraces the unique needs of dynamic marine ecosystems and adaptive strategies that can evolve to reflect the complexities of managing an ever-changing environment.

9.1. Future perspectives and outlook

This thesis reveals several critical perspectives and gaps at the intersection of biodiversity, conservation, and environmental governance. Humanity stands at a pivotal moment of discovery and responsibility, especially in how we conceptualise and manage biodiversity and marine ecosystems. As scientific exploration progresses, it brings forward new frameworks for understanding and working life, posing profound implications for conservation practices. Biodiversity remains a central but often ambiguously defined concept within conservation, highlighting a fundamental question: how can we operationalise biodiversity and other emerging concepts in ways that support practical, inclusive, and sustainable management?

While traditional approaches to conservation—such as measuring biodiversity through species counts, genetic proxies, or the establishment of Marine Protected Areas (MPAs)—have succeeded in specific contexts, this thesis underscores their limitations in dynamic, fragmented seascapes and landscapes. These limitations raise two pressing questions:

1. How can we effectively adapt and operationalise conservation strategies in a rapidly changing world?
2. Which conceptual or physical boundaries must we reconsider or redefine to align with these evolving conditions?

This thesis's critical examination of biodiversity—how it is defined, interpreted, and mobilised—opens avenues for rethinking marine conservation and broader questions of environmental stewardship and ecological identity. If biodiversity remains an unclear and fluid

term, this ambiguity challenges us to examine other foundational concepts across fields where terms are similarly assumed to be stable. For example, if biodiversity is often simplified as merely a "counting of species," we must question what exactly we are counting and whether "species" itself is a stable, universal concept. Such questioning suggests that our frameworks for understanding and protecting the diversity of life may need to expand beyond simple taxonomic counts and into more nuanced considerations of ecological functions, relationships, and unique life forms.

This thesis proposes that future research critically engage with these complexities in various contexts, beginning with marine biodiversity. For instance, emerging de-extinction projects aimed at reviving lost species raise profound questions about the very nature of biodiversity and the definitions we apply. Are reintroduced or synthetically "revived" species part of biodiversity as we understand it today, or do they require a new framework altogether? Marine biodiversity, which encompasses highly interconnected and evolving ecosystems, may particularly benefit from studies that address these questions, as it is likely to be affected by de-extinction, assisted evolution, and other innovative conservation strategies in ways we have yet to comprehend fully.

Further, the complexities of defining biodiversity suggest a need for interdisciplinary research into how we conceive and protect "life" in all its diversity and forms—whether microbial life in extreme ocean environments or life beyond Earth in space habitats. By questioning biodiversity's current boundaries and meanings, this thesis points toward a broader horizon: fields as diverse as geology, technology studies, and even cosmic studies could offer insights into how we define and manage life. Such an inquiry is crucial as humanity expands its reach into new domains, whether oceanic depths, deserts, or outer space.

Ultimately, this thesis calls for a reflective approach to any environmental or ecological concept we take for granted, emphasising that such terms are always socially, politically, and scientifically constructed. Other fields would benefit from applying this lens of critical inquiry to their foundational ideas. As we address the future of environmental policy, conservation, and technological development, we must examine underlying assumptions in these concepts and recognise that more nuanced, flexible definitions will be necessary to guide effective stewardship in an ever-evolving world.

----------*End of Chapter 9*----------

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Appendix

Appendix Table 14: Timeline of events attended that have contributed to this thesis analyses and results, showing their purpose and location

Date	*Event*	*Purpose*	*Location*
Dec 9-10, 2021	KDM Social Sciences and Humanities Working Group	Interdisciplinary engagement, scientific collaboration, and writing	Virtual
Feb 25-Mar 01, 2022	American Association of Geographers (AAG) Conference	Paper presentation and competition	Virtual
Mar 06-18, 2022	BBNJ Conference negotiations	Participant observation, interviews, meeting notes, museum content analysis	New York, USA
Apr 25-28, 2022	AWI PhD Days (Poster Presentation)	Poster presentation (won best poster), joined AWI DokTeam	Helgoland, Germany
Jun 27-Jul 01, 2022	UN Ocean Conference	Participant observations, interviews, meeting notes	Lisbon, Portugal
Jul 6-7, 2022	HIFMB Retreat	Scientific exchange and collaboration	Rastede, Germany
Jul 15, 2022	Writing Research for Non-Expert Audience Workshop	Writing skills training	Virtual
Aug 4-8, 2022	Visit the Natural History Museum	Content analysis and interviews	Bern, Switzerland
Aug 15-26, 2022	BBNJ Conference negotiations	Participant observation, interviews, meeting notes	New York, USA
Sep 7, 2022	Perspectives on Social Ecology Course	Interdisciplinary engagement	Virtual
Sep 13-16, 2022	ICYMARE Conference	Hosted sessions, collaborative writing	Bremerhaven, Germany
Oct 24-Nov 01, 2022	LFN Summer School	Interdisciplinary engagement	Virtual
Nov 3-4, 2022	KDM Social Sciences and Humanities Working Group	Interdisciplinary engagement, scientific collaboration, and writing	Bremen, Germany
Nov 9 -13, 2022	American Anthropological Association (AAA) annual meeting	Interdisciplinary engagement, scientific collaboration, and writing	Virtual

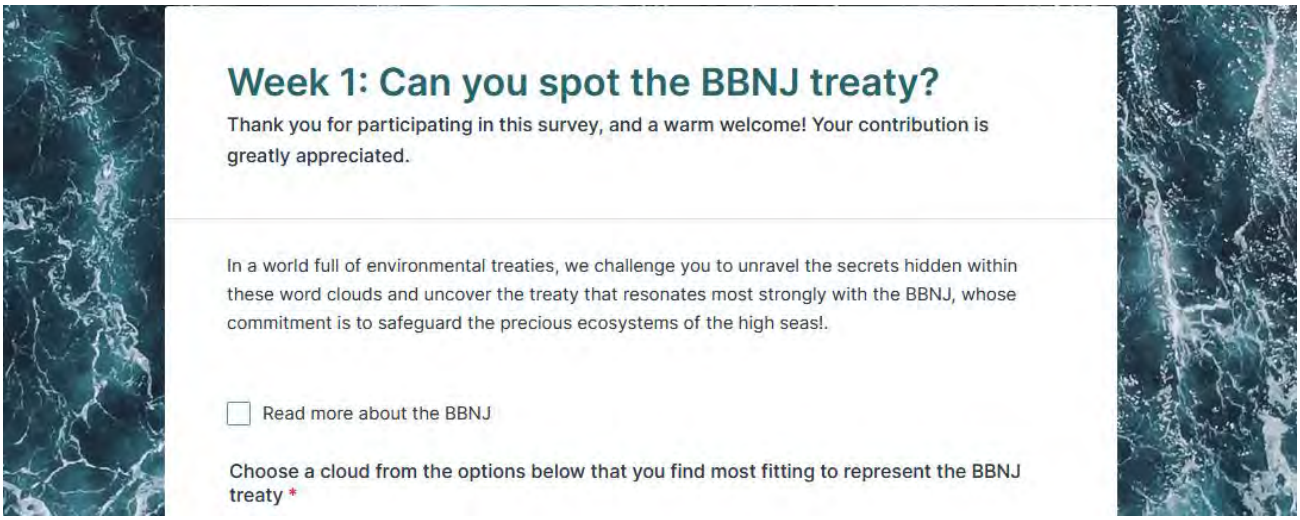
Date	*Event*	*Purpose*	*Location*
Nov 15-18, 2022	Grosswildjagd und Kolonialgeschichte Public Talk	Public talks, engagement and workshops	Bern, Switzerland
Dec 01, 2022	AWI Science Day	Scientific exchange and workshops	Bremerhaven, Germany
Winter 2022/2023	Winter Semester at the University of Oldenburg	Teaching and supervising students	Oldenburg, Germany
Feb 15, 2023	Movie night for the Shark Week hosted by the Oldenburg University Cinema	Participant observation, interviews, research notes	Oldenburg, Germany
Feb 20-Mar 3, 2023	BBNJ Conference negotiations	Participant observation, interviews, meeting notes	New York, USA
Jul 2-22, 2023	Rhodes Academy of Ocean Law and Policy	Diploma in ocean law and policy, skills in legal analysis, interviews	Rhodes, Greece
Aug 15-22, 2023	Visit the Museum of Oceanography	Content analysis and interviews	Monaco
May 21-23, 2023	MPE Retreat	Team collaboration and training	Twente, Netherlands
Dec 4-8, 2023	Western & Central Pacific Fisheries Commission (WCPFC) Annual Meeting	Participant observation, interviews, meeting notes	Rarotonga, Cook Islands
Feb 5-9, 2024	Gateway to the Arctic X Workshop	Interdisciplinary research collaboration	Iceland
Jun 26-27, 2024	BBNJ Agreement Preparatory Meeting	Organisational preparation for the treaty's entry into force	New York, USA

Appendix Table 15: Guiding questions to explore respondents' familiarity with crucial BBNJ concepts, perceptions of the BBNJ treaty and biodiversity meanings, regional influences, participation in international negotiations, and critical biodiversity issues. Each theme includes follow-up questions to encourage deeper insights into how various stakeholders view biodiversity's role within the BBNJ treaty's framework.

Theme	Guiding question	Follow-up question
Familiarity with BBNJ concepts	How would you describe your familiarity with key terms/concepts such as UNCLOS, MGR, ABMT, EIAs, and CB&TT?	Which do you feel most or least knowledgeable about, and why?
	In your opinion, what role does biodiversity play in the discussions on the BBNJ treaty?	Have you seen any change in the emphasis on biodiversity throughout the negotiations?
	What concepts or terms related to marine biodiversity are critical for you when discussing the BBNJ treaty?	
Perceptions of BBNJ treaty and biodiversity	How do you perceive the impact of the BBNJ treaty on understanding marine biodiversity or its objectives?	In your view, what should be the primary goal of the treaty regarding biodiversity?
	What does biodiversity mean for you in these BBNJ contexts?	
	What are your thoughts on the relationship between climate change and biodiversity in the context of BBNJ?	Do you think enough emphasis is placed on this relationship in current negotiations?
	Do you believe Marine Genetic Resources (MGRs) significantly impact biodiversity conservation?	How do you perceive MGRs about marine biodiversity? Do you think they are the same as or a critical aspect of marine biodiversity in these contexts? What would it be like if you were to give a yes or no answer to this question?
	How do you prioritise fish or fisheries and other marine species regarding biodiversity protection?	How do you perceive fisheries about marine biodiversity? Do you think fisheries are the same as or a critical aspect of marine biodiversity in these contexts? What would it be like if you were to give a yes or no answer to this question?
Participation and regional perspectives	How has your geographical background influenced your views on marine biodiversity?	Are specific biodiversity issues unique to your region or country that should be included in the BBNJ negotiations?

Theme	Guiding question	Follow-up question
	To what extent have you been involved in BBNJ sessions or other international negotiations?	How has your participation impacted your understanding or views on biodiversity?
	How do you see the role of different stakeholders (e.g., NGOs, national representatives, observers, researchers) influencing biodiversity outcomes within BBNJ?	What role do you think each group should ideally play?
Critical issues and specific interests	What do you consider to be the most critical issues in the current BBNJ negotiations?	How does biodiversity feature in these critical issues?
	In your opinion, which concepts or issues related to biodiversity are lacking or underemphasised in current discussions?	How would you like to see these issues addressed in the treaty, now or in the future?
	Additional Insights: Do you have any additional remarks or experiences related to biodiversity that you would like to share?	Is there a message or point you feel is not being heard enough in the negotiations?

Appendix Figure 0.1: Images from the online word cloud survey to gather respondents' perspectives on the aspects related to marine biodiversity and the BBNJ agreement



Cloud 1

Cloud 2

Cloud 3

Cloud 4

Cloud 5

Cloud 6

Cloud 7

Cloud 8

What unique elements stand out for you in the word cloud you have chosen as the BBNJ treaty? *

Any environmental/biodiversity aspects that are represented in your BBNJ treaty word cloud or those you would have loved to see? *

Are there any surprises or unexpected themes in the cloud you selected? If yes, which ones?

Thanks and come back next week!

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Appendix Table 16: Metrics and formulas for analysing countries and groups across five BBNJ Intergovernmental Conferences (IGCs). It highlights how relative contributions, likelihoods, and comparisons between groups and IGCs were calculated to identify patterns in participation

Metric	Formula	Explanation	Interpretation
Relative contribution	$\frac{\text{Participants from country}}{Total\ participants\ in\ IGC}$	Measures a country's share of participants in an IGC.	Higher values indicate more substantial representation.
Relative dominance	$\frac{\text{Total relative contributions across IGCs}}{5}$	Average contribution across five IGCs.	Higher dominance suggests consistent participation.
Likelihood of Participation (L)	$\mathrm{L(C)} = \frac{1}{5}\sum_{i=1}^{5} IGC_{(i,C)}$	Average participation of a country across five IGCs. $IGC_{i,C}$ = 1 if country participated in the ith IGC, otherwise 0	Values closer to 1 indicate a higher participation likelihood.
Average Likelihood Across Countries (L_AVG)	$\mathrm{L_{AVG}} = \frac{1}{\mathrm{N}}\sum_{\mathrm{C=1}}^{\mathrm{N}} L(C)$	Mean participation likelihood across all countries.	Used to benchmark individual and group participation.
Group Participation Likelihood (L(G))	$\mathrm{L(G)} = \frac{1}{N_G}\sum L(C)$	The average likelihood of participation for all countries in Group G.	Compared with $\mathrm{L_{AVG}}$ to determine group participation trends.
Group Comparison	$\mathrm{L(G_1 > G_2)} = \frac{1}{5}\sum_{n=1}^{5} I\,(S_{n,\mathrm{G_1}} > S_{n,\mathrm{G_2}})$	It measures how often group G1 has more participants than group G_2. I returns 1 if $S_{n,\mathrm{G_1}} > S_{n,\mathrm{G_2}}$, else 0	A higher value indicates more frequent dominance by group G_1
IGC Comparison	$\mathrm{L(IGC_1 > IGC_2)} = \frac{1}{\mathrm{N}}\sum_{j=1}^{\mathrm{N}} I\,(P_{j,\mathrm{IGC_1}} > P_{j,\mathrm{IGC_2}})$	Measures how often IGC_1 has more participants than IGC_2. I returns 1 if $P_{j,\mathrm{IGC_1}} > P_{j,\mathrm{IGC_2}}$ else 0	A higher value indicates more substantial participation in one IGC compared to another.
Assumption	N/A	A country must participate in at least one IGC to be included in comparisons.	Ensures meaningful comparisons between countries and groups

Appendix Table 17: All other organisations that participated in the Five IGCs, categorised by type (Secretariat of the Conference (SEC), president and facilitators (PEF), non-governmental organisations (NGOs), UN Specialized agencies and related organisations (UNSA), United Nations funds, programmes, bodies and offices (UNFPBO), and other intergovernmental organisations and international bodies (IOs)), showing average participation (AVG)

Type	Abbreviation	Organisation	1st	2nd	3rd	4th	5th	IGCs	Avg
NGO	AAFD	Action Aides Aux Familles Démunies				4		1	4
IOS	AU	Africa Union					4	1	4
NGO	AISC	Ambivium Institute on Security and Cooperation	1					1	1
NGO	ASIL	American Society of International Law	1	2	1	1		4	1
NGO	AALCO	Asian-African Legal Consultative Organization	1	1				2	1
NGO	AIDA	Asociación Interamericana Para La Defensa Del Ambiente		2	3		3	3	3
NGO	ANPM	Association Nationale Des Partenaires Migrants				1		1	1
NGO	Avaaz	Avaaz Foundation	3					1	3
NGO	BirdLife	Birdlife International		1	1	1	1	4	1
NGO	BJD Reinsurance	Bjd Reinsurance Consulting, Llc				1		1	1
NGO	Blue Marine	Blue Marine Foundation				1		1	1
NGO	Care-to-Help	Care-to-Help Foundation	1	2	1			3	1
NGO	COARE	Center For Oceanic Awareness, Research, And Education, Inc.		1		1	1	3	1
NGO	COLP	Center For Oceans Law and Policy		1	1			2	1
NGO	SICA	Central American Integration System			3	4	1	3	3
NGO	CIDCE	Centre International De Droit Comparé De Lenvironnement				1		1	1
NGO	CBCGDF	China Biodiversity Conservation and Green Development Foundation		1		2	4	3	2
NGO	CCE	Citizens Climate Education		2			5	2	4
IOS	CommSec	Commonwealth Secretariat					6	1	6
NGO	CTECO	Comparatively for Tanzania Elites Community Organizers				1		1	1
NGO	CI	Conservation International Foundation	1		0	6		2	2
IOS	GCC	Cooperation Council for The Arab States of The Gulf					1	1	1

Appendix

Type	Abbreviation	Organisation	1st	2nd	3rd	4th	5th	IGCs	Avg
NGO	DOSI	Deep Ocean Stewardship Initiative	2	8	2	8	4	5	5
NGO	DSCC	Deep Sea Conservation Coalition				1		1	1
IOS	DESA	Department of Economic and Social Affairs	2	3			4	3	3
NGO	DAWN	Development Alternatives with Women for A New Era	1	1	1	2	3	5	2
SEC	DOALOS	Division for Ocean Affairs and The Law of The Sea, Office of Legal Affairs	13	13	13	27	28	5	19
NGO	ELI	Environmental Law Institute	1	1		2	1	4	1
NGO	EBCD	European Bureau for Conservation and Development				1		1	1
IOS	EU	European Union	8	9	13	9	9	5	10
NGO	FEEDARHR	Federation of Environmental and Ecological Diversity for Agricultural Revampment And Human Rights				2		1	2
NGO	FOSBES	Fondation Des Oeuvres Pour La Solidarité Et Le Bien Etre Social	1	1	3	4		4	2
NGO	IRDDRI	Fondation Institut De Recherche Pour Le Developpement Durable Et Les Relations Internationales	1	2	2	3	2	5	2
NGO	Tara	Fonds Tara	1	2	1	1	1	5	1
UNSA	FAO	Food and Agriculture Organization of The United Nations	3	5	6	3	7	5	5
NGO	FNI	Fridtjof-Nansen-Institute	4	2	2		3	4	3
NGO	FANCV	Fundación Argentina a Las Naciones Camino La Verdad	1					1	1
NGO	Lonxanet	Fundación Lonxanet Para La Pesca Sostenible	1	1	1			3	1
NGO	MarViva	Fundacion Marviva		1			2	2	2
IOS	GFCM	General Fisheries Commission for The Mediterranean					1	1	1
UNSA	GEF	Global Environment Facility		2	1	3	7	4	3
NGO	GFW	Global Fishing Watch				1		1	1
NGO	Greenpeace	Greenpeace International	4	12	10	16	18	5	12
NGO	HSA	High Seas Alliance	5	13	5	18	10	5	10
NGO	IASS	Institute for Advanced Sustainability Studies		2			3	2	3
NGO	IASS	Institute for Advanced Sustainability Studies E.V.	3	3	4	9		4	5
NGO	IME	Institute of Marine Engineering, Science and Technology		0		2	2	2	1

Appendix

Type	Abbreviation	Organisation	1st	2nd	3rd	4th	5th	IGCs	Avg
NGO	AIDA	Interamerican Association for Environmental Defense	5			1		2	3
IOS	IATTC	Inter-American Tropical Tuna Commission (Iattc)			2		2	2	2
UNFPBO	IOC-UNESCO	Intergovernmental Oceanographic Commission United Nations Educational, Scientific and Cultural Organization	5		5			2	5
NGO	ICPC	International Cable Protection Committee Limited	6	2	2	2	2	5	3
IOS	ICC	International Chamber of Commerce	1	1			2	3	1
IOS	ICS	International Chamber of Shipping	2	1	1	1	1	5	1
NGO	ICFA	International Coalition of Fisheries Associations Inc.		1			1	2	1
NGO	ICO	International Coastal and Ocean Organization	3	1	4	4	1	5	3
IOS	ICCAT	International Commission for The Conservation of Atlantic Tunas			1	1	1	3	1
IOS	ICES	International Council for The Exploration of The Sea		1	1			2	1
NGO	ICEL	International Council of Environmental Law	1	1	4	5	4	5	3
NGO	IFPMA	International Federation of Pharmaceutical Manufacturers Associations	1	2	1	1	3	5	2
NGO	IFAW	International Fund for Animal Welfare	1	1			1	3	1
NGO	IHRO Pakistan	International Human Rights Observer Pakistan				1		1	1
NGO	IISD	International Institute for Sustainable Development		3		2	6	3	4
NGO	ILA	International Law Association				1		1	1
UNSA	IMO	International Maritime Organization	2	3	3	3	5	5	3
NGO	IOI	International Ocean Institute	1	1	1		1	4	1
NGO	ISO	International Organization for Standardization	2					1	2
NGO	IPSO	International Programme on The State of The Ocean	4	2	4	4	5	5	4
UNSA	ISA	International Seabed Authority	9	7	5	6	8	5	7
NGO	ISA	International Studies Association	2	2	4	15	6	5	6
UNSA	ITLOS	International Tribunal for The Law of The Sea				1	1	2	1
IOS	IUCN	International Union for Conservation of Nature	11			20	19	3	17
NGO	Islands First	Islands First, Inc.	1					1	1

Appendix

Type	Abbreviation	Organisation	1st	2nd	3rd	4th	5th	IGCs	Avg
NGO	MCBI	Marine Conservation Biology Institute		1	0	1	3	3	1
IOS	ATLAFCO	Ministerial Conference on Fisheries Cooperation Among African States Bordering the Atlantic Ocean		2			2	2	2
NGO	NCCRA	National Council of Child Rights Advocates, Nigeria (South-West Zone)				11		1	11
NGO	NOPC	National Ocean Policy Coalition				1		1	1
NGO	NRDC	Natural Resources Defence Council, Inc.	8	1	2	1	3	5	3
NGO	TNC	Nature Conservancy	1	0	2	3	2	4	2
NGO	Nippon	Nippon Foundation	3					1	3
IOS	NPFC	North Pacific Fisheries Commission	1	1	1			3	1
IOS	NEAFC	North-East Atlantic Fisheries Commission	1	1	1	1	1	5	1
IOS	NAFO	North-West Atlantic Fisheries Organization	1	1	1	1	2	5	1
NGO	OC	Ocean Care	1	1	2	2	2	5	2
NGO	OE	Ocean Elders			1			1	1
NGO	OSA	Ocean Sanctuary Alliance, Inc.	1					1	1
NGO	Oceana	Oceana Inc.				1		1	1
NGO	ONVJH	Organisation Pour Une Nouvelle Vision De La Jeunesse Dhaiti	1					1	1
IOS	OSPAR	Ospar Commission for The Protection of The Marine Environment of The North-East Atlantic	1	1	1	1	2	5	1
IOS	SPC	Pacific Community	1					1	1
IOS	PIFS	Pacific Islands Forum Secretariat	3				3	2	3
IOS	PASC	Parlement Africain De La Societe Civile			1			1	1
IOS	PAM	Parliamentary Assembly of The Mediterranean					15	1	15
NGO	Peace Boat	Peace Boat	1					1	1
NGO	Pew	Pew Environment Group	2	6	4	8	12	5	6
PEF	P&F	President and Facilitators	6	6	6	5	9	5	6
NGO	SPF	Sasakawa Peace Foundation	3		3	4		3	3
NGO	SMS-UMaine	School of Marine Sciences, University of Maine	2	1	1	2	1	5	1

Appendix

Type	Abbreviation	Organisation	1st	2nd	3rd	4th	5th	IGCs	Avg
IOS	Barcelona Convention Sec.	Secretariat of The Convention for The Protection of The Marine Environment and Coastal Region of The Mediterranean		2		2	4	3	3
IOS	CBD Sec.	Secretariat of The Convention on Biological Diversity	1	2		1	4	4	2
IOS	CMS Sec.	Secretariat of The Convention on The Conservation of Migratory Species of Wild Animals	1	1				2	1
IOS	SPREP	Secretariat of The Pacific Regional Environment Programme		1	1			2	1
UNFPBO	UNFCCC Sec.	Secretariat of The United Nations Framework Convention on Climate Change		1		1	1	3	1
NGO	SAF-Teso	Shine Africa Foundation-Teso				1		1	1
NGO	SINTEF	Sintef				1		1	1
NGO	SDCE	Society for Development and Community Empowerment	2					1	2
IOS	SEAFO	South East Atlantic Fisheries Organization	5		2	2		3	3
NGO	DSCC	Stichting Deep Sea Conservation Coalition		2	3		4	3	3
NGO	SEA	Sylvia Earle Alliance	1					1	1
NGO	TOU	Temple of Understanding			1			1	1
NGO	TWN	Third World Network		1			1	2	1
NGO	Tinker Institute	Tinker Institute on International Law and Organizations	1	1	4	1	1	5	2
NGO	UC Revelle	Uc Revelle Program on Climate Science and Policy	1					1	1
UNFPBO	UNDP	United Nations Development Programme		1			1	2	1
UNSA	UNESCO/IOC	United Nations Educational, Scientific and Cultural Organization/Intergovernmental Oceanographic Commission	1	4		11	5	3	5
UNFPBO	UNEP	United Nations Environment Programme	9	8	9	14	13	5	11
UNFPBO	UNFCC	United Nations Framework Convention on Climate Change			2			1	2
UNFPBO	UN RCO Burundi	United Nations Resident Coordinator Office in Burundi		1			1	2	1
NGO	UBO	Université De Bretagne Occidentale		3			5	2	4
NGO	Uni Vienna	University of Vienna				1		1	1

Appendix

Type	Abbreviation	Organisation	1st	2nd	3rd	4th	5th	IGCs	Avg
IOS	WCPFC	Western and Central Pacific Fisheries Commission		2			2	2	2
IOS	WPRFMC	Western Pacific Regional Fishery Management Council		1			1	2	1
NGO	WECF	Women in Europe For A Common Future	1	1	1	1	1	5	1
NGO	WFC	World Future Council Foundation		1		1	1	3	1
NGO	WIPO	World Intellectual Property Organization	2	3			2	3	2
NGO	WOC	World Ocean Council	1	2	0	3	3	4	2
NGO	WOHR	World Organization for Human Rights				2		1	2
NGO	WWF	World Wide Fund for Nature International	4	2	5	4	4	5	4
NGO	YGLF	Young Global Leadership Foundation, Inc.			1			1	1

Appendix Table 18: Organisations that attended BBNJ organisations, including their location, summary of mission statements and website

Organisation	Ctry. Hq	Mission/objective	Url
AAFD	COD	Support disadvantaged families by providing essential services and resources to improve their living conditions.	N/A
AU	ETH	To achieve greater unity and solidarity between the African countries and the peoples of Africa and to promote peace, security, and stability on the continent.	https://au.int
AISC	USA	To advance global security and cooperation through research, dialogue, and policy recommendations.	N/A
ASIL	USA	To foster the study and practice of international law and to promote international relations based on law and justice.	https://www.asil.org
AALCO	IND	To promote cooperation in legal matters of common concern and to harmonise international law practices between Asian and African countries.	http://www.aalco.int
AIDA	PER	To protect the environment and communities affected by environmental harm through legal advocacy and litigation.	https://aida-americas.org/
ANPM	NER	To advocate for and support the rights and integration of migrant communities through partnerships and collaboration.	N/A
AVAAZ	USA	To empower people from all walks of life to act on pressing global, regional, and national issues, from corruption and poverty to conflict and climate change.	https://avaaz.org
BIRDLIFE	GBR	To conserve birds, their habitats, and global biodiversity, working with people towards sustainability in using natural resources.	https://www.birdlife.org

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Organisation	Ctry. Hq	Mission/objective	Url
BJD REINSURANCE	USA	To provide expert reinsurance consulting services, supporting the stability and resilience of the global insurance market.	https://www.bjd-react.com/
BLUE MARINE	GBR	To restore healthy oceans by tackling overfishing and creating marine reserves.	https://www.bluemarinefoundation.com
CARE-TO-HELP	N/A	To provide humanitarian aid and support to underprivileged communities worldwide.	https://www.caretohelpusa.org/
COARE	USA	to study oceans and increase public awareness of the earth's marine environment through educational programs and outreach	https://www.coare.org/
COLP	USA	To foster scholarship and dialogue on ocean law and policy issues through research, publications, and conferences.	https://www.virginia.edu/colp
SICA (SPANISH)	SLV	To promote regional integration and cooperation in Central America.	https://www.sica.int
CIDCE	FRA	To bring together environmental lawyers worldwide to help advance environmental law at international and regional meetings and conferences.	http://www.cidce.org
CBCGDF	CHN	To conserve biodiversity and promote green development in China.	http://www.cbcgdf.org
CCE	USA	To educate and empower citizens to advocate for effective and equitable climate solutions.	https://citizensclimateeducation.org
COMMSEC	GBR	To support member countries in achieving development, democracy, and peace.	https://thecommonwealth.org
CTECO	TZA	To unite vibrant, active, and collaborative elites to support communities, especially the poor and vulnerable, in preparing for, mitigating,	N/A

Organisation	Ctry. Hq	Mission/objective	Url
		responding to, and recovering from disasters and adapting to hazards and climate change.	
CI	USA	To protect nature for the benefit of humanity.	https://www.conservation.org
GCC	SAU	to achieve unity among member States through coordination and integration in all fields, strengthen relations and cooperation among their peoples, harmonise regulations across various sectors, including economic, social, and legislative affairs, and promote scientific and technological progress through joint ventures and private sector collaboration.	https://www.gcc-sg.org
DOSI	N/A	To provide scientific and technical support to enable the conservation and sustainable use of the deep ocean and its resources to benefit present and future generations.	http://www.deepscience.org
DSCC	NLD	To remove and mitigate the greatest threats to life in the deep sea and safeguard the long-term health, integrity and resilience of deep-sea ecosystems.	http://www.savethehighseas.org
DESA	USA	To promote sustainable development for all, focusing on reducing inequalities and addressing the needs of the world's most vulnerable populations.	https://www.un.org/development/desa
DAWN	PHL	To advance gender equality and sustainable development through research, advocacy, and action from a feminist perspective.	https://www.dawnnet.org
DOALOS	USA	To promote and facilitate international maritime law development, implementation, and management.	https://www.un.org/depts/los
ELI	USA	To advance environmental protection by improving law, policy, and management through research, education, and dialogue.	https://www.eli.org

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Organisation	Ctry. Hq	Mission/objective	Url
EBCD	BEL	To promote sustainable development and conservation practices within Europe and globally.	https://ebcd.org/
EU	BEL	To promote peace, its values, and the well-being of its citizens by ensuring sustainable development based on balanced economic growth and price stability, a highly competitive market economy, and aiming at full employment and social progress.	https://europa.eu
FEEDARHR	CMR	To advocate for environmental sustainability, ecological diversity, and human rights in agriculture.	N/A
FOSBES	COD	To promote social welfare and solidarity.	N/A
IRDDRI	FRA	To research sustainable development and international relations.	http://www.ferdi.fr
TARA	FRA	To support scientific research and education to understand and protect the ocean environment.	https://www.taraexpeditions.org
FAO	ITA	To achieve food security for all and ensure that people have regular access to enough high-quality food to lead active, healthy lives.	https://www.fao.org
FNI	NOR	To research international environmental, energy, and resource management politics.	https://www.fni.no
FANCV	ARG	To support humanitarian and educational initiatives in Argentina that align with global standards.	N/A
LONXANET	ESP	To promote sustainable fishing practices and the conservation of marine ecosystems.	N/A
MARVIVA	CRI	To promote marine conservation and sustainable development through environmental advocacy, education, and field projects.	https://www.marviva.net

Appendix

Organisation	Ctry. Hq	Mission/objective	Url
GFCM	ITA	To ensure the sustainable use and conservation of marine resources in the Mediterranean and Black Sea.	https://www.gfcm.org
GEF	USA	To address global environmental issues by funding projects promoting sustainable development.	https://www.thegef.org
GFW	USA	To advance ocean sustainability through greater transparency of global fishing activity.	https://globalfishingwatch.org
GREENPEACE	NLD	To ensure the ability of the Earth to nurture life in all its diversity by promoting peace, global disarmament, and environmental conservation.	https://www.greenpeace.org
HSA	USA	To safeguard the high seas, the ocean area beyond national jurisdiction, for the benefit of all humanity.	https://www.highseasalliance.org
IASS	DEU	To promote sustainable development through interdisciplinary and transdisciplinary research and dialogue.	https://www.iass-potsdam.de
IASS	DEU	To promote sustainable development through interdisciplinary and transdisciplinary research and dialogue.	https://www.iass-potsdam.de
IME	GBR	To promote the scientific, technical, and professional excellence of those engaged in marine engineering, science, and technology.	https://www.imarest.org
AIDA	USA	To strengthen people's ability to protect their human rights and the environment using legal and scientific resources.	https://www.aida-americas.org
IATTC	USA	RFMO is responsible for the conservation and management of tuna and associated species and their ecosystems throughout the Eastern Pacific Ocean	https://www.iattc.org
IOC-UNESCO	FRA	To promote international cooperation and coordinate programs in research, services, and capacity-building in order to learn more about	https://ioc.unesco.org

Organisation	Ctry. Hq	Mission/objective	Url
		the nature and resources of the ocean and coastal areas and to apply that knowledge for the improvement of management, sustainable development, the protection of the marine environment, and the decision-making processes of its Member States.	
ICPC	GBR	To promote the safeguarding of submarine telecommunication and power cables against man-made and natural hazards.	https://www.iscpc.org
ICC	FRA	To promote international trade and investment and help businesses meet the challenges and opportunities of globalisation.	https://www.iccwbo.org
ICS	GBR	To represent the global shipping industry and promote safe, environmentally friendly, and sustainable shipping.	https://www.ics-shipping.org
ICFA	USA	To represent and advocate for the interests of fisheries associations globally.	https://fishcoalition.org/
ICO	USA	To promote the sustainable use and conservation of coastal and marine resources.	https://www.globaloceans.org
ICCAT	ESP	To manage and conserve tuna and tuna-like species in the Atlantic Ocean and adjacent seas.	https://www.iccat.int
ICES	DNK	To advance the scientific understanding of marine ecosystems and provide knowledge for sustainable marine management.	https://www.ices.dk
ICEL	ESP	To promote environmental law to achieve environmental justice and sustainable development.	https://www.iucn.org
IFPMA	CHE	To advocate for policies encouraging the discovery of new medicines and vaccines for patients worldwide.	https://www.ifpma.org

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Organisation	Ctry. Hq	Mission/objective	Url
IFAW	USA	To rescue and protect animals worldwide through research, advocacy, and hands-on efforts.	https://www.ifaw.org
IHRO	PAK	To monitor and advocate for human rights protection and compliance in Pakistan and globally.	http://www.ihro.org.pk/
IISD	CAN	To promote human development and environmental sustainability through innovative research, engagement, and partnerships.	https://www.iisd.org
ILA	GBR	To promote the study, clarification, and development of international law.	https://www.ila-hq.org
IMO	GBR	To promote safe, secure, environmentally sound, efficient and sustainable shipping through cooperation.	https://www.imo.org
IOI	MLT	To enhance the peaceful and sustainable use of oceans through education, training, and research.	https://www.ioinst.org
ISO	CHE	To develop and publish international standards.	https://www.iso.org
IPSO	GBR	To investigate the threats to the global ocean and develop solutions to ensure the sustainability of marine ecosystems.	https://www.stateoftheocean.org
ISA	JAM	To organise and control all mineral-related activities in the international seabed area beyond the limits of national jurisdiction to benefit mankind as a whole.	https://www.isa.org.jm
ISA	USA	To promote rigorous discussion, research, and the dissemination of knowledge in international affairs and to enhance the capacity of scholars, practitioners, and others to develop a deeper understanding of international relations.	https://www.isanet.org

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Organisation	Ctry. Hq	Mission/objective	Url
ITLOS	DEU	To adjudicate disputes arising from the interpretation and application of the United Nations Convention on the Law of the Sea.	https://www.itlos.org
IUCN	CHE	To influence, encourage and assist societies worldwide to conserve nature's integrity and diversity and ensure that any use of natural resources is equitable and ecologically sustainable.	https://www.iucn.org
ISLANDS FIRST	USA	To empower small island developing States in international environmental and climate change negotiations.	http://www.islandsfirst.org/
MCBI	USA	To safeguard marine biodiversity by providing scientific research and advocacy to foster conservation and sustainable ocean policy.	https://www.mcbi.org
ATLAFCO	MAR	To promote cooperation and sustainable management of fisheries among African States bordering the Atlantic Ocean.	https://www.comhafat.org
NACCRANSW	NGA	To promote and protect children's rights in Nigeria, ensuring their well-being and access to basic needs.	N/A
NOPC	USA	To advocate for balanced ocean policies that support sustainable use and stewardship of marine resources.	https://www.oceanpolicy.com
NRDC	USA	To safeguard the earth—its people, plants and animals, and the natural systems on which all life depends.	https://www.nrdc.org
TNC	USA	To conserve the lands and waters on which all life depends through innovative and collaborative approaches.	https://www.nature.org
NIPPON	JPN	To drive social innovation by providing grants and support to organisations working in various fields.	https://www.nippon-foundation.or.jp
NPFC	JPN	To ensure the long-term conservation and sustainable use of the fisheries resources in the North Pacific Ocean.	https://www.npfc.int

Appendix

Organisation	Ctry. Hq	Mission/objective	Url
NEAFC	GBR	To conserve and manage the fisheries resources of the North-East Atlantic Ocean.	https://www.neafc.org
NAFO	CAN	To ensure the effective management and conservation of fisheries resources in the Northwest Atlantic.	https://www.nafo.int
OC	CHE	To protect the world's oceans and marine life through research, policy change, and raising public awareness.	https://www.oceancare.org
OE	USA	To support ocean conservation initiatives through the leadership and advocacy of distinguished global leaders.	https://www.oceanelders.org
OSA	USA	To promote the creation of marine protected areas to safeguard ocean ecosystems.	N/A
OCEANA	USA	To protect and restore the world's oceans through targeted policy campaigns and advocacy.	https://www.oceana.org
ONVJH	HTI	To empower Haitian youth through education, leadership development, and community engagement.	N/A
OSPAR	GBR	To protect and conserve the marine environment of the North-East Atlantic through cooperation and regulatory measures.	https://www.ospar.org
SPC	NCL-(FRA)	To support sustainable development in the Pacific region through scientific and technical expertise.	https://www.spc.int
PIFS	FJI	To work in support of the people of the Pacific through the leaders to ensure the effective implementation of the leaders' decisions for the benefit of the people of the Pacific.	https://www.forumsec.org
PASC	SEN	To represent and advocate for the interests and rights of African civil society.	N/A

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Organisation	Ctry. Hq	Mission/objective	Url
PAM	MLT	To be a centre of excellence for regional cooperation among Mediterranean countries to promote political dialogue and cooperation on security and socio-economic issues.	https://www.pam.int
PEACE BOAT	JPN	To promote peace, human rights, and sustainability through global voyages and educational programs.	https://www.peaceboat.org
PEW	USA	To conserve biodiversity and restore the ecological integrity of the natural systems on which life depends.	https://www.pewtrusts.org
P&F	N/A	To guide and facilitate discussions and negotiations to achieve effective international Agreements and policies.	N/A
SPF	JPN	To promote international understanding, exchange, and cooperation and to contribute to the welfare and peace of mankind.	https://www.spf.org
SMS-UMAINE	USA	To advance the understanding of marine systems and promote sustainable use of marine resources through research, education, and outreach.	https://www.umaine.edu
BARCELONA CONVENTION SEC.	GRC	To reduce pollution in the Mediterranean Sea and protect its marine environment and coastal areas.	https://www.unep.org/unepmap
CBD SEC.	CAN	To support the implementation of the Convention on Biological Diversity and its Protocols.	https://www.cbd.int
CMS SEC.	DEU	To conserve migratory species and their habitats through international cooperation and policy Agreements.	https://www.cms.int
SPREP	WSM	To promote cooperation in the Pacific region for the protection and sustainable management of the environment.	https://www.sprep.org

Appendix

Organisation	Ctry. Hq	Mission/objective	Url
UNFCCC SEC.	DEU	Support the global response to climate change by facilitating negotiations and promoting climate action.	https://www.unfccc.int
SAF-TESO	UGA	To serve the less privileged persons in Uganda through the promotion of healthcare services, education, environment conservation, and economic opportunities	https://safteso.netlify.app/
SINTEF	NOR	To conduct research and provide innovative solutions for sustainable development and technology.	https://www.sintef.no
SDCE	NGA	To promote community development and empowerment through education and capacity building.	https://sdcec.org/
SEAFO	NAM	To ensure the long-term conservation and sustainable use of fishery resources in the Southeast Atlantic Ocean.	https://www.seafo.org
DSCC	NLD	To protect vulnerable deep-sea ecosystems and species.	https://www.savethehighseas.org
SEA	USA	To support marine conservation through scientific research, exploration, and public outreach.	https://www.mission-blue.org
TOU	USA	To promote interfaith dialogue and understanding to foster peace and social justice.	https://www.templeofunderstanding.org
TWN	MYS	To promote the interests and rights of developing countries in global policy-making processes.	https://www.twn.my
TINKER INSTITUTE	USA	To promote the understanding and application of international law through research, education, and dialogue.	https://tiilo.org/
UC REVELLE	USA	To advance climate science and policy solutions through research, education, and collaboration	N/A

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Organisation	Ctry. Hq	Mission/objective	Url
UNDP	USA	To eradicate poverty and reduce inequalities through sustainable development and capacity-building.	https://www.undp.org
UNESCO/IOC	FRA	To promote international cooperation, coordinate research, services, and capacity-building programs, and learn more about the nature and resources of the ocean and coastal areas.	https://ioc.unesco.org
UNEP	KEN	To provide leadership and encourage partnership in caring for the environment by inspiring, informing, and enabling nations and peoples to improve their quality of life without compromising that of future generations.	https://www.unep.org
UNFCC	DEU	United Nations entity tasked with supporting the global response to the threat of climate change	https://www.unfccc.int
UN RCO BURUNDI	BDI	To coordinate UN activities in Burundi and support national development priorities and peacebuilding efforts.	N/A
UBO	FRA	To provide high-quality education and conduct cutting-edge research to contribute to the region's cultural, scientific, and economic development.	https://www.univ-brest.fr
UNI VIENNA	AUT	To provide high-quality education and research opportunities across a range of disciplines.	https://www.univie.ac.at
WCPFC	FSM	To ensure the long-term conservation and sustainable use of highly migratory fish stocks in the Western and Central Pacific Ocean.	https://www.wcpfc.int
WPRFMC	USA	To manage and conserve fisheries resources in the U.S. Pacific Islands through sustainable practices and policies.	https://www.wpcouncil.org

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Organisation	Ctry. Hq	Mission/objective	Url
WECF	NLD	To promote environmental and health protection and gender equality in Europe and beyond.	https://www.wecf.org
WFC	DEU	To promote sustainable development and future-just policies through advocacy and research.	https://www.worldfuturecouncil.org
WIPO	CHE	To lead the development of a balanced and effective international intellectual property system.	https://www.wipo.int
WOC	USA	To promote sustainable ocean industry practices by bringing together leadership companies to collaborate on sustainability and stewardship initiatives.	https://www.oceancouncil.org
WOHR	USA	To promote and protect human rights globally through advocacy, education, and legal action.	N/A
WWF	CHE	To conserve nature and reduce the most pressing threats to the diversity of life on Earth.	https://www.worldwildlife.org
YGLF	USA	Empower young leaders to create positive social change through education, mentorship, and community projects.	https://www.younggloballeaders.org

Refer to Appendix Table 17 for organisation acronyms and Appendix Table 19 for country abbreviations

Appendix Table 19: participation or non-participation by participant categories in the Biodiversity Beyond National Jurisdiction Intergovernmental Conference. Countries that did not participate are also marked in greyscale.

Abbreviation	Country	Region	Income	1st	2nd	3rd	4th	5th	IGCs	Groups	Treaties	Ships
AFG	Afghanistan	SAR	LI	0	0	0	0	0	0	a, n, o, p	B	0
ALA	Åland Islands	ECA	HI	0	0	0	0	0	0			2
ALB	Albania	ECA	UMI	0	0	2	0	0	1		A, B, D	53
DZA	Algeria	MENA	LMI	3	4	2	3	4	5	a, b, l	B, D	141
ASM	American Samoa	EAP	HI	0	0	0	0	0	0	c		0
AND	Andorra	ECA	HI	0	0	0	0	0	0	n	B	0
AGO	Angola	SSA	LMI	0	0	3	7	3	3	a, b, n, o	B, D	66
AIA	Anguilla	LAC	HI	0	0	0	0	0	0	c	F	0
ATA	Antarctica	N/A	N/A	0	0	0	0	0	0			1
ATG	Antigua and Barbuda	LAC	HI	0	0	0	0	8	1	a, c, d, g	B, C, D, E	640
ARG	Argentina	LAC	UMI	5	4	4	5	6	5	a, f	B, C, D, E	533
ARM	Armenia	ECA	UMI	0	0	0	0	0	0	n, p	B, D	0
ABW	Aruba	LAC	HI	0	0	0	0	0	0	c		0
AUS	Australia	EAP	HI	4	8	8	6	10	5	i, J	B, C, D, F	583
AUT	Austria	ECA	HI	2	2	2	2	7	5	h, i, n	B, C, D, E, F	0
AZE	Azerbaijan	ECA	UMI	2	2	0	0	0	2	a, n, p	B, D	235
AZR	Azores	ECA	HI	0	0	0	0	0	0			67
BHS	Bahamas	LAC	HI	6	7	9	6	12	5	a, c, d, g	B, D, E, F	1236

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Abbreviation	Country	Region	Income	1st	2nd	3rd	4th	5th	IGCs	Groups	Treaties	Ships
BHR	Bahrain	MENA	HI	0	0	0	0	0	0	a	B, D	107
BGD	Bangladesh	SAR	LMI	5	4	5	5	6	5	a, l, n, o	B, D, F	147
BRB	Barbados	LAC	HI	3	5	5	2	5	5	a, c, d, g	B, D, F	386
BLR	Belarus	ECA	UMI	0	0	0	3	4	2	n	B, D	0
BEL	Belgium	ECA	HI	7	8	11	6	11	5	h, i	B, C, D, E, F	227
BLZ	Belize	LAC	UMI	5	3	5	7	8	5	a, c, d, g	B, C, D, F	736
BEN	Benin	SSA	LMI	0	0	0	0	0	0	a, b, n, o	B, C, D	6
BMU	Bermuda	NAR	HI	0	0	0	0	0	0	c, g	F	129
BTN	Bhutan	SAR	LMI	0	0	6	0	0	1	a, n, o, p	B	0
BOL	Bolivia, a Plurinational State of	LAC	LMI	0	0	0	4	4	2	a, l, n, p	B, D	33
BES	Bonaire, Sint Eustatius and Saba			0	0	0	0	0	0			
BIH	Bosnia and Herzegovina	ECA	UMI	0	0	0	0	2	1		B, D, E	0
BWA	Botswana	SSA	UMI	4	4	4	6	8	5	a, b, n, p	B, D	0
BVT	Bouvet Island	N/A	N/A	0	0	0	0	0	0			0
BRA	Brazil	LAC	UMI	7	9	13	12	22	5	a, f	B, C, D, E, F	677
IOT	British Indian Ocean Territory	LAC	HI	0	0	0	0	0	0	c, g	F	0
BRN	Brunei Darussalam	EAP	HI	2	3	0	3	6	4	a, K	B, D	62
BGR	Bulgaria	ECA	UMI	6	5	5	6	4	5	h	B, C, D, E, F	40
BFA	Burkina Faso	SSA	LI	4	4	0	0	9	3	a, b, n, o, p	B	1
BDI	Burundi	SSA	LI	0	0	0	0	0	0	a, b, n, o, p	B	0

Appendix

Abbreviation	Country	Region	Income	1st	2nd	3rd	4th	5th	IGCs	Groups	Treaties	Ships
CPV	Cabo Verde	SSA	LMI	0	0	0	2	3	2	a, b, c, d, o	B, D	29
KHM	Cambodia	EAP	LMI	0	0	0	1	2	2	a, K, n, o	B, C, D	58
CMR	Cameroon	SSA	LMI	0	3	3	0	0	2	a, b	B, C, D	273
CAN	Canada	NAR	HI	9	9	7	8	13	5	i, J	B, D, F	830
CYM	Cayman Islands	LAC	HI	0	0	0	0	0	0	c, g		947
CAF	Central African Republic	SSA	LI	0	0	0	0	0	0	a, b, n, o, p	B	0
TCD	Chad	SSA	LI	0	0	0	0	3	1	a, b, n, o, p	B	2
CHL	Chile	LAC	HI	7	6	8	5	14	5	a, f, i	B, C, D, F	477
CHN	China	EAP	UMI	17	19	15	8	14	5	a, l	B, C, D, E	7100
CXR	Christmas Island	EAP	HI	0	0	0	0	0	0			0
CCK	Cocos (Keeling) Islands	EAP	HI	0	0	0	0	0	0			1
COL	Colombia	LAC	UMI	5	3	6	14	16	5	a, f, i	B, C, D, E	199
COM	Comoros	SSA	LMI	0	0	0	0	0	0	a, b, c, d, n, o	B, D	270
COG	Congo	SSA	LMI	2	2	3	0	0	3	a, b	B, C, D	2
COD	Congo, Democratic Republic of the	SSA	LI	0	0	2	5	4	3	a, b, n, o	D	11
COK	Cook Islands	EAP	UMI	0	0	0	0	0	0	c, d, e	B, D, F	331
CRI	Costa Rica	LAC	UMI	8	8	10	8	10	5	a, f, i	B, C, D, F	1
CIV	Côte dIvoire	SSA	LMI	1	4	0	6	9	4	a, b	B, C, D	6
HRV	Croatia	ECA	HI	3	3	7	5	4	5	h	B, C, D, E, F	406
CUB	Cuba	LAC	UMI	4	5	4	3	10	5	a, c, d, l	B, D	37

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Abbreviation	Country	Region	Income	1st	2nd	3rd	4th	5th	IGCs	Groups	Treaties	Ships
CUW	Curaçao	LAC	HI	0	0	0	0	0	0	c		52
CYP	Cyprus	ECA	HI	4	4	4	4	4	5	h	B, C, D, F	991
CZE	Czechia	ECA	HI	4	0	5	3	4	4	h, i, n	B, C, D, F	0
DNK	Denmark	ECA	HI	4	7	5	9	15	5	h, i	B, C, D, E, F	851
DJI	Djibouti	MENA	LMI	3	0	4	6	7	4	a, b, n, o	B, D, E	33
DMA	Dominica	LAC	UMI	0	0	0	0	2	1	a, c, d, g	B, C, D	63
DOM	Dominican Republic	LAC	UMI	3	3	0	3	3	4	a, c, d, f	B, C, D	33
ECU	Ecuador	LAC	UMI	7	5	9	4	6	5	a, l	B, C, D, F	308
EGY	Egypt	MENA	LMI	4	4	2	4	4	5	a, b, l	B, D	194
SLV	El Salvador	LAC	UMI	5	7	4	7	8	5	a, f, l	B, D	10
GNQ	Equatorial Guinea	SSA	UMI	1	0	0	0	2	2	a, b, n, o	B, D	20
ERI	Eritrea	SSA	LI	0	4	4	5	2	4	a, b, n, o	B, C, D	5
EST	Estonia	ECA	HI	5	5	6	6	5	5	h, i	B, C, D, F	96
SWZ	Eswatini	SSA	LMI	2	3	2	0	0	3	a, b, n, p	B	0
ETH	Ethiopia	SSA	LI	0	2	2	0	0	2	a, b, n, o, p	B, D	10
FLK	Falkland Islands (Malvinas)	LAC	HI	0	0	0	0	0	0		F	22
FRO	Faroe Islands	ECA	HI	0	0	0	0	0	0		F	170
FJI	Fiji	EAP	UMI	8	8	11	5	13	5	a, c, d, e	B, D, F	118
FIN	Finland	ECA	HI	5	5	5	4	5	5	h, i	B, C, D, E, F	266
FRA	France	ECA	HI	10	11	9	13	28	5	h, i	B, C, D, E, F	807

Appendix

Abbreviation	Country	Region	Income	1st	2nd	3rd	4th	5th	IGCs	Groups	Treaties	Ships
GUF	French Guiana	LAC	HI	0	0	0	0	0	0			0
PYF	French Polynesia	EAP	HI	0	5	0	6	4	3	c		22
ATF	French Southern Territories	N/A	N/A	0	0	0	0	0	0			0
GAB	Gabon	SSA	UMI	4	2	4	7	5	5	a, b	B, C, D, E	157
GMB	Gambia	SSA	LI	3	5	0	2	3	4	a, b, n, o	B, C, D	16
GEO	Georgia	ECA	UMI	0	0	3	0	0	1	m	B, D	66
DEU	Germany	ECA	HI	13	20	11	14	21	5	h, i	B, C, D, E, F	579
GHA	Ghana	SSA	LMI	3	6	6	8	14	5	a, b	B, C, D	92
GIB	Gibraltar	ECA	HI	0	0	0	0	0	0			114
GRC	Greece	ECA	HI	3	3	3	4	10	5	h, i	B, D, E, F	1360
GRL	Greenland	ECA	HI	0	0	0	0	0	0		F	57
GRD	Grenada	LAC	UMI	2	2	2	3	1	5	a, c, d, g	B, C, D	1
GLP	Guadeloupe	LAC	HI	0	0	0	0	0	0	c		18
GUM	Guam	EAP	HI	0	0	0	0	0	0	c		0
GTM	Guatemala	LAC	UMI	4	3	5	4	4	5	a, f	B, D	10
GGY	Guernsey	ECA	HI	0	0	0	0	0	0			0
GIN	Guinea	SSA	LMI	0	4	3	0	2	3	a, b, n, o	B, C, D, F	10
GNB	Guinea-Bissau	SSA	LI	0	0	0	0	0	0	a, b, c, d, n, o	B, C, D	85
GUY	Guyana	LAC	HI	4	4	3	2	4	5	a, c, d, g	B, D	30
HTI	Haiti	LAC	LMI	0	0	0	3	5	2	a, c, d, g, o	B, D	1

Abbreviation	Country	Region	Income	1st	2nd	3rd	4th	5th	IGCs	Groups	Treaties	Ships
HMD	Heard Island and McDonald Islands	N/A	N/A	0	0	0	0	0	0			0
VAT	Holy see	ECA	N/A	5	5	6	8	4	5			0
HND	Honduras	LAC	LMI	5	6	6	0	4	4	a, f	B, D	68
HKG	Hong Kong	EAP	HI	0	0	0	0	0	0			2388
HUN	Hungary	ECA	HI	3	4	5	3	3	5	h, i, n	B, C, D, F	0
ISL	Iceland	ECA	HI	5	6	5	4	8	5	i, J	B, C, D, F	172
IND	India	SAR	LMI	5	6	0	6	9	4	a, l	B, C, D, F	1278
IDN	Indonesia	EAP	UMI	8	6	9	32	39	5	a, K, l	B, D, F	7829
IRN	Iran, Islamic Republic of	MENA	LMI	5	4	2	5	8	5	a, l	B, D, F	925
IRQ	Iraq	MENA	UMI	4	2	2	0	0	3	a, l	B, D	33
IRL	Ireland	ECA	HI	6	5	7	9	4	5	h, i	B, C, D, F	254
IMN	Isle of Man	ECA	HI	0	0	0	0	0	0			0
ISR	Israel	MENA	HI	7	3	0	0	4	3	i, J	B, C, D, E	29
ITA	Italy	ECA	HI	3	3	4	4	10	5	h, i	B, C, D, E, F	1199
JAM	Jamaica	LAC	UMI	3	3	3	9	3	5	a, c, d, g	B, D	127
JPN	Japan	EAP	HI	23	22	20	14	30	5	i, J	B, D, E, F	4810
JEY	Jersey	ECA	HI	0	0	0	0	0	0			0
JOR	Jordan	MENA	LMI	0	0	0	0	0	0	a, l	B, D	28
KAZ	Kazakhstan	ECA	UMI	0	0	0	0	0	0	J, n, p	B, D	78
KEN	Kenya	SSA	LMI	6	7	0	10	21	4	a, b	B, C, D, F	21

Abbreviation	Country	Region	Income	1st	2nd	3rd	4th	5th	IGCs	Groups	Treaties	Ships
KER	Kerguelen Islands	N/A	N/A	0	0	0	0	0	0			11
KIR	Kiribati	EAP	LMI	4	0	6	5	13	4	a, c, d, e, o	B, C, D, E, F	68
PRK	Korea, Democratic Peoples Republic of	EAP	LI	0	0	0	0	0	0	a	A, B, D, F	281
KOR	Korea, Republic of	EAP	HI	14	16	16	22	25	5	a, i, m	B, C, D, E, F	1640
XKX	Kosovo	ECA	UMI	0	0	0	0	0	0	n	E	0
KWT	Kuwait	MENA	HI	0	3	2	2	0	3	a, l	B, D	130
KGZ	Kyrgyzstan	ECA	LMI	0	0	0	0	0	0			1
LAO	Lao Peoples Democratic Republic	EAP	LMI	0	4	3	0	6	3	a, K, n, o, p	B, C	0
LVA	Latvia	ECA	HI	2	3	2	2	3	5	h, i	B, D, F	117
LBN	Lebanon	MENA	LMI	3	0	0	2	0	2	a	B, D, E	32
LSO	Lesotho	SSA	LMI	0	0	0	0	0	0	a, b, n, o, p	B	0
LBR	Liberia	SSA	LI	0	0	1	0	9	2	a, b, n, o	B, C, D, E, F	5343
LBY	Libya	MENA	UMI	0	0	2	0	0	1	a, b	B, D	61
LIE	Liechtenstein	ECA	HI	0	0	0	0	5	1	m, n	B	0
LTU	Lithuania	ECA	HI	3	3	2	3	2	5	h, i	B, C, D, F	68
LUX	Luxembourg	ECA	HI	0	0	0	0	8	1	h, i, n	B, C, D, F	185
MAC	Macao	EAP	HI	0	0	0	0	0	0			0
MDG	Madagascar	SSA	LI	4	4	0	4	13	4	a, b, n, o	B, D	34
MDE	Madeira	ECA	HI	0	0	0	0	0	0			940
MWI	Malawi	SSA	LI	0	0	0	0	4	1	a, b, n, o, p	B, D	0

Appendix

Abbreviation	Country	Region	Income	1st	2nd	3rd	4th	5th	IGCs	Groups	Treaties	Ships
MYS	Malaysia	EAP	UMI	4	3	4	5	5	5	a, K, l	B, D	1459
MDV	Maldives	SAR	UMI	6	8	6	7	8	5	a, c, d, o	B, D, F	50
MLI	Mali	SSA	LI	4	4	1	0	0	3	a, b, l, n, o, p	B, C	0
MLT	Malta	MENA	HI	3	3	3	3	14	5	h	B, D, E, F	2296
MHL	Marshall Islands	EAP	UMI	4	6	6	5	0	4	a, c, d, e	B, C, D, F	4510
MTQ	Martinique	LAC	HI	0	0	0	0	0	0	c		6
MRT	Mauritania	SSA	LMI	0	0	1	0	4	2	a, b, n, o	B, C, D	33
MUS	Mauritius	SSA	UMI	5	6	6	4	4	5	a, b, c, d	B, D, F	40
MYT	Mayotte	SSA	LMI	0	0	0	0	0	0			0
MEX	Mexico	LAC	UMI	7	0	8	9	9	4	f, i, m	B, C, D	603
FSM	Micronesia, Federated States of	EAP	LMI	5	6	5	7	10	5	a, c, d, e	B, F	53
MDA	Moldova, Republic of	ECA	UMI	0	0	0	0	2	1	n, p	B, D	26
MCO	Monaco	ECA	HI	3	4	3	3	3	5	m	B, C, D, F	5
MNG	Mongolia	EAP	LMI	0	2	0	4	6	3	a, n, p	B, C, D	355
MNE	Montenegro	ECA	UMI	0	0	3	0	0	1		A, B, D, E	12
MSR	Montserrat	LAC	HI	0	0	0	0	0	0			0
MAR	Morocco	MENA	LMI	2	2	3	11	9	5	a, b	B, C, D, F	173
MOZ	Mozambique	SSA	LI	1	4	5	0	10	4	a, b, n, o	B, D, F	43
MMR	Myanmar	EAP	LMI	1	2	2	0	0	3	a, K, n, o	B, D	53
NAM	Namibia	SSA	UMI	0	0	0	0	4	1	a, b	B, D, F	120

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Abbreviation	Country	Region	Income	1st	2nd	3rd	4th	5th	IGCs	Groups	Treaties	Ships
NRU	Nauru	EAP	HI	4	0	6	5	7	4	a, c, d, e	B, C, D, F	34
NPL	Nepal	SAR	LMI	3	5	5	6	10	5	a, n, o, p	B, D	0
NLD	Netherlands, Kingdom of the	ECA	HI	7	9	8	9	11	5	h, i	B, C, D, E, F	1377
NCL	New Caledonia	EAP	HI	0	0	0	0	0	0	c		32
NZL	New Zealand	EAP	HI	10	7	11	14	15	5	i, J	B, C, D, E, F	148
NIC	Nicaragua	LAC	LMI	4	2	4	4	4	5	a, l	B, C, D	2
NER	Niger	SSA	LI	0	0	0	1	1	2	a, b, n, o, p	B	0
NGA	Nigeria	SSA	LMI	4	15	16	0	24	4	a, b	B, D, F	814
NIU	Niue	EAP	UMI	0	0	0	0	0	0	c, d, e	B, F	57
NFK	Norfolk Island	EAP	HI	0	0	0	0	0	0			0
MKD	North Macedonia	ECA	UMI	0	0	2	0	0	1	n, p	B, D	0
MNP	Northern Mariana Islands	EAP	HI	0	0	0	0	0	0	c		0
NOR	Norway	ECA	HI	9	8	6	11	14	5	i, J	B, C, D, E, F	2228
OMN	Oman	MENA	HI	3	0	3	5	8	4	a	B, C, D, E, F	72
PAK	Pakistan	SAR	LMI	0	0	0	6	7	2	a, l	B, D	24
PLW	Palau	EAP	UMI	2	4	6	4	24	5	c, d, e	B, C, D, F	629
PSE	Palestine, State of	MENA	UMI	0	4	0	4	4	3	a	B	0
PAN	Panama	LAC	HI	3	3	3	7	10	5	a, f	B, C, D, F	8128
PNG	Papua New Guinea	EAP	LMI	7	5	10	11	10	5	a, c, d, e	B, D, F	141
PRY	Paraguay	LAC	UMI	5	4	4	4	8	5	a, f, n, p	B, D	31

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Abbreviation	Country	Region	Income	1st	2nd	3rd	4th	5th	IGCs	Groups	Treaties	Ships
PER	Peru	LAC	UMI	3	3	6	7	14	5	a, f	B, C, D, E	174
PHL	Philippines	EAP	LMI	23	19	16	11	14	5	a, K	B, D, F	845
PCN	Pitcairn	EAP	N/A	0	0	0	0	0	0			2
POL	Poland	ECA	HI	4	3	3	3	4	5	h, i	B, C, D, F	178
PRT	Portugal	ECA	HI	3	7	7	5	13	5	h, i	B, C, D, F	205
PRI	Puerto Rico	LAC	HI	0	0	0	0	0	0	c		0
QAT	Qatar	MENA	HI	0	0	0	0	0	0	a	B, D	105
REU	Réunion	SSA	UMI	0	0	0	0	0	0	h		19
ROU	Romania	ECA	HI	5	7	3	2	5	5	h	B, C, D, F	77
RUS	Russian Federation	ECA	UMI	7	14	6	14	14	5		A, B, C, D, F	3503
RWA	Rwanda	SSA	LI	0	0	0	0	0	0	a, b, n, o, p	B	0
BLM	Saint Barthélemy	LAC	HI	0	0	0	0	0	0			0
SHN	Saint Helena	SSA	UMI	0	0	0	0	0	0			3
KNA	Saint Kitts and Nevis	LAC	HI	3	0	0	0	2	2	a, c, d, g	B, C, D, E	535
LCA	Saint Lucia	LAC	UMI	2	2	2	0	4	4	a, c, d, g	B, C, D, F	0
MAF	Saint Martin (French part)	LAC	HI	0	0	0	0	0	0			0
SPM	Saint Pierre and Miquelon	LAC	HI	0	0	0	0	0	0			3
VCT	Saint Vincent and the Grenadines	LAC	UMI	0	5	3	11	6	4	a, c, d, g	B, C, D, F	686
WSM	Samoa	EAP	LMI	1	6	6	11	18	5	a, c, d, e, o	B, D, F	9
SMR	San Marino	ECA	HI	0	0	0	0	0	0	n	B, C, D	26

Appendix

Abbreviation	Country	Region	Income	1st	2nd	3rd	4th	5th	IGCs	Groups	Treaties	Ships
STP	Sao Tome and Principe	SSA	LMI	0	0	0	0	0	0	a, b, c, d, n, o	B, C, D	40
SAU	Saudi Arabia	MENA	HI	7	10	11	15	13	5	a, l	B, D	363
SEN	Senegal	SSA	LMI	0	0	6	5	7	3	a, b, n, o	B, C, D, F	51
SRB	Serbia	ECA	UMI	3	0	3	0	0	2	n	B, D, E	0
SYC	Seychelles	SSA	HI	3	4	6	5	8	5	a, b, c, d	B, D, F	83
SLE	Sierra Leone	SSA	LI	3	4	4	3	5	5	a, b, n, o	B, D	589
SGP	Singapore	EAP	HI	7	10	9	13	14	5	a, c, d, K	B, D, E	3139
SXM	Sint Maarten (Dutch part)	LAC	HI	0	0	0	0	0	0	c		0
SVK	Slovakia	ECA	HI	6	6	6	5	6	5	h, i, n	B, C, D, F	0
SVN	Slovenia	ECA	HI	3	2	2	4	8	5	h, i	B, C, D, E, F	7
SLB	Solomon Islands	EAP	LMI	6	0	5	0	4	3	a, c, d, e, o	B, C, D, F	17
SOM	Somalia	SSA	LI	0	0	0	0	0	0	a, b, n, o	B, D	7
ZAF	South Africa	SSA	UMI	4	4	2	1	1	5	a, b	B, C, D, E, F	264
SGS	South Georgia and the South Sandwich Islands	N/A	N/A	0	0	0	0	0	0		F	0
SSD	South Sudan	SSA	LI	0	0	0	0	0	0	a, b, n, o, p	B	0
ESP	Spain	ECA	HI	8	9	8	9	9	5	i	B, C, D, E, F	1110
LKA	Sri Lanka	SAR	LMI	3	4	4	6	6	5	a, l	B, D, F	54
SDN	Sudan	SSA	LI	2	3	3	0	0	3	a, b, l, n, o	B, D	6
SUR	Suriname	LAC	UMI	2	2	2	2	4	5	a, c, d, g	B, C, D	0

Appendix

Abbreviation	Country	Region	Income	1st	2nd	3rd	4th	5th	IGCs	Groups	Treaties	Ships
SWE	Sweden	ECA	HI	5	7	3	9	15	5	i	B, C, D, E, F	382
CHE	Switzerland	ECA	HI	14	14	15	16	4	5	i, m, n	B, C, D, E	16
SYR	Syrian Arab Republic	MENA	LI	0	0	0	0	4	1	a, l	B, D, E	3
TWN	Taiwan, Province of China	EAP	HI	0	0	0	0	0	0			799
TJK	Tajikistan	ECA	LMI	0	0	0	0	0	0	a, n, p	B	0
TZA	Tanzania, United Republic of	SSA	LMI	11	17	17	22	27	5	a, b, n, o	B, C, D	464
THA	Thailand	EAP	UMI	8	4	6	9	8	5	a, K	B, D	577
TLS	Timor-Leste	EAP	LMI	5	4	3	0	6	4	a, c, d, n, o	B, D	0
TGO	Togo	SSA	LI	4	6	3	4	7	5	a, b, n, o	B, C, D	353
TKL	Tokelau	EAP	N/A	0	0	0	0	0	0			0
TON	Tonga	EAP	UMI	6	9	10	7	7	5	a, c, d, e	B, D, F	9
TTO	Trinidad and Tobago	LAC	HI	4	5	4	4	6	5	a, c, d, g	B, D, F	52
TUN	Tunisia	MENA	LMI	0	0	0	3	3	2	a, b	B, D, E	144
TUR	Türkiye	ECA	UMI	6	2	10	15	30	5	i	B, D	1888
TKM	Turkmenistan	ECA	UMI	0	0	0	0	0	0	a, n, p	B, D	52
TCA	Turks and Caicos Islands	LAC	HI	0	0	0	0	0	0	c, g	F	0
TUV	Tuvalu	EAP	UMI	0	3	5	4	9	4	c, d, e, o	B, C, D, F	244
UGA	Uganda	SSA	LI	0	0	3	0	5	2	a, b, n, o, p	B, D	0
UKR	Ukraine	ECA	LMI	0	0	0	0	0	0	J	B, D, F	209
ARE	United Arab Emirates	MENA	HI	6	0	0	0	7	2	a	B, D	583

Appendix

Abbreviation	Country	Region	Income	1st	2nd	3rd	4th	5th	IGCs	Groups	Treaties	Ships
GBR	United Kingdom of Great Britain and Northern Ireland	ECA	HI	9	12	12	19	4	5	i, J	B, C, D, E, F	1826
USA	United States of America	NAR	HI	23	21	23	19	40	5	i, J	C, D, E, F	5226
UMI	United States Minor Outlying Islands	LAC	HI	0	0	0	0	0	0			0
URY	Uruguay	LAC	HI	6	5	5	4	5	5	a, f	B, C, D, E, F	76
UZB	Uzbekistan	ECA	LMI	0	0	0	0	0	0	n, p	B	0
VUT	Vanuatu	EAP	LMI	4	0	0	0	4	2	a, c, d, e, o	B, D	387
VEN	Venezuela, Bolivarian Republic of	LAC	UMI	4	5	6	3	3	5	a, l	B, D	214
VNM	Viet Nam	EAP	LMI	8	8	8	20	15	5	a, K, l	D, E	1295
VGB	Virgin Islands (British)	LAC	HI	0	0	0	0	0	0			55
VIR	Virgin Islands (U.S.)	LAC	HI	0	0	0	0	0	0			0
WLF	Wallis and Futuna	EAP	UMI	1	0	0	0	0	0			13
ESH	Western Sahara	MENA	LMI	0	0	0	0	0	0			0
YEM	Yemen	MENA	LI	0	0	4	3	4	3	a, n, o	B, D	3
ZMB	Zambia	SSA	LMI	0	0	0	0	0	0	a, b, n, o, p	B, D	0
ZWE	Zimbabwe	SSA	LMI	0	0	0	12	14	2	a, b, n, p	B, D	0

Appendix

Key

WORLD BANK REGIONAL GROUPINGS	
CODE	Full name
NAR	North America
EAP	East Asia and Pacific
SAR	South Asia
ECA	Europe and Central Asia
LAC	Latin America and the Caribbean
SSA	Sub-Saharan Africa
MENA	Middle East and North Africa
WORLD BANK INCOME CATEGORIES	
LI	Low income
LMI	Low middle-income
UMI	Upper middle-income
HI	High income
NEGOTIATING GROUPS	
a	Group of 77
b	African Group
c	Small Island Developing States
d	Alliance of Small Island States
e	Pacific Small Island Developing States
f	Core Latin American Group (CLAM)
g	Caribbean Community
h	European Union
i	Organisation for Economic Co-operation and Development (OECD)
j	Umbrella Group[52]

[52] A loose coalition of non-EU developed countries which formed following the adoption of the Kyoto Protocol. No formal list, although the Group is usually made up of Australia, Canada, Japan, New Zealand, Kazakhstan, Norway, the Russian Federation, Ukraine and the USA. Note Russia did not negotiate as part of this group during the BBNJ

k	Association of Southeast Asian Nations (ASEAN)
l	Like-Minded Developing Countries (LMDC)
m	Environmental Integrity Group (EIG)
n	Landlocked Countries
o	Least Developed Countries (LDCs)
p	Landlocked Developing Countries (LLDCs)
SELECTED TREATY RATIFICATIONS OR ACCESSION (ABRREVIATION, YEAR)	
A	United Nations Convention on the Law of the Sea (UNCLOS, 1982)
B	Convention on Biological Diversity (CBD, 1992)
C	International Convention for the Regulation of Whaling (IWC, 1946)
D	International Maritime Organization (IMO, 1982)[53]
E	The International Convention for the Prevention of Pollution from Ships (MARPOL, 1973)
F	United Nations Fish Stocks Agreement (UNFSA, 1995)

[53] First adopted and established in 1948 as the Inter-Governmental Maritime Consultative Organization (IMCO)