UiT The Arctic University of Norway

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Marine Genetic Resources in Areas Beyond National Jurisdiction:

Developing States and issues relating to equitable benefit sharing

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List of abbreviations

ABS	Access and Benefit Sharing
ABNJ	Areas Beyond National Jurisdiction
BBNJ	Marine Biological Diversity of Areas Beyond National Jurisdiction
BBNJ Agreement	United Nations Convention on the Law of the Sea on the Conservation and Sustainable Use of Marine Biological Diversity of Areas Beyond National Jurisdiction
CBD	Convention on Biological Diversity
CHM	Common Heritage of Mankind
ILBI	International Legal Binding Instrument
ISA	International Seabed Authority
LOSC	United Nation Convention on the Law of the Sea
MGR	Marine Genetic Resources
MSR	Marine Scientific Research
MPA	Marine Protected Area
UNGA	United Nation General Assembly
IUCN	International Union for Conservation of Nature and Natural Resources
PrepCom	Preparatory Commission

1 Research framework

1.1 Historical background

The 1982 United Nations Convention on the Law of the Sea (LOSC)[1] has been recognized as the "Constitution for the Ocean". [2] The recognition can be reflected by the fact that the convention purports to regulate "all issues relating to the law of the sea" and creates the basis for States' rights and obligations at sea.[3] However, there are still several loopholes in the law of the sea when it comes to the conservation and sustainable use of biological diversity in sea areas outside national jurisdiction (ABNJ).[4]

These legal challenges were assigned to an 'Ad Hoc Open-ended Informal Working Group' (BBNJ Working Group) in 2004.[5] After meeting on several occasions, recommendations were established from the BBNJ Working Group in 2011.[6] These led to the formation of the so-called "2011 package". The general assembly continued its work based on the recommendations, which resulted in the establishment of the mandate for the Working Group.[7] During the negotiations, the elements of the "2011 package" were discussed. The discussion also depended on the development of a possible multilateral agreement under the LOSC. After the Working Group expressed that such a process was feasible[8], the UNGA began to develop an internationally legally binding instrument under the LOSC.[9]

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[1] United Nation Convention on the Law of the Sea (LOSC), adopted 10 December 1982, entered into force 16 November 1993, 1834 UNTS 397.
[2] T. T. B. Koh, 'A Constitution for the Ocean', Remarks by the President of the third United Nations Conference on the Law of the Sea (UNCLOS III); See also D.R. Rothwell et al., *The Oxford Handbook of The Law of the Sea*, first edition, Oxford University Press (2015), p. 24.
[3] LOSC, Preamble, para. 4.
[4] This topic will be discussed under Chapter 3.
[5] Ad Hoc Open-ended Informal Working Group to study issues relating to the conservation and sustainable use of marine biological diversity beyond areas of national jurisdiction (the BBNJ Working Group), established by UNGA A/RES/59/24 (17 November 2004), 'Oceans and the law of the sea', p. 13, para. 73.
[6] See the recommendations in UNGA, A/66/119, Letter dated 30 June 2011 from the Co-Chairs of the Ad Hoc Open-ended Informal Working Group to the President of the General Assembly, Annex, Section. I.
[7] UNGA A/RES/66/231 (2011), Oceans and the law of the sea, para. 167 and its Annex.
[8] Letter dated 13 February 2015 from the Co-Chairs of the Ad Hoc Open-ended Informal Working Group to the President of the General Assembly, UN Doc. A/69/780, Annex, Section I
[9] UNGA A/RES/69/292, Development of an international legally binding instrument under the United Nations Convention on the Law of the Sea on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction (2015).

Furthermore, the Preparatory Committee (the 'PrepCom') was established to make substantive recommendations to the General Assembly on the elements of a draft text.[10] The PrepCom was open to all State Members of the United Nations, all Parties to the LOSC and members of the specialised agencies.[11]

The mission of the Committee contained four different aspects, and which emerges from the "2011 package" deal: conservation and sustainable use of marine biological diversity of ABNJ; marine genetic resources, including on the sharing of benefits; and measures such as area-based management tools, including marine protected areas [MPAs] and environmental impact assessments [EIAs] and capacity building and the transfer of marine technology".[12] In 2017 UNGA adopted, on the basis of the PrepCom's Report[13], Resolution 72/249 to convene an intergovernmental conference.[14] The goal was to create a framework "as soon as possible". The first three sessions took place in September 2018, March 2019 and August 2019. The fourth sessions took place in March 2022. The fifth session will take place in August 2022.

1.2 Research objectives

One of the "2011 package" issues brought to light through the BBNJ negotiation is the question of benefit sharing.[15] In that context, this thesis aims to consider which measures are necessary to ensure fair and equal access and utilization of the benefits derived from MGR activities in ABNJ. The research will examine the previous negotiations to identify the range of potential measures that could be adopted to meet the aim of fair and equal access and benefit sharing.[16]

In order to answer these questions, focus will be directed towards the existing legal framework that regulates MGRs in ABNJ, the ongoing BBNJ negotiations and the potential of an ABS-regime.[17] This topic has been tried resolved earlier, without success.

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[10] UNGA, *supra* note 9, p. 2, para. 1(a).
[11] E.g., The Food and Agriculture Organization of the United Nation, the International Seabed Authority, the International Fund for Agricultural Development etc. Several specialized agencies are listed on the UN website, https://www.un.org/en/about-us/specialized-agencies, 16 August 2022
[12] UNGA, *supra* note 9, p. 3, para. 2.
[13] UNGA, A/AC.287/2017/PC.4/2 (2017), Report of the Preparatory Committee.
[14] UNGA A/RES/72/249 (24 December 2017), p. 1, para. 1.
[15] UNGA, *supra* note 7, p. 3, para. 2.
[16] This topic will be discussed under Chapter 6.
[17] This topic will be discussed under Chapter 2 and Chapter 5.

However, this objective of this thesis is to confirm which conditions contributes to inhibit fair and equal benefit sharing of MGRs, with due regard for developing States. Finally, possible solutions will be set out with a view on filling the gaps, in light of the final negotiation stage under the auspices of UNGA.

In summary, the specific objectives of this thesis are to (1) identify how activities in ABNJ currently are governed;[18] (2) identify the legal gaps regarding utilization and equitable benefit sharing of genetic resources in ABNJ;[19] and (3) assess how these legal issues could be resolved through an updated and supplementary international framework.[20]

1.3 Research methodology

The legal issue of this thesis falls within the area of international law under the Law of the Sea. Article 38 of the Statutes for the International Court of Justice[21] establishes the generally accepted sources under international law[22] and will be decisive for the methodological presentation of the thesis.

The LOSC is the most central source regulating all activities at sea and will serve as an indicative source. The LOSC consists of provisions with an open structure and requires implementation by other mechanisms.[23] Reference will be made to other relevant conventions and treaties.[24] However, the question raised by this thesis can not be resolved solely by applying these instruments. The legal challenges addressed have been tried resolved through the BBNJ negotiations. For that reason, the most recent BBNJ draft text will act as the primary source throughout this thesis.[25]

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[18] See Chapter 3.
[19] See Chapter 3, Chapter 4 and Chapter 5.
[20] See Chapter 6 and Chapter 7.
[21] Statute of the International Court of Justice, adopted 26 June 1945, entered into force 4 October 1945, UNTS 993.
[22] See J. Crawford, 'Brownlie's Principles of Public International Law', 8th Edition, Oxford University Press, UK, p. 20.
[23] Examples of such mechanisms is "general accepted international rules or standards" which appears in Article 211(2), and "competent international organisations or diplomatic conference" which appears in Article 210 (4), LOSC.
[24] Such as the International Convention on Biological Diversity (CBD), as well as its associated protocols, such as the Nagoya Protocol.
[25] UNGA, A/CONF.232/2022/5 (2022), 'Further revised draft text of an agreement under the United Nations Convention on the Law of the Sea on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction'.

The Vienna Convention on the Law of Treaties[26] provides rules s for how treaties and conventions should be interpreted. Generally, they must be interpreted "in good faith in accordance with ordinary meaning to be given to the terms of the treaty in their context and in the lights of its object and purpose".[27] Relevant conventions and treaties used in this thesis will be interpreted in accordance with the provisions of the Vienna Convention.

This thesis will also make use of soft law instruments.[28] In that context, resolutions from the UNGA, and statements and public documents for the ILBI process will be included. Furthermore, research reports and articles will be used to build up argumentation or information in cases where this is needed to ensure reliability behind a statement.

Another source of law applied in this thesis is "the general legal principles recognized by civilized nations",[29] which have contributed to creating legal norms and provides guidance in cases where other legal sources do not contribute to clarification. In addition, reference will be made to "juridical decisions and the teaching of the most highly qualified publicists",[30] as they are indicative and reflects different interpretations.

Various aspects highlighted in the thesis fall within several parallel regimes. For that matter, a doctrinal methodology is used to clarify and evaluate legal content. [31] Along the way, this method will be used to examine existing law *(de lege lata)* with guidance from primary and secondary sources. In addition, aspects of a future internationally binding framework under the LOSC *(de lege ferenda)* will be assessed. Reference is made to sources in international law, mainly with a focus on international agreements, where a descriptive legal analysis of the regime's mechanisms is applied. The dissertation moves into the depth of the interests of the negotiating States and in that context a qualitative technique will be used to examine the underlying values that lie behind the negotiations.

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[26] Vienna Convention on the Law of Treaties (VCLT), adopted 23 May 1969, entered into force 27 January 1980, 115 UNTS 331.
[27] *Ibid.*, Article 31(1)(a)
[28] The term soft law is used to denote agreements, principles and declarations that are not legally binding (definition of the ECCHR). Even though such instruments are not legally binding between parties, they reflect political and social aspects, which can further develop into hard law instruments.
[29] Article 38(c), ICJ Statute.
[30] Article 38(d), ICJ Statute.
[31] E. Lieblich, 'How to do research in international law? A basic guide for beginners' (2021), Vol 62, Harvard International Law Journal Online, pp. 4 and 8.

1.4 Research boundaries

This thesis is limited to areas beyond national jurisdiction; the high seas and the international seabed Area. In other words, the exclusive economic zone, the territorial sea, adjacent waters, and internal waters will fall outside the scope of the assessment. As this thesis will primarily be angled from the perspective of a developing State, the assessment will to a limited extent relate to developed States. Nevertheless, the latter can be used as an illustration to explain existing differences or as an example to provide a holistic understanding.

Furthermore, this thesis is limited to one of the main themes of the BBNJ negotiation, namely marine genetic resources and issues relating to benefit sharing. The content will continuously slide into several principal aspects regarding access and benefit sharing of genetic resources, but this thesis will be limited to not undertake a comparative analysis of the legal existence of these aspects. This thesis will not operate with a distinction between resources (MGRs) or activities linked to such resources (e.g. bioprospecting). As LOSC itself focuses on both, this thesis will do the same.

2 Background and definition

Despite four attempts, the final report prepared by the PrepCom provided modest guidance to the governance of MGRs in ABNJ. It also gave indications that little consent existed between the negotiated States. As there were several unresolved issues related to the regulation of MGRs in ABNJ, the initiative was taken to continue the preliminary negotiations based on the recommendations given by the PrepCom, and in that way develop a framework in accordance with the LOSC.[32]

2.1 Introduction

The ocean is an enormous area of resources and consists of a rich content of biological and genetic components, such as plant species, marine animals, and bacteria.[33] Marine areas beyond national jurisdiction, the high seas and the international seabed Area comprise 70% of the living space on our planet.[34] These areas contain marine resources and biodiversity – of immense economic, cultural and ecological importance.[35] There is enormous interest within States, especially from researchers and companies that are active participants when it comes to the utilization of genetic resources in ABNJ.

Recently, States have acquired knowledge of the biological and commercial benefits linked to scientific research and utilization of marine genetic resources in ABNJ.[36] The resilience, sustainability, and development of the marine environment in waters beyond national boundaries is under enormous pressure from human development and global environmental change.

[32] UNGA, *supra* note 14, p. 1, para. 1.
[33] M. Bollmann et al., *World Ocean Review: Living with the Oceans*, Hamburg, Germany, Maribus GmbH (2010), p. 114.
[34] J. M. Arrieta et al., 'What lies underneath: Conserving he oceans' genetic resources' (2010), PNAS, Vol. 107, no. 43, p. 18318; See also Callum Roberts et al., *30x30: a blueprint for ocean protection*, Greenpeace International (2019), p. 5.
[35] European Commission on Oceans and Fisheries, 'Protecting the Ocean: Time for Action, A High Ambition Coalition on Biodiversity beyond National Jurisdiction' (2022), Ref. Ares 107868, 1 July 2022.
[36] A. Broggiato, et al., *Fair and equitable sharing of benefits from the utilization of marine genetic resources in areas beyond national jurisdiction: Bridging the gaps between science and policy*, Marine Policy 49 (2014), p. 179.

When reference is made to areas outside national jurisdiction, it is referred to an area that makes up the majority of the ocean area.[37] Nevertheless, ABNJ links itself to two specific areas. First, we have the Area, which includes "the deep seabed and ocean floor and subsoil thereof, beyond the limits of national jurisdiction".[38] Second, we have the high seas, which refers to "all parts of the sea that are not included in the exclusive economic zone, in the territorial sea or in the internal waters of a State, or in the archipelagic waters of an archipelagic State".[39] This means that the high seas is defined as the water column above the Area and the extending continental shelf of the coastal State.

During the last few decades, major changes in research and technology has developed in marine areas.[40] Still it may seem as some areas, species and resources are not discovered yet, due to challenging environments, limited access, as well as political, economic, and technological challenges.[41]

Seen from a scientific perspective, the possibilities to extract MGRs are highly interesting. Certain types of organisms in the deep-sea area have been shown to survive in extreme ecosystems, such as hydrothermal vents and polar areas,[42] and have unique features. The discovery and utilization of marine biological resources has also led to a development seen from a paramedical and cosmetic point of view, which will be explained later on.
Even though previous exploitation of MGRs has primarily been linked to areas within national jurisdiction, the focus has now changed. Thanks to development in science, technology and other research aids, it is now possible to collect, analyze and produce marine biological substances faster and easier than before.[43]

In the next chapter, an account will be given for the existing legal framework that regulates activities related to MGRs in ABNJ. Initially, a definition of MGR will be presented. Next, an assessment will be made about the implementation of MGRs in the current framework. An

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[37] Areas outside national jurisdiction makes up 40% of the surface of our planet, encompassing 64% of the surface of the oceans and almost 95% of its volume. Factual information obtained from the Global Environment Facility, available at https://www.thegef.org/topics/areas-beyond-national-jurisdiction 16 August 2022.
[38] Article 1(1), LOSC.
[39] Article 86, LOSC.
[40] M. Bollmann et al., supra note 33, p. 178
[41] A. Broggiato et al., *supra* note 36, p. 177.
[42] J.M. Arrieta et al., *supra* note 32, p. 18322.
[43] M. Bollmann et al, *supra* note 33, p. 178.

analysis of the current framework will also be carried out to answering whether and to what extent the framework can be considered sufficient.

2.2 **Defining MGRs**

There is no single agreed legal definition of MGR.[44] Since the concept was not practiced at the time of its adoption, the LOS Convention does not specifically refer to "marine genetic resources". It was not until the 1990s that genetic resources proved to possess commercial advantages, and therefore generated interest between States.[45]

Different alternative definitions of marine genetic resources have been proposed through the BBNJ negotiation, but which alternative will apply is still uncertain.[46] Nevertheless, a meaning of the term can be deduced from the 1992 Convention on Biological Diversity (CBD) and the 2010 Nagoya Protocol.[47] Article 2 of the Convention defines "biological resources", "genetic material" and "genetic resources". In order to gain a deeper understanding of what the terms entail, an extended assessment of the terms is required.

"Biological resources" includes genetic resources, organisms or parts thereof, populations, or any other biotic component of ecosystems with actual or potential use or value for humanity.[48] Marine genetic resources fall under the definition and are considered a biological resource.

"Genetic material" is defined as "any material of plant, animal, microbial or other origin containing functional units of heredity." Finally, "genetic resources" are defined as "genetic material of actual or potential value". The same definition is expressed in the previous draft text of the BBNJ negotiation.[49] If these definitions are read together, it must be assumed that for an organism to be considered a genetic resource, it is a requirement that it contains

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[44] Muriel Rabone et al., *Access to Marine Genetic Resources (MGR): Raising Awareness of Best-Practice Through a New Agreement for Biodiversity Beyond National Jurisdiction (BBNJ),* Frontiers in Maritime Science, Volume 6, Article 520 (2019), p. 3.
[45] A. Broggiato, *supra* note 36, p. 149.
[46] UNGA, *supra* note 25, Article 1, p. 5. Para. 11.
[47] Convention on Biological Diversity (adopted 5 June 1992, entered into force 29 December 1993) 1760 UNTS 79 and the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity (adopted 29 October 2010, entered into force 12 October 2014).
[48] Article 2, CBD.
[49] UNGA, *supra* note 25.

"genetic material" that has an "actual or potential value". Furthermore, it must be understood that the actual or potential value is linked to research-based, economic, or commercial benefits. In addition, there is no requirement of a guaranteed value; it is sufficient that a possible value exists.[50] This approach can be supported by the fact that scientists still have a lot of work to do before they can ascertain how much value is attached to genetic resources. As of today, an actual value is estimated, which will discuss later in this thesis. Whether the estimated value will occur remains to be seen.

A direct interpretation of "genetic material" as "any material of plant, animal, microbial or other origin" suggests that all material from an organism falls under the definition. Nevertheless, it is a requirement that the material must have "functional units of heredity", which according to a linguistic understanding must be considered as hereditary genes. It is stated that functional units of heredity include all genetic elements containing DNA, and in some cases, RNA.[51]

Disagreement has arisen regarding the interpretation of "functional units of heredity". The disagreement primarily consists of whether the units only include genes, or whether the term encompasses the organism's units at a fragmented level, such as molecules, and therefore includes all units associated with a genome.[52] Hence, no agreed interpretation of "functional units of heredity" exists. The unclear definition in the CBD, together with statements from scholars, may create uncertainty. The uncertainty relates to whether an organism contains resources that fall under the definition "marine genetic resources", and for that matter, which regime should be applied.

Scholars have tried to define the content of MGRs. Marine genetic resources include the genetic information marine organisms host enabling them to produce a wide range of biochemicals. Such biochemicals can be beneficial for the humankind through application, including cosmetics, food supplements, research tools and pharmaceuticals.[53] They also include adaptable solutions found in deep-sea organisms. These solutions can add value to

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[50] Arianna Broggiato et al., 'Mare Geneticum: Balancing Governance of Marine Genetic Resources in International Waters', The International Journal of Marine and Coastal Law 33 (2018), pp. 13 and 23.
[51] L. Glowka et al., 'A Guide to the Convention on Biological Diversity', IUCN Environmental Law Centre, Environmental Policy and Law Paper No. 30, p. 21.
[52] B. Fedder, *Marine Genetic Resources, Access and Benefit Sharing – Legal and biological perspectives*, Routledge, Taylor & Francis Group, London and New York (2013), p. 35-36.
[53] J.M. Arrieta et al., *supra* note 34, p. 18320.

new materials and structural designs, such as protective materials.[54]
Future application of genetic tools and technologies may prevent biofouling (biological contamination) of boat hulls, bioremediation (purification of contaminated soil or water), and wildlife management.[55]

3 Regulation of MGRs in ABNJ

This part will give an account for the existing legal regime applying to MGRs in ABNJ. In that context, focus will be directed towards the LOSC, the CBD and the Nagoya Protocol. The former will be used as the primary legal source for maritime law issues. The CBD regulates biological diversity but recognizes the LOSC's primacy in Article 22(2). The same applies to the Nagoya Protocol and its Article 4(3).

3.1 United Nation Convention on the Law of the Sea

The LOS Convention states that the coastal State has jurisdiction over the living and non-living resources that exist in their exclusive economic zone (EEZ).[56] The jurisdiction extends to 200 nautical miles from the state baseline and to the outer boundary of their continental shelf.[57] The sea outside these areas is considered the high seas and falls outside the jurisdiction of any State.[58] Article 87 of the LOSC clarifies that the high seas are open to all States, regardless of their geographical existence. Nevertheless, the Convention allowed the International Seabed Authority (ISA) to exercise jurisdiction over the exploration and exploitation of the resources found in "the Area".[59]

The Convention distinguished between two geographical areas in ABNJ; the water column, and the seabed, the ocean floor and the subsoil thereof.[60] As mentioned, the LOSC is the

[54] H. Yao et al., 'Protection mechanisms of the iron-plated armor of deep-sea hydrothermal vent gastropod, Department of Materials Science and Engineering' (2010), Vol. 107, No. 3, p. 991.
[55] A. D. Rogers, et al., Frontiers in Marine Science, *Marine Genetic Resources in Areas Beyond Jurisdiction: Promoting and Enabling Equitable Benefit Sharing,* Frontiers in Marine Science (2021), p. 2; See additionally supplementary material.
[56] Article 56, LOSC.
[57] Articles 57 and 76, LOSC.
[58] Article 86, LOSC.
[59] Article 137(2), LOSC.
[60] R. Blasiak et al., 'Corporate control and global governance of marine genetic resources' (2018), Vol. 4, No. 6 ,Science Advances, p. 4.

natural starting point for questions related to the law of the sea. For that reason, it is also the natural starting point for answering how MGRs in ABNJ are regulated. Its purpose is, *inter alia*, to form "a legal order for the seas and oceans […] and to promote the peaceful uses of the seas and oceans, the *equitable* and efficient utilization of their *resources*, the *conservation* of their *living resources*, and the study, protection and preservation of the marine environment."[61] The purpose of the convention are be decisive for the later discussion on the fair and equal utilization of MGRs. Its purpose is tried achieved by dividing the sea areas into several delimited areas, with associated rights and obligations. As a result, States should be aware of which rules apply in each individual area they seek to enter. The various provisions can be based on different principles, such as the freedom of the high seas or the common heritage of mankind which applies to the Area.[62]

Part VII of the LOSC regulates the rights and obligations on the high seas. This includes the ability to navigate, overflight, installation of submarine cables, construction of artificial islands, fishing and scientific research. The list is not unexhaustive and only highlights some of the activities that can be freely undertaken on the high seas. Marine genetic resources must be considered to fall under this provision, as they originate from living organisms found in the sea.[63] In that way, a dynamic interpretation is applied, which causes that MGRs falls under the LOSC regime, even though the convention did not specifically take such resources into account in time of its adoption. Another element that may provide grounds for MGRs to fall under the freedoms of the high seas is its connection to marine scientific research (MSR). Whether this right can be linked to genetic resources will be explained later in this thesis.

Utilization of MGR can be claimed to fall under freedom of high seas, subject to minimal limits. States are obliged to act in accordance with the LOSC. The convention requires States to show due regard to the interests of other States[64], to protect and preserve the marine environment,[65] and to cooperate in good faith with other States. With that being said, the only

[61] LOSC, Preamble, para. 4. Emphasis added.
[62] See Chapter 4 in this thesis.
[63] As provided under chapter 2.2.
[64] Article 87(2), LOSC. In the 1974 Fisheries Jurisdiction case (Federal Republic of Germany vs. Iceland) The International Court of Justice referred to the freedom of the high seas as "a recognition of the duty to have due regard to the rights of other States and the needs of conservation to the benefit for all", ICJ, Reports, 3.
[65] Provisions of Part XII, LOSC.

additional restrictions that can be imposed outside the Convention are through international binding agreement.

It may seem that States act with unlimited freedom to the resources on the high seas, if one ignores the limitations listed above.[66] This also applies when it comes to activities related to the utilization of MGRs in the water column. Hence, it can be said that a self-determined regime exists, where States hold large parts of the regulatory authority. The later assessment depends on how this approach may be met to in relation to fair and equal sharing of benefits.

3.2 Convention on Biological Diversity

The CBD is considered the international legal instrument for "the conservation of biological diversity, the sustainable use of its components and *the fair and equitable sharing* of the benefits arising out of the utilization of *genetic resources*, including by appropriate *access* to genetic resources".[67] In other words, the CBD applies to MGRs in ABNJ. The convention plays a central role regarding fair access and equal benefit sharing between States, with particular regard to developing States. The convention' primary goal is to encourage actions that will contribute positively to a sustainable future.[68]

The uncertainty is linked to the Convention's scope of application, as regulated in Article 4(a). It appears that the scope of application is limited to "components of biological diversity" within national jurisdiction. On the other hand, the second paragraph includes "processes and activities, regardless of where their effects occur, carried out under its jurisdiction or control, within the area of its national jurisdiction or beyond the limits of national jurisdiction". For that reason, MGRs are considered to fall within the scope of the Convention, as long as they are controlled by a Member State.[69]

3.2.1 The Nagoya Protocol

The Nagoya Protocol is an international legally binding supplementary agreement that was created based on and in accordance with the CBD. The protocol establishes regulations for

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[66] See e.g., Article 87(2) and Part XII, LOSC.
[67] Article 1 CBD. Emphasis added.
[68] Official UN Website, *Convention on Biological Diversity, key international instrument for sustainable development*. Available at https://www.un.org/en/observances/biological-diversity-day/convention 22 July 2022.
[69] Derived from the wording "that is jurisdiction or control".

access and benefit sharing within biodiversity and aims to develop the main objectives of the CBD.[70] The Nagoya Protocol applies to genetic resources under the scope on the CBD. The protocol' main focus is to extend legal certainty regarding access and benefit sharing of marine genetic resources.[71] Since its adoption in 2010, the Nagoya Protocol has marked an important international advance by clarifying the obligations related to monetary and non-monetary benefit sharing of genetic resources within national jurisdiction.[72] No such regime exist for the area outside national jurisdiction.

The protocol is primarily based on principles, State sovereignty and bilateral negotiations. At the same time, it adds a possible global multilateral benefit sharing system through Article 10. However, the provision goes no further than stating that "Parties shall consider the need for and modalities of a global multilateral benefit-sharing mechanism". Whether such a regime is necessary will be assessed later in this thesis.

The Parties shall encourage users and providers to exploit the benefits arising from the exploitation of genetic resources in favour of biological diversity and its conservation.[73] Mainly developing States sets several prerequisites that must be met before access to the genetic resources is allowed in their territory. On the other hand, developed States have more or less operated with an unlimited access.

3.3 Legal gaps

There is no specific international framework that specifically regulates MGRs in ABNJ.[74] As mentioned, both LOSC, the CBD and the Nagoya Protocol are indicative, but may appear deficient. First, they do not consist of provisions that directly resolve issues involving BBNJ.[75] Second, the provisions on access and sharing under the CBD are not absolute. Although biodiversity, sustainable use and fair sharing of MGRs are protected by the CBD, it

[70] Emerges from the preamble of the Nagoya Protocol.
[71] The preamble acknowledges that the Parties to the Protocol recognizes "the importance of providing legal certainty with respect to access to genetic resources and the fair and equitable sharing of benefits arising from their utilization»
[72] R. Blasiak et al., *supra* note 60, p. 1.
[73] Article 9, Nagoya Protocol.
[74] J. M. Arrieta et al., *supra* note 34, p. 18322
[75] CBD, Preamble, para 4; CBD, Articles 3 and 15(1); T.Scovazzi "Mining, Protection of the Environment, Scientific Research and Bioprospecting: Some Considerations on the Role of the International Sea-Bed Authority (2004) *International Journal of Marine and Coastal Law* 383-409.

does not state which methods should be used in that context.[76] Likewise, it does not determine which methods are to be used in a dispute resolution process between the parties.[77] This includes legal gaps regulating marine genetic resources (MGRs) found in areas beyond national jurisdiction. Scientific and commercial research of MGRs also reveal regulatory loopholes in the same areas.[78]

There is a marked gap between current national legislative regimes and a potentially legally binding framework governing MGRs in ABNJ. The gap may contribute to conflict and competition-driven practice between States, as well as a "first-come, first-served" approach.[79] Such practice will be largely visible in cases dealing with transboundary resources.[80]

Several challenges are linked to the application of the existing legislation. The first concerns the interpretation of the content of the instruments. The second concerns uncertainty related to which legal mechanisms should be decisive. The third concerns which access and benefit-sharing mechanisms are to be used with regard to developing states.

When it comes to marine genetic resources, much of the content is introduced in the 'Revised Draft Text' of the BBNJ Agreement.[81] There has been clear disagreement between the various participating States. The disagreement makes it difficult to reach a final agreement, as the BBNJ agreement is considered a package agreement where "nothing is agreed before everything is agreed".[82]

The BBNJ negotiation includes consideration of marine genetic resources in ABNJ, sustainable use of marine biological diversity and beneficial sharing.[83] These considerations shall be assessed with regard to developing States possibility to participate in research and

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[76] Article 1, CBD.
[77] Article 27, CBD.
[78] A. Horna, *Marine Genetic Resources, Including Sharing of Benefits,* Proceedings of the ASIL Annual Meeting, Vol. 111 (2017), p. 245.
[79] UNGA, A/RES/66/119, Letter dated 30 June 2011 from the Co-Chairs of the Ad Hoc Open-ended Informal Working Group to the President of the General Assembly (2011 Report of the UNGA Working Group), p. 5, para 17.
[80] R.J McLaughlin, 'Managing foreign access to marine genetic materials: moving from capture to cooperation', DD Caron and HN Scheiber (eds), Bringing New Law to Ocean Waters, Martinus Nijhoff Publishers, Leiden, (2004), p. 258.
[81] UNGA, *supra* note 25.
[82] Glen Wright et al., *The long and winding road: negotiating a treaty for the conservation and sustainable use of marine biodiversity in areas beyond national jurisdiction*. IDDRI Stud (2018), p. 42. With further reference to Danilenko, G.M, *Law-Making in the International Community*, Martinus Nijhoff Publishers (1993).
[83] UNGA, *supra* note 25, p. 1. [2].

technology development. Among other things, the BBNJ agreement will give priority to raising the capacity of all States, in order to ensure a fair benefit of research, technology development and innovation. The challenge is primarily related to developing States, which are more dependent on such support.

Obviously, the exploration and exploitation of the marine genetic resources in the ABNJ is faces a number of challenges, as neither the LOSC nor the CBD have developed specific rules for this type of activity outside national jurisdiction.[84] Both CBD and Nagoya recognizes States' sovereignty *inside* national jurisdiction, which also includes MGRs located there.[85] The geographical demarcation evident in the CBD and Nagoya results in a clear gap concerning MGRs in ABNJ.

Later, during the 2012 UN Conference on Sustainable Development (Rio +20), States committed themselves "to address, on an urgent basis […] the issue of the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction", including taking a decision on the development of an international instrument under the United Nation Convention on the Law of the Sea.[86]

The negotiation on the development of an international legal binding instrument should address the main objective of the "2011 package"; the conservation and sustainable use of marine biological diversity in ABNJ and questions regarding benefit sharing of MGRs. The question further depends on which solutions will be most beneficial when future problems concerning the utilization of resources arises.

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[84] T. Scovazzi, 'The Conservation and sustainable use of marine biodiversity, including genetic resources, in areas beyond national jurisdiction: A legal perspective', Abstract, p. 1, available at https://www.un.org/Depts/los/consultative_process/ICP12_Presentations/Scovazzi_Abstract.pdf 05 August 2022.

[85] See CBD Article 3; See the Nagoya Protocol Article 6(1)

[86] UNGA A/RES/66/288 (2012), Resolution Adopted by the General Assembly *on 27 July 2012, The future we want,* 11 September 2012, paragraph 162.

4 Utilization of MGRs

The sea areas that fall outside national jurisdiction are internationally recognized as part of the global commons.[87] Such areas are shared among the entire international community, and the same applies to its natural resources.[88] Historically speaking, the concept of the global commons originates from international law but has also been recognized through Roman law.[89]

When Hugo Grotius published his work *Mare Liberum*, or *Freedom of the seas*, in 1609, his approach laid the foundation for the maritime legal doctrine of the past and present.[90] The rationale behind the doctrine was mainly based on three different approaches. First, the seas could be identified as the property of no one (*res nullis*). Second, they could be considered to fall under a joint possession (*res communis*). Third, they could be identified as public property (*res publica*).[91] Already from this point on, it was claimed that the ocean contained universal freedom for all States. The idea behind the approach was that it was going to be the solution to a number of marine conflicts, mainly in Europe.

Grotius applied a res communis omnium approach and considered the sea as "common to all, because it is so limitless that it cannot become a possession of anyone, and because it is adapted for the use of all, whether we consider it from the point of navigation or of fisheries".[92] As a result, biological resources, such as fish, were also considered a common possession. In recent years, States have acquired sovereignty and jurisdictional powers over several areas of the sea. Nevertheless, during the adoption of the LOSC, focus was directed towards the principle of the freedom of the high seas. In that way, Grotius' approach was sustained. When considering issues related to MGRs and benefit sharing in a BBNJ context, Grotius' approach is indicative, but not sufficient.

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[87] Includes the flowing water, outer air space and the atmosphere.
[88] N. Schrijver, 'Managing the global commons: common good or common sink?' (2016) Third World Quarterly, 37:7, pp. 1252-1253.
[89] K. Baslar, 'The Concept of the Common Heritage of Mankind in International Law (1998), Martinus Nijhoff Publishers, Kluwer Law International, p. 420.
[90] H. Grotius, *Freedom of the Seas: The Right which Belongs to the Dutch to Take Part in the East Indian Trade*, Oxford University Press, New York, 1633 trans, 1916 rep.
[91] *Ibid*, p. 20.
[92] *Ibid*, p. 24.

The principle of freedom of the high seas has since then been perceived 'relative'[93], partly through increased coastal State jurisdiction and partly by the establishment of the Area, where the principle of the common heritage of mankind (CHM) applies.[94] The principle was originally put forward by the Meltean ambassador, Arvid Pardo, in 1967.[95] The origin of the principles was mainly based on the concern to allow the deep seabed resources to exclusively benefit industrialized States. Technological advances suggested that such resources would bring great commercial benefits for the future[96], and a "first-come, first-served" approach was therefore sought to be prevented.[97]

As of today, ABNJ consists both of the principle of freedom of the high seas and the common heritage of mankind. On the one hand, the high seas is considered a common property where the resources can be exploited individually.[98] On the other hand, the Area operates with a regime where the states cannot exploit resources individually, but for the benefit of all humanity.[99]

When the Nagoya Protocol was adopted[100] an attempt was made to clarify the uncertainty surrounding the definition of genetic resources.[101] In this context, the objective was to explain when utilization of MGRs created questions about sharing of benefits.[102] The exploitation of MGRs was thus defined as a "means to conduct research and development on the genetic and/or biochemical composition of genetic resources".[103] In cases where benefits can be derived from marine research of such resources, the latter provision will be applicable.[104] The wording corresponds to the temporary proposal for the definition of "utilization of marine

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[93] A. Broggiato,et al, *supra* note 50, p. 5.
[94] Article 136, LOSC.
[95] A. Pardo, 'The Common Heritage: Selected Papers on Ocean and worlds order 1967-1974' (1975), Malta University Press, p. 549.
[96] T. Scovazzi, *supra* note 84.
[97] UNGA, *supra* note 79, p. 5, para. 17.
[98] Attention is drawn to certain legal restrictions, such as exercising due regard for the rights and interests of other states according to Article 87(2) of the LOSC.
[99] Article 137(2), LOSC.
[100] See Chapter 3 in this thesis.
[101] Elise Morgera et al., 'Unraveling the Nagoya Protocol – A Sommentary on the Nagoya Protocol on Access and Benefit-Sharing to the Convention on Biological Diversity', Brill Leiden, Boston (2015), p. 59-60.
[102] B. Fedder, *supra* note 50, p. 37.
[103] Article 2(c), Nagoya Protocol.
[104] T. Greiber et al., 'An explanatory Guide to the Nagoya Protocol on Access and Benefit-Sharing', IUCN Environmental Policy and Law, Paper no. 83 (2012) p. 70.

genetic resources" made through the BBNJ negotiation.[105] Furthermore, the protocol states that designated checkpoints should be relevant for utilization or for the collection of genetic resources or relevant information at "any stage of research, development, innovation, pre-commercialization or commercialization"[106]

The utilization of marine genetic resources can be divided into two different purposes. On one hand, the resources can be used for commercial purposes, including for goods or with other commercial intentions. On the other hand, the resources can be used for non-commercial purposes, including scientific research purposes.

Although the list is exhaustive, some distinctive activities are considered 'exploitation of genetic resources'. It includes, *inter alia,* gen-tec activities; transfer of genetic material between organisms, breeding, conservation, evaluation processes and production of compounds that occur naturally in genetic material.[107]

Both States and contractors have over time shown great interest in the economic potential of the resources and the sea area outside national jurisdiction.[108] The interest is largely focused on fishing activities, but also new activities such as bioprospecting of genetic resources. The international community has over time shown goodwill to expand and improve the international legal framework for resources in precisely these areas, as well as to protect and preserve the ecosystem and biodiversity.[109]

Bioprospecting was, in the 2000 Progress Report noted by the Executive Secretary, defined as "the process of gathering information from the biosphere on the molecular composition of genetic resources for the development of new commercial products".[110]
Similar to a submission to a Parliamentary inquiry into bioprospecting, Biotechnology

[105] UNGA, *supra* note 25, Article 1, p. 6, para. 19.
[106] Article 17(1)(a)(iv), Nagoya Protocol.
[107] T. Greiber et al., *supra* note 104, p. 64.
[108] The sea area beyond national jurisdiction concerns the high seas and the Area. See article 1(1(1) and 86 in the LOS Convention.
[109] See Articles 192 and 194(5), LOSC.
[110] CBD Doc UNEP/CBD/COP/5/INF/7 (20 April 2000), p. 2, para. 6.

Australia defined bioprospecting as "the search for naturally occurring chemical compounds, genes or other parts of organisms that have potential economic value."[111]

"Bioprospecting" is generally understood as "investigative activities with a commercial purpose". The definition of "utilization of genetic resources" derived from the Nagoya Protocol also focuses on the commercial purpose.[112] Hence, bioprospecting enables sustainable utilization of resources, which is the best alternative for States to acquire economic and social benefits. It can therefore be claimed that there is a clear connection between MGR and sustainable development, which results in the protection of biological diversity and ensures economic growth.

Nevertheless, the question remains about various elements of the framework, which includes whether bioprospecting of genetic resources should be considered the freedom of the high seas or the common heritage of mankind.

4.1 The Freedom of the High Seas

Some States rely on the principle of freedom of the high seas when operating in ABNJ.[113] The principle entails the right to free access and unrestricted exploration of genetic resources in the water column.[114] For that reason, it may seem like the principle of freedom of the high seas gives unrestricted access and right to explore MGRs on the deep seabed outside of national jurisdiction

Seen from the perspective of a developed country, it may be preferred that the resources of the biological components of the water column in ABNJ should fall within the "freedom of the high sea". The principle is enshrined in the LOSC and is considered customary law. All sea areas, which do not include the EEZ, the territorial waters and the internal waters of the States, shall not be subject to the sovereignty and jurisdiction of any State.[115] In this way, any

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[111] Biotechnology Australia, Submission to the House of Representatives Standing Committee on Primary Industries and Regional Services, Enquiry into Development of High Technology Industries in Regional Australia based on bioprospecting, (2001), p. 6.
[112] The Nagoya Protocol Article 2 (c) states that "Utilization of genetic resources" means to conduct research and development on the genetic and/or biochemical composition of genetic resources, including through the application of biotechnology as defined in Article 2 of the Convention».
[113] T. Scovazzi, *supra* note 84, p. 1.
[114] Attention is drawn to certain legal restrictions, such as exercising due regard to other States in accordance with Article 87(2), and the protection and preservation of the marine environment in Part XII of the LOSC.
[115] Articles 86 and 87, LOSC.

State will be able to explore and exploit all the resources available there without restrictions.[116] From a wider perspective, it will be possible to make use of the biological natural resources on the high seas to the extent that it is compatible with the provisions of the LOS Convention.

There are several factors that must be considered before an alternative regime for a beneficial utilization of MRGs in ABNJ can be implemented. First, it must be considered that areas outside national jurisdiction are far from the coast and are often very deep. This means that the areas have been explored to a limited extent, which makes it more difficult to guarantee successful exploration and utilization in advance than it would be closer to the coast. As there is limited knowledge about the ecosystem in ABNJ, it could present problems when the potential extent of damage is to be assessed against the potential extent of profit.

Second, there are still quite few pharmaceutical products derived from marine organisms that are currently on the market. [117] Most of them are based on genetic material from within national jurisdiction or species found both inside and outside national jurisdiction.[118] For this reason, it has been uncertainty related to whether there will be future opportunities to form commercial products based on genetic resources. However, recent research has shown interesting findings and potential monetary benefits associated with MGRs.[119]

As part of the summary after the 2006 Ad Hoc open informal Working Group meeting, the importance of an extended legal framework relating to activities undertaken in the Area outside national jurisdiction was expressed. [120] In that context, it was stated that a further discussion regarding the framework for biological diversity and marine genetic resources is considered necessary. It was also considered necessary to confirm which tools and

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[116] As long as due regard is given to the rights of other states under Article 87(2).
[117] A. Broggiato et al., *supra* note 50, p. 23. With further reference to T. Greiber, *Types of benefits and benefit sharing*, IUCN information papers for the intersessional workshop on marine genetic resources in ABNJ, IUCN Environmental Law Center, Bonn (2013) 29–37, p. 32; See also M. Jaspar et al., 'The Marine Biodiscovery Pipeline and Ocean Medicines of Tomorrow', Journal of the Marine Biological Association of the United Kingdom (2016) 96 (1), p. 151.
[118] *Ibid* A. Broggiato, p. 23. Of seven marine-derived products, six come from organisms found in the EEZs of coastal states. The last product come from a highly purified polyunsaturated fatty acid derived from a range of fish species appearing both within and beyond national jurisdiction.
[119] See J. McIntosh, 'Antibiotic resistance: What you need to know', Medical News Today (2018), available at https://www.medicalnewstoday.com/articles/283963.php, 24 August 2022.
[120] See UNGA, *supra* note 79, p. 5, para 15.

arrangements can be considered sufficient to ensure access, sustainable use, and fair benefit sharing.

4.2 The Common Heritage of Mankind

Article 136 of the LOSC states that "the Area and its resources are the common heritage of mankind". The Article refers to 'its resources' which seems to include genetic and biological resources, as well as mineral resources. The same is expressed in the preamble where it appears that "the area of the seabed and ocean floor and the subsoil thereof, beyond the limits of national jurisdiction, *as well as its resources*, are the common heritage of mankind"[121] and that activities carried out there shall benefit all mankind.

The resources found in the Area are defined as "all solid, liquid or gaseous mineral resources in situ in the Area at or beneath the seabed, including polymetallic nodules".[122] The provision operates with the wording "mineral resources" and refers primarily to non-living resources. The same understanding must be applied considering that the convention refers to "mineral" resources, when the resources are recovered from the Area.[123] For that reason, it may seem that the provisions regulating activity in the Area do not apply to living resources, such as marine genetic resources. On the other side, the Area constitutes the seabed, ocean floor and the subsoil thereof. An interpretation would be that not only resources alone, but the entire area, constitute the common heritage of all. For that reason, it can be said that all the natural components belonging to the Area should be considered common heritage, and therefore also include living resources.

As bioprospecting has mostly been carried out in areas within national jurisdiction, it is difficult to estimate to what extent bioprospecting of MGRs in the Area has been carried out by the States. The reason is that only a very few industrialized States are involved in such activity in ABNJ and no logging systems exist for this type of activity. For that reason, it is impossible to answer whether or to what extent the principle of common heritage of mankind has been applied to MGRs in the Area. Nevertheless, it seems that the application of the principle of CHM has become a preferred practice between States and has prevented different

[121] Emphasis added.
[122] Article 133(a), LOSC.
[123] Article 133(b), LOSC

interpretation issues.[124] Uncertainties, on the other hand, are linked to which practice should apply to bioprospecting in the Area. Although there exist legitimate arguments for different interpretations, these do not contribute to clarification.[125] What is clear, however, is that the disagreement around the topic can hardly be resolved solely by an interpretation of the LOS Convention.

In order to understand how the convention should be interpreted, it may be useful to look at the background of its adoption. When the convention was developed, the focus was on the mineral resources in the Area, while living resources were excluded to the extent that they did not receive a direct reference in the convention.[126] Even though the LOSC was adopted at a time before marine genetic resources were discovered, it can still be argued that such resources would have been included if there was knowledge of them at the time. It is difficult to imagine that genetic resources located in the Area would not have been considered if the convention was adopted in a later period.

It is reasonable to believe that an actual implementation of provisions regarding utilization of MGRs would have been preferred if sufficient knowledge about genetic resources in ABNJ had been available at the time of adoption. This approach is also supported by the fact that the LOSC is a dynamic and evolutionary legal instrument[127], and practices with an open and general wording.

At the contrary, some States, including Russia, the United States and Japan, have argued that MGRs falls under the "freedom of the seas" regime found in Part VII of the LOSC.[128] This approach assumes that there is no legal regime for bioprospecting activities in the Area and that the "common heritage of mankind" does not apply to biological resources in the sea column and on the seabed.

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[124] See inter alia the Statement on behalf of the Group of the Group of 77 and China at the Ad Hoc Open-ended Informal Working Group to study issues relating to the conservation and sustainable use of marine biological diversity beyond areas of national jurisdiction (2011), available at http://www.g77.org/statement/getstatement.php?id=110531 12 August 2022.
[125] See e.g. T. Scovazzi, 'The Concept of Common Heritage of Mankind and the Genetic Resources of the Seabed beyond the Limits of National Jurisdiction', Agenda Internacional 25 (2007), p. 11-12.
[126] T. Scovazzi, *supra* note 84, p. 2.
[127] *Ibid.*
[128] Art. 87, 1982 LOSC.

Additionally, some States have expressed their opinion that marine genetic resources in ABNJ constituted the common heritage of mankind.[129] In that sense, reference was made to Article 140 of the LOSC, which states that the activities carried out in the Area must be carried out with *respect for humanity*, with an extended focus on the consideration of developing States, but *with regard to present and future generations*.[130] Similarly, no State can claim the Area or exercise sovereignty over it. The Area and its resources are to be used solely for peaceful purposes with regard to all humankind, regardless of the states' geographical location. It is thus the ISA which shall ensure a fair sharing of the financial and other economic benefits linked to activities carried out in the Area.[131]

It must be assumed that a safe and fair sharing of MGRs in areas outside national jurisdiction is to the benefit of all mankind. At the same time, such an approach helps to ensure a more solidary and equitable economic stability of the international community. As a result, developing States will be safeguarded, which includes not only underdeveloped coastal States, but also landlocked developing States, geographically difficult States and low-income States.[132]

It may seem that developing States prefer the common heritage of mankind approach. Regardless, one must look at the basis behind the principle. The principle, which is now legally established, assumes that specific localities must belong to all of humanity. The resources must be available for the benefit of all, considering the interests of future generations and developing States. Hence, developing States is assured that resources are and will be available in the future, as they continue to grow. The principle also contributes to a more solidary utilization process where developed States takes due regard to the needs of the entire international community.

[129] R. Blasiak et al., *supra* note 60, p. 4.
[130] UNGA, *supra* note 25, Preamble.
[131] Article 140(2), LOSC.
[132] UNGA, *supra* note 25, Article 7(b).

5 Access and benefit sharing

Once it has been determined whether and how MGRs may be utilized, the assessment further depends on to which extent those resources shall be shared in order to satisfy the requirement for equal beneficial sharing. One of the main challenges arising from the BBNJ negotiations is the question of "access and benefit sharing".[133] In that context, it has been expressed that an access and benefit sharing regime (ABS regime) is necessary to regulate the utilization of MGRs in ABNJ. [134] However, this appears to be easier said than done, as disagreement has arisen over the need to establish such a regime.[135] This issue is probably the most complex and is likely to be one of the more controversial aspects of the negotiation. The further assessment will therefore include a discussion of this issue.

5.1 The legal concept

In several contexts, reference has been made about sharing of benefits under the UNGA.[136] Nevertheless, lack of definition exists regarding "access" to MGRs, which must be considered an important element of the ongoing negotiation. The LOSC remains silent in this regard. The CBD, on the other hand, facilitates an ABS regime, but still does not operate with a clear definition of what lies within the term.

A linguistic understanding of "access" must be understood as an opportunity to "make use of". If the access is not restrictive in any sense, it will be insignificant where and how it is utilized. In other words, access to MGRs will be available *in situ*, *ex situ* and *in silico.* Access in situ is the collection of genetic material carried out in the natural environment of marine organisms. Access ex situ, on the other hand, is the collection of genetic material carried out outside the natural environment of the resource. Finally, in silico access is direct access to genetic data, where marine organisms can be transferred to a computer.[137] The exploitation from MGRs can result in either commercial or non-commercial benefits. From the moment such benefits are harvested and sampled, it can more or less be transferred to other parties.

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[133] UNGA *supra* note 9, p. 3, para. 2.
[134] Chair's non-paper on the different positions of the States within the BBNJ negotiations, PrepCom p. 21-33, and from p. 24.
[135] UNGA, PrepCom report, supra note 14, p. 17.
[136] Chair's non paper, *supra* note 134, p. 24-27.
[137] A. Broggiato, *supra* note 50, p. 14.

Existing laws and regulations aim to establish systems and guidelines for ABS, as well as facilitate a fair sharing of benefits that are derived from genetic resources, so far without success. If this can be managed with time the balance between the interests of all participants is ensured when utilizing the resources.[138]

5.2 Defining developing States

There is an existing ambiguity as to what falls within the concept of "developing State". The term is somewhat applied by scholars, but still lacks a clear definition. The Human Development Index (HDI) is a metric used by the United Nation to determine whether a State is 'developing'.[139] The HDI measures the development of a State based on three dimension indexes; the life expectancy index,[140] the education index[141] and the gross national income (GNI) index.[142] The World Bank classifies States as low-income economies, based on the World Bank Atlas method, if the GNI of 2021 is of $1,085 or less.[143] According to the International Monetary Fund (IMF) for sustainable growth and prosperity[144] there are 152 developing countries in the world.[145]

A more general approach implies that the difference between developing States and developed States will be determined on the basis of economic and industrial factors, as well as health and life expectancy.

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[138] The Secretariat of the Convention on Biological Diversity, 'Convention on Biological Diversity: ABS, Introduction to access and benefit-sharing', Factsheets in the ABS series (2011), p. 3, available at http://www.cbd.int/abs/infokit/brochure-en.pdf 6 August 2022.
[139] Human Development Reports, *Human Development Index (HDI)*, available at https://hdr.undp.org/data-center/human-development-index?utm_source=EN&utm_medium=GSR&utm_content=US_UNDP_PaidSearch_Brand_English&utm_campaign=CENTRAL&c_src=CENTRAL&c_src2=GSR&gclid=Cj0KCQjw9ZGYBhCEARIsAEUXITX8jQqTebXqWBua6gGRlJzsMB0cqIszVpzp4yHQC_yicyQewsqP5GsaAqtGEALw_wcB#/indicies/HDI 23.08.2022.
[140] Assessed by life expectancy at birth.
[141] Measures by mean of years of schooling for adult aged 25+ and expected year of schooling for children of school entering age.
[142] Measured by gross national income per capita.
[143] The World Bank, *World Bank Country and Lending Groups*, available at https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups 24 August 2022.
[144] International Monetary Fund, 'What is the IMF?', available at https://www.imf.org/en/About/Factsheets/IMF-at-a-Glance 24 August 2022.
[145] World Data, *Developing Countries*, available at https://www.worlddata.info/developing-countries.php 24 August 2022.

5.3 An ABS regime – a necessity

In the resolution text of The United Nation General Assembly it was proposed that the ILBI negotiations should address "marine genetic resources including the question of sharing benefits".[146] In this context, it was stated that access to such resources must be included in the package deal in order to make it feasible. Practically speaking, the implementation of an ABS regime has faced several challenges. One difficulty has been the absence of politically feasible approaches in individual countries.[147]

The system of benefit sharing is already an integral part of the regulation of national jurisdictional areas. Article 193 of the LOSC expresses States' sovereignty over natural resources in areas within national jurisdiction. This type of system does not exist in areas outside national jurisdiction, and the following question is whether there is a need to establish a similar system for ABNJ. During the BBNJ negotiations, issues surrounding ABS have been a debated topic. In that context, there has been some disagreement between States about the details of an ABS regime, or most importantly, whether there is a need for such a regime at all. If we ignore the conflicting arguments, the need for a fair ABS regime in ABNJ can be assessed, on the basis of international law.

Gaute Voigt-Hansen has tried to shed light on this question based on national and international instruments. [148] In that context, it is expressed that rules for ABS have been developed in areas within national jurisdiction but have not been developed in ABNJ. This is problematic, especially considering that the LOSC does not specifically regulate MGRs. As the Nagoya Protocol suggests, the authority to regulate access to MGRs in ABNJ will rest with the "provider states". To avoid such an unbalanced practice, a separate ABS regime should be incorporated through an agreement.

As there are potential great values associated with MGR in ABNJ, future competition for resources may create a huge gap between States' industrial dominance, as well as a development difference, and differences between present and future generations. As of today,

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[146] UNGA, *supra* note 12, p. 2, [2].
[147] R. Wynberg, *Marine Genetic Resources and Bioprospecting in the Western Indian Ocean,* Regional State of the Coast Report (2016), p. 413.
[148] Gaute Voigt-Hanssen, "Light" and "heavy" options for benefit-sharing in the context of the United Nations Convention on the Law of the Sea.' Chapter 10. First published (2018) 33 IJMCL 683–705.

a limited number of States have the economic or technical prerequisites needed to develop and utilize genetic resources in these areas. In that sense, the principle of the CHM or freedom of the high seas does not impose any restrictions on States other than to act in due regard.

5.3.1 Monetary and non-monetary benefits

There are different approaches related to the question of benefit sharing. The first approach implies that benefit sharing should cover both monetary and non-monetary benefits. The second, more limited approach, focuses only on non-monetary benefits. This approach is supported by the EU and its member states. In that context, they have argued that "With regard to the questions on the sharing of benefits, […] the characteristics of living organisms are distinct and markedly different from those of minerals. In particular, while the latter have a monetary value already at the exploration phase, marine genetic resources possess only potential value. […] Moreover, in a vast majority of cases research on MGRs will not generate a product or any financial benefit."[149] However, it is stated in the 2017 Chair's non-paper under the LOS Convention that "benefits should be both monetary and non-monetary".[150]

At the same time, in the previous BBNJ draft text, two different approaches have been proposed on this point. It is stated that benefits arising from the collection of MGRs of ABNJ shall be shared in a fair and equitable manner. Furthermore, two alternatives are expressed, where either 1) the benefits are shared in its entirety or 2) monetary and non-monetary benefits are hared separately.[151] The draft text provides no answer as it appears unclear between the negotiating parties how the benefit sharing should be structured and distributed.

Nevertheless, marine genetic resources used for other than food purposes have increased.[152] In certain fields of application, low yield, long development, and investment time are expected before a product can effectively be commercialized. For example, it is estimated that a time frame of 10 to 15 years until a new drug is developed, followed by further research and

[149] Written submission of the EU and Its Member States (EU), Marine Genetic Resources, including questions on the sharing of benefits (22 February 2017), 3.
[150] Chair's Non-Paper, *supra* note 134, para. 3.2.3.
[151] UNGA, *supra* note 25, Article 11, Option I: [3] and Option II: [3], p. 12.
[152] J. M. Arrieta et al., *supra* note 34, p. 18318.

testing. [153] Such developments can be very expensive and can cost up to several million dollars. In addition, it turns out that 9 out of 10 drugs in the US fail when it comes to the human testing stage.[154] For that matter, these figures are not unique for the US compared to other States that rely on research development. However, examination in other fields of application are usually much less time demanding. In addition, the chance of success is expected to increase, and the time needed to develop biotechnologies continues to decrease as molecular tools and associated technologies improve exponentially.[155]

The deep-water resources could be of great value as a commercial commodity, especially when carrying out health measures, industrial measures and bio remedial measures.[156] In a pharmaceutical context, the use of organisms from the deep seabed has been effective in the development and treatments for malaria, tuberculosis and HIV/AIDS, diseases that are still common and very widespread in some States[157], especially in developing States.

Likewise, it may seem that the commercial benefits associated with bioprospecting activities will be quite profitable in a long term.[158]. In July of this year, the global market for marine biotechnology was estimated to fall at $6 billion by the end of 2022. [159] Furthermore, it was expected to increase by $2.4 billion by 2026, which will result in a total market of $8.4 billion dollars over the next four years.

The expected benefits can not necessarily be deduced directly after harvesting the resources. In order to achieve a financial dividend, States are dependent on further research, a process that is both time-consuming and expensive. There are too many risks associated with scientific research of MGRs that developing States are not willing to sacrifice their capital for

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[153] G. A.Van Norman, 'Drugs, Devices, and the FDA: Part one: An Overview of Approval Processes for Drugs', JACC: Basic to Translational Science (2016), p. 171.
[154] *Ibid.*
[155] J. M. Arrieta, *supra* note 34, p. 18321.
[156] *Ibid*, p. 18320.
[157] Report from the United Nations Development Program (UNDP), '*The New Gold Rush: Bioprospecting',* June 30, 2022.
[158] P. Bhatia and Archana Chugh, *Role of marine bioprospecting contracts in developing access and benefit sharing mechanisms for marine traditional knowledge holders in the pharmaceutical industry*, Global Ecology and Conservation 3 (2015-2017), p. 185.
[159] A new market study published by Global Industry Analysts Inc., (GIA). Commented by PRNewswire, San Francisco, July 4, 2022.

the potential benefits that can be derived from it. In other words, the economic benefits that can be derived from MGRs cannot be guaranteed.

Recently, a practice has emerged where various actors have used the patenting of various innovations from MGRs.[160] Such patenting can bring great financial benefits for those willing to invest in them. Still private actors only represent the largest industrial States and create a marked difference between individual States' monetary and non-monetary advantages. Studies have shown that as much as 90% of patents can be linked to ten different industrial States, with Japan, the USA and Germany at the top with an ownership of over 70%.[161] Dramatic asymmetries have been created in patent registration, resulting in industrial dominance for developed States.[162] Hence, developed States and private actors holds an important role as a participant in scientific research development, technological development, scientific transfer development, and developing access and benefit sharing mechanisms.

The existing situation currently consists of uneven access to MGRs in ABNJ.[163] This brings us back to the main purpose behind a benefit sharing regime. The process will help to correct the inequalities between the States, and thus ensure international balance and symmetry. The purpose of the regulations must therefore be clarified by stating that this is not a matter of exchanging benefits, but rather sharing of benefits. The regulations must also help to create a clear distinction between these concepts.

A clear distinction also exists between the availability of MGRs for developing and developed States. The degree of availability does not solely depend on whether there is actually and theoretically access, but on whether it is practically possible to gain access to the resources. Practical challenges creates a distinction between the various States wishing to take part in activities related to MGRs in ABNJ. Most often, developing States have reduced access to technical aids or other research-based aids. States facing such limitation will be able to possess, to a reduces extent, the necessary or sufficient biological technology remedies.

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[160] See Robert Blasiak et al., *supra* note 60.
[161] M. Vierros et al., 'Who Owns the Oceans? Policy Issues Surrounding Marine Genetic Resources', Association for the Sciences of Limnology and Oceanography (2016), p. 3.
[162] R. Blasiak et al., *supra* note 60, p. 3.
[163] M. Vierros er al., *supra* note 161, p. 3.

Overall, these challenges have led to increasing discussion of capacity building and technology transfer in the ILBI negotiations, especially with regard to developing States.[164]

5.3.2 Technical aids

In order to achieve a successful utilization process, there are several stages that must be fulfilled. First, one is dependent on technology that makes it possible to reach the extreme environments found on the seabed. Secondly, one must make sure that the organisms that are sampled will survive the process from of being harvested on the seabed, until reaching the surface. Such technology must be considered advanced.

The process of scientific exploitation of MGRs requires more than just a genuine commitment to research. It requires high investment early in the process. It is not until the final steps of the process is completed that commercial benefits may be taken advantage of. Hence, actors taking part of the process must therefore have a certain scope of capital. Despite the fact that research and sampling of organisms at coastal level does not necessarily entail significant costs, the same activities on the open sea, on the seabed and in the subsoil cannot be compared.

In order to be able to explore the organisms found in the deep sea, one is dependent on sophisticated technology, oceanographic submersibles and advanced laboratory equipment.[165] For example, such environments require advanced research vessels and submersible underwater vessels, such as ROVs (remote operated vehicles), AUVs (autonomous underwater vehicles) and HOVs (human-occupied vehicles).[166] Vessels of this type are not only expensive to purchase, but also to operate. Such specific vessels and equipment exist globally only in limited numbers and are mostly applied by rich nations.[167] Operations involving the use of such vessels is be estimated to cost as much as $25,000 USD per day.[168]

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[164] UNGA *supra* note 9, p. 3 para. 2.

[165] M. Vierros er al., *supra* note 161, p. 3.
[166] Alex D. Rogers, et al., *supra* note 55, p. 5.
[167] *Ibid*, p. 3.
[168] S. Arnaud-Haond et al., 'Use of Marine Genetic Resources', The First Global Integrated Marine Assessment: World Ocean Assessment I, United Nations, Division for Ocean Affairs and the Law of the Sea, Office for Legal Affairs, Cambridge University Press (2017), Chapter 29, p. 454.

The capacity dissimilarities between States is also evident within the research fields, and applies to all types of research, whether it is carried out in situ, ex situ or in silico.

In other words, there are major differences when it comes to research capacity between States, both economically, scientifically, and technologically, especially between developing States in the south and developing States in the north. This appears in reports from the United Nations First Integrated Marine assessment on the Conservation and Sustainable use of Marine Biological Diversity of Areas Beyond National Jurisdiction.[169]

It must be assumed that the necessary technology for scientific research of genetic resources on the deep seabed includes developed vessels equipped with advanced technology and equipment, remotely controlled underwater craft, equipment for sampling, as well as other technology linked to the commercialization process. Nevertheless, few States have access to this type of technological aid.[170]

Developing States either have limited or lacked opportunity to harvest MGRs to the same degree as developed States. Hence, a solution where it is possible to share the resources are preferred by developing States. If so, technological aids that are necessary for researching the seabed can be made available through public and private research institutions. Moreover, protection of MGR and securing access and benefit sharing requires efforts from public and private actors. In addition, institutional capacity and recognition from public authorities, institutions and local consumers should be required as well.

5.3.3 Scientific research – potential issues

Despite the fact that there are arguments which advocated the need for an ABS regime, conflict regarding scientific research can arise. In that matter, it would be optimal to be able to do research unimpeded. Especially in relation to the economic benefits behind the exploitation of the genetic resources, it is preferable that scientists are allowed to operate independently, rather than being bound by a regime that places limits on research activities.

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[169] M. Banks, et al., *Use of Marine Genetic Resources*, The First Global Integrated Marine Assessment, United Nations General Assembly – A Regular Process for Global Reporting and Assessment of the State of the Marine Environment, including Socio-economic Aspects, United Nations, New York, Cambridge University Press (2017), Chapter 29, p.14

[170] CBD Doc, UNEP/CBD/SBSTTA/11/11 (22 July 2005), paras 12 and 13.

Establishing an ABS regime could result in such a restriction, and scientists may therefore be sceptical of such a solution.

The regime for MSR can be derived from Part XIII of the LOSC. Article 238 states that "All States, irrespective of their geographical location, and competent international organizations have the right to conduct marine scientific research subject to the rights and duties of other States as provided for in this Convention". Scientific research in marine areas is considered one of the freedoms of the high seas.[171]

The same right exists in the Area under Part XI, where it is stated in article 254 that “All States, irrespective of their geographical location, and competent international organizations have the right, in conformity with the provisions of Part XI, to conduct marine scientific research in the Area”.

For that reason, it is clear that every state has the right to conduct marine scientific research in ABNJ. What stands out from this approach is how states should operate with respect to each other. Marine scientific research carried out in the Area falls under the principle of CHM and must therefore benefit all of humanity. This involves the publication of research data and the transfer of scientific knowledge.

On the other hand, as mentioned, MSR in ABNJ falls within the principle of freedom on the high seas. This leads to the fact that different principles are applied differently depending on the depth of the research activity. The challenge is linked to the fact that there are not the same requirements for access and benefit sharing in the water column as in the Area. For that reason, principles of the freedom of the high seas hamper a potential ABS regime. A possible solution could be to establish and apply principles about CHM also in the water column.

Nevertheless, it cannot be ignored that marine genetic research not only benefits states that directly carry out research, but also benefits other States that have a more modest role. For that reason, it would be advantageous to promote research, rather to carry out restrictions. In order to be able to make maximum use of MGRs, future research is dependent on legal certainty and financial income. At the same time, due consideration must be given to States with a different starting point. An ABS regime aims to reconcile all considerations and will

[171] Article 87(1)(f), LOSC.

therefore represent a framework that both safeguards the interests of developing States while promoting marine research. Hence, a future ABS regime may be able to create the foundation behind fairness and equal distribution of resources in ABNJ, without hampering scientific research.

6 Future prospects

The increased interest in genetic resources suggests that sooner or later there will arise a qualified regime dealing with ABNJ, under the auspices of the LOSC.
A possible solution is to initially design a framework that consists of a general character, where over time it may be possible to develop more specific provisions, on the basis of a practical and research-based experience. On one hand, if the framework is to function as a "trial scheme", it is most appropriate to give the instrument a character of being "soft law". Hence, the legal transmission will be done smoothly, at the same time as it will be indicative for all States.

At the same time, the new regime should be built on the LOS Convention and its objectives. The new ILBI should also be able to specify unclear concepts, including the consideration of "due regard" when States operate on the high seas. It should also try to close the remaining gaps and set certain criterias for the various activities, which may prevent conflict or misunderstandings between State parties.

Further, the new regime should take into consideration that resources in the ocean are limited, while keeping in mind that extinction or overexploitation is a global concern. The consideration is aimed to safeguard future generations, as well as showing due consideration for developing States. The aim must be to balance the principle of sustainable development and economic progress, and to meet the needs of populations that faces the greatest economic, technological and industrial challenges.

This approach can be seen in accordance with the general objective behind the negotiation of a new international legally binding framework. It expresses that "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 and further international

cooperation and coordination".[172] In order for States to achieve the objective of the agreement they shall be guided by the principle of equity or the fair and equitable sharing of benefits.[173]

6.1 Clarification of the legal principles and terms

The PrepCom report notes: "With regard to the common heritage of mankind and the freedom of the high seas, further discussions are required"[174]

One of the main challenges with the new implementation agreement is which legal principles are applicable to MGRs in ABNJ. The limitation is linked to the fact that any regime linked to access and sharing of MGRs must be established in accordance with the LOSC.[175]
Since before and during the establishment of the 1982 LOS Convention, international law has changed in step with economic, technological, and industrial development. Until recently, the legal principles has been given an independent and isolated role in the international legal system and has guided each individual State towards the conservation and sustainable use of marine biological diversity. It may be time to unify and confirm the legal terms and principles under ILBI. A confirmation of the principles could contribute to an improved and solid collective responsibility regarding the biological diversity in ABNJ, and that States operates with the same minimum standards.

The purpose behind defining the various legal terms is to prevent unequivocal formulations that lead to uncertainty for users of the law, but rather to promote a balanced practice. Different interpretations can lead to asymmetry in how the legislation is applied and may result in conflict. Nevertheless, it can be disadvantageous to operate with strict legal definitions as it can inhibit the inclusion of future interpretations. How legal terms and principles should be interpreted and understood is not rarely up for discussion. The fundamental question is whether the formulations should maintain predictability or flexibility. In the negotiation of ILBI, it may be beneficial to polish the legal terms, while maintaining a certain flexibility. This approach is consistent with the LOSC's dynamic system. The same

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[172] UNGA, *supra* note 25, Article 2, p. 7. Emphasis added.
[173] *Ibid*, Article 5(c), see option 1 and 2, p. 8.
[174] UNGA, PrepCom, *supra* note 13 , p. 17; Preparatory Committee established by General Assembly resolution 69/292, above n 5, 17, Marine Policy 99 (2019) 21–29
[175] See e.g., UNGA A/RES/69/292 (19 June 2015).

applies to the definition of MGRs in ABNJ, whether and in what way they can be utilized, and whether they must be shared with other nations.[176] The new implementation agreement can build upon the vague wording in the LOSC and CBD. In any case, focus should be directed towards a clearer definition of MGRs.

For the future, it will be of great interest to know whether the new agreement will apply to MGRs on the high sea and the Area, or just the Area. The issue has proven to be very prominent during the negotiation and has been up to discussion since the beginning of its origin.[177] Neither the BBNJ Working Group nor the PrepCom has managed to preserve the question. A decision on this question will be of great relevance for the future activity and utilization of MGRs in ABNJ. An alternative solution would be to apply the principles of freedom of the sea for genetic resources that reside in the water column, and the principle of CHM for genetic resources that reside in the Area. The problem behind such a solution arises for MGRs that move horizontally and vertically.[178] This means that they can move between different deep sea levels, but also from areas outside national jurisdiction to areas within national jurisdiction. This makes it difficult to carry out a fair and equal sharing of the benefits of the resources. If the resources are harvested within a national area of jurisdiction, the State can distribute resources as it wishes, according to the CBD and Nagoya. If the resources are harvested in ABNJ, there are no provisions regulating which benefit sharing conditions shall apply.[179]

A solution to this problem, however, would be to ascertain which part of the area outside national jurisdiction the individual organisms belong to in order to avoid future doubts.[180] Another possibility is to assess whether MGRs, which live most of their lives in contact with the seabed, fall under the regime of “sedentary species” if one applies an analogical interpretation.[181] This question is not to be considered further, but is intended to illustrate the many unresolved questions that remain before a final agreement is reached.

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[176] M. Vierros et al.,*supra* note 161, p. 5.
[177] UNGA, *supra* note 79, p. 5 para. 15.
[178] A. Broggiato et al., *supra* note 36, p. 179.
[179] M.Vierros et al.,*supra* note 161, p. 3.
[180] E.g., by defining "seabed", "ocean floor", "subsoil" and "water column", as these are currently undefined by the LOSC.
[181] Article 77(4), LOSC.

A possible solution has been expressed in the previous BBNJ draft text. It is proposed that "[i]n cases where marine genetic resources of areas beyond national jurisdiction are also found in areas within national jurisdiction [...] shall be conducted with due regard for the rights and legitimate interests of any coastal State in areas within the national jurisdiction of which such resources are found."[182] This proposal answers the uncertainty surrounding species that move horizontally between ocean boundaries.

It has been stated that the LOS convention "sets out the legal framework within which all activities in the ocean and seas must be carried out".[183] This statement is nevertheless only partially true as the law is basically a product of the time of its adoption.[184] The law of the sea has become a subject to a process of natural development. Although, it cannot be required that the convention shall regulate all legal issues that have arisen after its adoption.

As of today, one thing is clear. The principle of the freedom of the seas results in an unchanged practice that maintains the unrestricted freedom of States, with the absence of specific requirements for benefit sharing.[185] Conversely, principles of CHM prevent inequalities and contribute to a greater degree of justice between developing and developed States.[186] A clarification of how the principles are to be applied in practice will have enormous significance for the establishment and implementation of a benefit sharing regime.

Although Conventions and treaties are indicative, there is still reticence around questions related to the biological process, and what is required to ensure ABS. This leads to a large degree of uncertainty for participating companies, researchers and other participants as to when the obligation to share benefits arises. Despite the fact that Conventions and treaties operates with narrow definitions of terms, they still have an influencing force when a new regime for marine genetic resources in ABNJ is to be adopted. Parts of the convention already deal with several fields that directly or indirectly include the exploration and utilization of marine genetic resources, such as marine scientific research, environmental concerns, and cultural conservation.[187]

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[182] UNGA, *supra* note 25, Article 9, [2], p. 10.
[183] See UNGA, A/RES62/215 (22 December 2007).
[184] T. Scovazzi, *supra* note 84, p. 2.
[185] The freedom of exploiting the living resources on the high seas, Article 87, LOSC.
[186] Articles 140(2), 142(2) and 143(3)(c), LOSC
[187] Article 143, 145 and 149.

6.2 Facilitation of international cooperation

In order to strengthen knowledge about biological diversity in ABNJ, international cooperation is crucial. The final agreement may contribute to strengthening international cooperation by implementing Articles 242 and 243 of the LOSC. This approach has been tried to be implemented through the previous BBNJ draft text where it is stated that "Parties shall promote international cooperation in marine scientific research and in the development and transfer of marine technology consistent with the convention in support of the objective of this Agreement."[188] Hence, research groups and other relevant actors should be invited to participate in global cooperation.

In order to ensure extensive knowledge of the biological diversity in ABNJ, diversity depends on international support for existing and future examination. Hence, the examination will help to close the gaps for scientific knowledge about biological diversity, especially with regard to the most demanding areas. An increasing sharing of knowledge may be able to contribute to political engagement, which in turn could lead to increased research capacity and the transfer of technology. As an additional factor, a opportunity to achieve international financial cooperation can be decisive in ensuring access and equitable benefit sharing. As already mentioned, many of the current challenges are primarily linked to economic and financial differences and limitations.

Furthermore, Part XIII of the LOSC asserts that "States and competent international organizations shall […] promote international co-operation in marine scientific research for peaceful purposes".[189] The same approach is expressed in Article 143, which promotes cooperation related to scientific research carried out in the Area.[190] International cooperation also requires the implementation of the best possible research practices between States, in order to contribute to increased capacity building.[191] Another important element is that the sharing of marine technology increases the opportunity for developing States to participate in research.

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[188] UNGA, *supra* note 25, Article 6, [3], p. 8.
[189] Article 242(1).
[190] T. Scovazzi, *supra* note 84, p. 2.
[191] EU Regulation 511/2014 expresses that the States maintain their obligations under the EU's ABS regulation by exercising "best practice" according to Article 8. In this context, there is a requirement that procedures, tools or mechanisms must be effectively implemented when utilizing marine genetic resources.

One possible solution has been to establish multilateral benefit-sharing funds.[192] The United Nations Development Program (UNDP), in collaboration with the Nagoya Protocol Implementation Fund (NPIF) and the Global Environment Facility (GEF), has offered financial support to public, private and local actors since 2011.[193] The financial support will primarily contribute to developing national access and benefit sharing regime (ABS-regime), and secure, develop and utilize MGR. Hence, financial contribution has been applied to develop new agricultural products, hygiene supplements, pharmaceutical products and products for consumption.

During the BBNJ negotiations, developing States have expressed that MGRs derived from ABNJ is a topic of top priority.[194] As there is a lack of participation from representatives from developing States, especially small developing States located on islands, it makes it difficult for fair participation during the process.[195] Combined with the low level of legal and technical expertise, the progress of the negotiations has been greatly affected and delayed.[196] Future prospects depends on increased participation and commitment to capacity building among States. It is mentioned in this context that they are also free to make use of the voluntary fund which was primarily created to support developing States in their participation during the negotiations.[197]

Despite the fact that the financial challenge has been tried to be solved, there will always be room for improvement and development. For example, over time, funders can build up greater capital as States becomes economically stronger, and the scheme can therefore function as an ongoing financial cycle. As of today, a large part of the progression consists of national measures and methods, which leads to individual development. Such an approach prevents a collective effectiveness and the emergence of a global ABS framework and cooperation.

Even in the absence of a special regime for MGRs, it still seems as the convention has tried

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[192] Proposed by the African Group at the third Prep Com.
[193] UNDP, *supra* note 156.
[194] R. Blasiak et al., *supra* note 60, p. 4. With further reference to Robert Blasiak et al., Negotiating the use of biodiversity in marine areas beyond national jurisdiction. *Front. Mar. Sci.* 3, 224 (2016).
[195] *Ibid.*
[196] R. Blasiak et al., The role of NGOs in negotiating the use of biodiversity in marine areas beyond national jurisdiction. *Mar. Policy* 81, 1–8 (2017).
[197] UNGA, *supra* note 9, p. 3, para. 5.

to make sure that future occurrences of resources or activities carried out in the Area should lead to a fair and equal sharing between the States. In that case, one is dependent on effective global cooperation arrangements where the principle of fair and equitable benefit sharing is fulfilled in its total function. The arrangement will therefore be in accordance with the objectives set in Article 1 of the CBD.[198] It is clear that the LOSC has included several provisions that aim to promote and develop international cooperation between the participants at sea. In order to establish a fulfilling ABS regime, as well as supplementing additional mechanisms and principles related to MSR and bioprospecting, it may be possible to build on the already existing legislation under the LOSC.

6.3 The application of the MSR regime

For questions related to States' right to access and utilization of MGRs, the regulations for marine scientific research may be applicable. The regulations appear in Part XIII of the LOSC and are also relevant with regard to developing States. All states can exercise the right to conduct research, both on the high seas and in the Area, as long as it is carried out in accordance with the convention,[199] with due regard for other states[200] and for peaceful purposes.[201] The assessment further depends on whether the rights in Part XIII on marine scientific research are applied to bioprospecting of MGRs.

Part XIII of the Convention does not specify which areas the provisions are applying to[202], which draws in the direction that both areas within and outside national jurisdiction are covered. Some of the provisions aims to promote international cooperation between States. The co-operation is primarily related to the dissemination of information and publication, especially for the benefit of developing States.[203] An obligations follows for the Member States to collaborate and create constructive relationships around the implementation of

[198] Mainly the conservation of biological diversity, sustainable use, and fair and equal sharing of benefits; T. Scovazzi, *supra* note 84, p. 1.
[199] Article 238, LOSC.
[200] Article 87(2), LOSC.
[201] Article 240, LOSC.
[202] Attention is drawn to some exceptions, such as in Article 56 where the coastal state has exclusive rights, jurisdiction and duties relating to living and non-living resources in the exclusive economic zone.
[203] Article 242–244 LOSC.

scientific research at sea. The collaboration must take place in the light of the fact that maritime research must provide mutual benefit.[204]

As there is no clear legal definition of what is meant by marine scientific research, neither in the LOSC nor other conventions, a natural interpretation of the term will be understood as a process where systematic and methodical procedures are carried out in an analysis or investigation. "Marine" scientific research points in the direction of the process being carried out in the ocean area. Legal researchers have used the definition "any form of scientific investigation, fundamental or applied, concerned with the marine environment, i.e. that has the marine environment as its object".[205] This definition expresses scientific research of various kinds, but with the main focus on the marine environment.

To understand the content of the MSR, the purpose behind the convention can be indicative. The provision draws in the direction that all types of research are included, as long as they benefit a common interest and humanity as a whole. At the same time, Articles 246 and 252, which regulate the coastal state's authority to grant consent for research in the EEZ and on the continental shelf, refers to applied and pure research. These provisions seems to distinguish between commercial research for the benefit of all humanity, and research that benefits each individual State. There is no clear answer as to whether MSR in ABNJ applies to both applied and pure research. For that reason, the further question depends on whether the convention regulates MSR that are for commercial purposes or not.

Earlier in this thesis, the activity 'bioprospecting' was mentioned and defined. Although there is no universal definition of what is included in this type of research,[206] The UN Secretary-General has nevertheless stated that bioprospecting is "the search for biological compounds of actual or potential value to various applications, in particular commercial applications".[207]

This type of activity can be considered to fall under the LOS Convention' regime for marine scientific research. Conversely, it may be unfortunate to create a distinction between MSR

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[204] Article 242(1) LOSC.
[205] P. Birnie, 'Law of the Sea and Ocean Resources: Implications for Marine Scientific Research' 10 International Journal of Marine and Coastal Law (1995), p. 242.
[206] D. Leary et al., 'Marine genetic resources: A review of scientific and commercial interest', Marine Policy 33 (2009), p. 184.
[207] United Nations Secretary-General, 'Oceans and the Law of the Sea: Report of the Secretary-General' (A/62/66, United Nations, 2007), at para. 105.

and bioprospecting, as they are linked to each other. What falls under the terms "marine scientific research" is somewhat uncertain, but article 246 operates with a distinction between two types of marine scientific research projects: (1) "to increase scientific knowledge of the marine environment for the benefit of all mankind" and (2) "of direct significance for the explorations and exploitation of natural resources, whether living or non-living".[208]

The LOS Convention distinction is understood to include research activities with the purpose of commercial exploitation of the resources, such as bioprospecting, and must therefore fall within its regime and the general formulation "marine scientific research".[209] This interpretation suggests that all steps from sampling to commercialization are included as part of bioprospecting. For that reason, it would be reasonable to believe that both applied and pure research fall under the activity.

Based on the interpretation, bioprospecting is also covered by Article 143 which states that "marine scientific research in the Area shall be carried out exclusively for peaceful purposes and for the benefit of mankind as a whole". Hence, bioprospecting falls within "marine scientific research".For those States that have already initiated bioprospecting in the Area are subject to a requirement to explain whether the prospecting is to the benefit of humankind as a whole.

6.3.1 Dissemination of scientific data and knowledge

Access to scientific data and knowledge is crucial in order to enable technology transfer between States. For this reason, the ILBI negotiations must provide a greater basis for this type of transfer. In order to be able to achieve sharing of scientific knowledge, it will be possible to facilitate open and accessible data.

All Member States under the LOS Convention shall cooperate to the extent that they ensure the publication and dissemination of information and knowledge. Article 244 (1) imposes an obligation on «States and competent international organizations shall, in accordance with this Convention, make available by publication and dissemination through appropriate channels information on proposed major programmes and their objectives as well as knowledge

[208] See paras. 3 and 5(a)
[209] T. Scovazzi, *supra* note 84, p. 2.

resulting from marine scientific research". Article 244(2) refers directly to "the flow of scientific data and information and transfer of knowledge", especially with due consideration to developing States. The wording of these provisions points in the direction that States that engage in marine scientific research should act in an inclusive manner. Such an approach will result possessing knowledge and information to developing States and future generations, which will contribute to future scientific development within research.

Release of data obtained from research on biodiversity is necessary to achieve the objectives of the CBD.[210] Release of scientific findings can be ensured by transferring knowledge and developing the necessary research tools. In this way, developing States can actively participate in scientific research on biological diversity.[211]
In order to achieve such an arrangement, public databases, information forums and other scientific forums should be created which are made available to all States, particularly with regard to developing States. An example of an instrument that has proven to be functional is the InterRidge Code of Conduct for Responsible Practices at Deep-Sea Hydrothermal Vents, which publicly shares information and data related to marine research.[212] Likewise, the LOS Convention Part XIV on the development and transfer of marine technology should be given greater attention to ensure equal participation in the exploration and exploitation of MGR in ABNJ.[213]

6.4 Establishment of an ABS regime

States and competent international organizations must actively participate in the information sharing process, by providing information on "proposed major programmes" and the objectives that accompany them. [214] The same applies to following the implementation of the research and its final results. The purpose therefore has two aspects. The first aspect is to "actively promote the flow of scientific data and information and the transfer of knowledge resulting from marine scientific research, especially to developing States".[215] The second

[210] Mainly the objective of fair and equal sharing of benefits and by appropriate transfer of relevant technologies.
[211] J. M. Arrieta et al., *supra* note 34, p. 18323.
[212] A. Broggiato et al., supra note 36, p. 180.
[213] H. Harden-Davies, Marine science and technology transfer: Can the Intergovernmental Oceanographic Commission advance governance of biodiversity beyond national jurisdiction? *Mar. Policy* 74, 260–267 (2016).
[214] Article 244(1) LOSC.
[215] Article 244(2) LOSC

aspect focuses on strengthening "autonomous marine scientific research capabilities of developing States through, *inter alia*, programs to provide adequate education and training of their technical and scientific personnel".[216] Both aspects aim to fulfil a desire for a beneficial sharing of MGRs, with particular regard to non-monetary benefits.[217]

There are several legal instruments that aim to regulate and ensure a fertile ABS regime. As already mentioned, the CBD and the Nagoya Protocol are important instruments for the regulation of the exploitation of MGRs. As there are several uncertain questions related to access and benefit sharing of MGRs in ABNJ, it may be worthwhile to look to the existing legal instruments to answer some of them.

Another relevant question is whether ILBI should include both monetary and non-monetary benefits. This is a topic that has been addressed in the debate's revised draft from 2019. [218] Article 11(2) states that "Benefits may include [monetary and] non-monetary benefits. Special emphasis should be placed on the needs of developing States and what consequences there will be if these are not to be able to make use of commercial, but also research-based benefits linked to genetic resources. The monetary benefits may be limited by being partially transferred to a common fund, which will subsequently be distributed by agreement. The non-monetary benefits are to a greater extent related to access to samples, information sharing and research material, technology transfer and capacity building.

6.4.1 Benefit sharing arrangements

During the ILBI negotiations, discussion has arisen about how the potential benefits, commercial as well as informative, should be shared fairly between the parties bounded by the regime. Some may argue in favour of promoting all associated parties, with particular regard to developing States. On the other hand, some may believe that only developing States and/or particularly vulnerable and disadvantaged States should be given priority. Either way, future generations should be emphasized.

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[216] Available results from marine scientific research and analysis in the Area must be disseminated and coordinated by the International Seabed Authority (ISA) in accordance with Article 143 of the Convention on the Law of the Sea.
[217] T. Scovazzi, *supra* note 84, p. 3.
[218] UNGA, A/CONF.232/2019/6 (17 May 2019), p. 10, Article 11(2).

Despite the fact that there are a number of procedures that can be applied when implementing the ABS regime through ILBI, there are some specific aspects that should receive attention. Among these aspects, it is primarily important that developed States act inclusively, as mentioned earlier. Subsequently, the regime should not inhibit scientific research in any way, as research is crucial to create an optimal ABS regime. Furthermore, the regime must ensure that States maintain and respect its provisions. Finally, the regime should focus on establishing arrangements that pay particular attention to underdeveloped States and their interests.

It is difficult to answer whether a regime containing the above-mentioned criterias will be considered complete in terms of access and distribution for developing States, but it will in any case help to prevent an imbalance of interests. As a result, both the interests of larger research nations, as well as the interests of less developed states, will be shielded. In order to ensure such an arrangement, it may be necessary to establish an organization or body under the LOSC with authority to monitor and enforce the various mechanisms, such as the ISA.

The BBNJ negotiation includes consideration of marine genetic resources in ABNJ, beneficial sharing and promoting scientific research. These considerations shall be assessed with regard to developing States possibility to participate in research and technology development. Among other things, the BBNJ agreement will give priority to raising the capacity of all States, in order to ensure a fair benefit of research, technology development and innovation. The challenge is primarily related to developing States, which are more dependent on such support.

6.5 The establishment of MPAs

The International Union for Conservation of Nature and Natural Resources (IUCN)[219] defines a protected area as "a clearly defined geographical space, recognized, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values.[220] In general, marine protected areas (MPAs) are understood as demarcated marine areas that consist of a special protection regime

[219] The International Union for Conservation of Nature (IUCN), created in 1948.
[220] IUCN, 2008 Guidelines; J. Day et al., "Guidelines for Applying the IUCN Protected Area Management Categories to Marine Protected Areas" (International Union for Conservation of Nature, 2012), Chapter 2, p. 8.

to preserve certain interests, such as biological, scientific and cultural interests.[221] For that reason, MPAs aims to safeguard biodiversity, protect top predators and maintain ecosystem balance, and build resilience to climate change. The establishment of MPAs in ABNJ is supported by customary international law and several global and regional treaties.[222] Nevertheless, there is no legal framework that specifically regulates the establishment of MPAs in ABNJ.

MPAs that protects both the water column and the seafloor will conserve the marine environment most effectively because of the critical role species in the column play in their ecosystem – and the reverse link between features on the seafloor and species that live above it.[223] A relevant question is whether a future instrument can contribute to ensuring that the rights and obligations incumbent on States outside national jurisdiction can be safeguarded by establishing marine protected areas (MPAs). The question can be answered by looking at previous practices and their effects.

After the "Ad-Hoc Open-Ended Informal Working Group" was established under the United Nations, issues relating to the conservation and sustainable use of marine biological diversity and genetic resources in ABNJ were to be studied. Even though regional fisheries management organizations were established, approximately two-thirds of fish stocks are either depleted or overexploited. For this reason, provision should be made for MPAs that aim to protect living organisms outside national jurisdiction.[224]

Although MPAs were historically created to conserve biodiversity and fisheries, interest in genetic resources has indicated that MPAs should be extended to include MGRs.[225] At the World Summit on Sustainable Development held in Johannesburg in 2002, agreement was expressed to establish a future global network of MPAs.[226] This was continued during the Conference of the Parties to the CBD, where necessary steps were taken to develop the

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[221] T. Scovazzi, *supra* note 84, p. 3.
[222] E.g., the International Convention for the Prevention of Pollution from Ships (MARPOL), the 1995 Protocol Concerning Specially Protected Areas and Biological Diversity in the Mediterranean, and the Convention for the Protection of the Marine Environment of the North East Atlantic (OSPAR Convention)
[223] See B.C. O'Leary and C.M. Roberts, 'The Structuring Role of Marine Life in Open Ocean Habitat: Importance to International Policy', Frontiers in Marine Science 4, no. 268 (2017).
[224] J. M. Arrieta et al., *supra* note 34, p. 18322
[225] *Ibid*, p. 18318.
[226] T. Scovazzi, *supra* note 85, p. 3.

protection of significant marine areas and criteria for establishing MPAs. Since then, the focus has been on reaching agreement on which criteria should be used as a basis for such an arrangement.[227]

The criteria associated with MPAs are relevant for the protection of MGRs, as these aim to protect viable and authentic biological areas. Hence, MPAs does not target only familiar species, but also undiscovered and emerging species. For that reason, such areas will preserve all MGRs, both current and future. Despite ongoing improvements, research suggests that developed MPAs are the best tool for achieving conservation of biological species.[228] Nevertheless, establishment of MPAs will be in accordance with Resolution 72/249, which states that negotiations must deal with "measures such as area-based management tools, including marine protected areas".[229]

The international community has undertaken to protect at least 10 percent of the sea and coastal areas.[230] This is intended to be implemented by establishing protected areas where this is considered particular important for biodiversity and ecosystem services.[231] In order for States to be able to comply with their obligations, they have to establish protected areas in ABNJ. This measure has been up for discussion during the ILBI negotiations.[232] More recently, scientific recommendations have expressed a desire to set aside at least 30% of the ocean for the use of MPAs, within 2030.[233]

Both the LOS Convention and the CBD express that State Members has the main responsibility for the marine protected areas and their biological diversity in ABNJ.[234] The objective is dependent on efficient and orderly cooperation across national borders as it does not come with any specific jurisdictional authority or hierarchical arrangement for each

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[227] The World Commission on Protected Areas (IUCN Commission), Non-Technical Summary Report, Establishing Marine Protected Area *Networks* (2008), pp. 1-3.
[228] See S. D. Gaines, 'Marine Reserves Special Feature: Designing marine reserve networks for both conservation and fisheries management' (2010). Proc Natl Acad Sci USA 107, pp. 18286–18293.
[229] UNGA, *supra* note 14, p. 1, para 2.
[230] United Nations Decade on Biodiversity, Press Release, 'Global marine protected area target of 10% to be achieved by 2020' (2017).
[231] CBD, Aichi Biodivarsity Targets, Target 11; available at https://www.cbd.int/sp/targets/default.shtml
[232] UNGA, *supra* note 9, p. 3, para. 2.
[233] IUCN, Increasing marine protected area coverage for effective marine biodiversity conservation, IUCN/WCC-2016-Res-050-EN, available at https://portals.iucn.org/library/sites/library/files/resrecfiles/WCC_2016_RES_050_EN.pdf
[234] See Articles 192, 194(5) and the LOSC Preamble. See Article 6,10 and the CBD Preamble.

individual States. There are nevertheless four concepts that have received attention in the PrepCom's assessment of the states' behaviour in relation to MPAs in ABNJ: (1) due regard, (2) adjacency, (3) compatibility, and (4) respect for coastal State sovereignty or sovereign rights . Beyond this, no in-depth explanation of these concepts will been presented.

7 Conclusion

In this thesis the research issue was:

Marine Genetic Resources in Areas Beyond National Jurisdiction: Developing States and issues relating to equitable benefit sharing.

The intention behind this thesis has been to analyse one of the most challenging issues that has arisen during the negotiation of a final implementation agreement: equitable benefit sharing of MGRs in ABNJ for developing countries. There are several elements and aspects to the question, but only a few selected ones have been analyzed and assessed. There are still several obvious and remaining questions that must be answered by the BBNJ negotiators. For that reason, there are several concluding remarks will be highlighted.

The first remark that will be highlighted is based on the ongoing negotiation, which, despite several sessions, has not resulted in compatibility. For that reason, the **normative conditions** can be highlighted. The approach is based on setting a bottom limit where the requirements are reduced in order to be able to establish a fair and equal ABS regime. These minimum requirements should be established with the consent of all States in order to achieve full efficiency. The idea behind this approach is to focus on getting collective interests that exist between States, and then to establish a regime that is compatible with those interests. If such an approach is feasible, it will possibly be easier to agree on the remaining points in the agreement.

The second remark that will be highlighted is the **cooperative conditions** that are based on economic, technological and political participation from all participating States. As highlighted earlier in this thesis, it is precarious that all States cooperate towards a common goal to achieve fair and equal access and utilization of MGRs in ABNJ. The previous "tunnel vision" where States have operated individually should be abolished, and a "compromising" approach should be facilitated. Here, one enters **political conditions** which means that

developed States should be willing to sacrifice their own interests for the benefit of less developed States. Developed States therefore play an elementary role for the future work.

Through several international legal instruments, there are several objectives and principles that aims to preserve and ensure the sustainable use of the sea and its resources. Customary international law is also based on such an objective. All of the objectives and principles are of course relevant and applicable to BBNJ, mainly to prevent further deterioration of the ocean's environment. This approach is supported by the LOS Convention, as it expresses **ethical conditions** and a comprehensive approach to avoid piecemeal governance between States. It is crucial that the States operate with a common strategy and with collective criteria so that an absolute and effective practice can be implemented.

Furthermore, it is also crucial to incorporate good organizational and cooperation arrangements between States and organisations, both at a regional and a global level. An example where a challenge arises is if international organizations play a central role in the management of the high seas, but where these areas overlap and there is no organizational procedure. In addition, there is a lack of agreement on the issue of BBNJ, regarding the water column and the seabed. As previously mentioned, the question of whether ABNJ is subject to the common heritage of mankind, or the freedom of the high seas is a sensitive issue.[235]

However, attention is drawn to the most recent draft text of the BBNJ negotiation. Article 5 states the general principles and approaches to achieve the objective of the implementing agreement. In that context, reference is made to the principle of the common heritage of mankind.[236] The square brackets in the provision indicate agreement on the principle's application and content. In the introductory part of the draft, it is stated that square brackets express a compatible approach where alternative textual solutions are omitted. In that case, the principle of the freedom of high seas expires, and the principle of the CHM remains. Nevertheless, it is important to remember that the implementation phase is still in the negotiation stage and that a final draft is not yet available.

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[235] R. Blasiak et al., *supra* note 60, p. 4.

[236] UNGA, *supra* note 25, Article 5(b), p. 8.

As mentioned earlier in the thesis, there are clear capacity dissimilarities between States. For that reason, it is important to focus on creating **symmetrical conditions**. There are different interests and values that are challenged when establishing a fair and equal regime. In this context, a balanced assessment should be carried out between the various interests in order to arrive at the most solidary result. For example, marine scientific research can be promoted, while showing due regard for future generations and developing States. In the same way, a balance of different considerations should be carried out with regard to the design of the framework. For example, consideration of flexibility in the framework can be coordinated with consideration of predictability. A combination of the negotiating States' approaches could result in less degree of asymmetry between them.

Furthermore, since different opinions about which legal regime regulates MGRs in ABNJ, as well as how these should be interpreted, it is relevant to direct attention to the **legal conditions.** Arrangements can be made for States to actively participate in the establishment of an ILBI and at the same time influence how the regime is to be implemented and interpreted. Nevertheless, "neither participation in the negotiations nor their outcome may affect the legal status of non-parties to the Convention or any other related agreements with regard to those instruments, or the legal status of parties to the Convention or any other related agreements with regard to those instruments".[237] For that reason, the negotiation of the new ILBI should reflect a coordinated practice between States.

Throughout the thesis, there is also the question of which legal principles are to be applied under an MGR regime. In this context, several solutions have been shown which have aimed to reconcile the interests of States with the provisions of international law. In that context, the focus was directed towards an MRS regime that can help to ensure access and sharing of benefits related to commercial and non-commercial scientific research, which at the same time complies with the LOS Convention.

It is clear that is has been difficult to reach a compatible result through the four previous negotiations. Initially, a fifth negotiation meeting was not intended.[238] The big question is whether even a firth negotiation will be sufficient to reach a final result. Regardless of which

[237] UNGA, *supra* note 14, p. 2, para. 10
[238] *Ibid,* para. 1.para. 3.

future legal regime comes into force, there are major prerequisites that a regime that ensures a fair and equal benefit sharing of MGRs in ABNJ will be available within a short period of time. With that being said, the alternative measures and solutions assess throughout the thesis illustrates ‘an ocean of possibilities’.

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