

Marine Genetic Resources in Areas beyond National Jurisdiction: How Should the Exploitation of the Resources be Regulated?

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In resolution 69/292 the General Assembly of the United Nations established a Preparatory Committee to develop a legally binding instrument to regulate marine biodiversity in areas beyond national jurisdiction. This included the management of marine genetic resources (MGRs) in these areas. This article aims at providing an opinion on the international management of marine genetic material beyond national jurisdiction. To assess possible regulations, existing regimes for managing similar resources will be discussed. The most central regulations are the United Nations Convention on the Law of the Sea (UNCLOS) management of fish stocks in the high seas and management of minerals in the seabed in areas beyond national jurisdiction (the Area) and the Convention on Biological Diversity (CBD). The assessment of possible regulation will be based on the recommendation for an implementation agreement on the binding legal instrument to manage biodiversity of the high seas presented by the Preparatory Committee, and the submissions of states on the issue. There are still many aspects of the implementation agreement where the work of the Preparatory Committee is incomplete, which need to be addressed, including issues such as whether the concepts of common heritage of mankind (CHM) or freedom of the high seas should be used, whether

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access to MGRs should be regulated, what type of benefits should be shared, or if the instrument should regulate in relation to intellectual property rights (IPRs). Some states believe that MGRs in areas beyond national jurisdiction fall within the existing regimes for the freedom of the high seas in UNCLOS. However, MGRs do not appear to fit within any of these regimes, so a more pragmatic approach of access and benefit-sharing might be a better solution. If benefits are shared, there is no real need to regulate access to MGRs. Non-monetary benefit-sharing is most essential, since this increases general knowledge and development, but if combined with intellectual property rights creates a risk of overpricing vital products. An alternative is therefore to create a reward system for bioprospecting of MGRs in areas beyond national jurisdiction.

1. INTRODUCTION

The areas beyond national jurisdiction comprise 64 per cent of the ocean surface and 95 per cent of its volume.¹ Yet scientific research in these areas is so costly, time-consuming and difficult that much of its content is still unknown. Marine genetic resources (MGRs) have been a hot topic in international fora for several years. The potential economic benefits of exploitation have raised the issue of international regulation. Genetic resources within national jurisdictions are regulated in the Convention on Biological Diversity (CBD), but the Convention does not mention areas beyond national jurisdiction. The high seas and its seabed both contain MGRs with potential for exploitation.

The high seas and its seabed are regulated in the United Nations Convention on the Law of the Sea (UNCLOS). The high seas comprise the water column in areas beyond national jurisdiction. Historically, the high seas have been a free place for all, exempt from the jurisdiction of any state. The freedoms are specifically outlined in the Convention's art 87. The seabed in areas beyond national jurisdiction, referred to as "the Area", is regulated in pt XI of UNCLOS. The provisions found here are mainly reserved for mineral resources.² MGRs are not mentioned either as a freedom or as subject to regulation in UNCLOS. Consequently, many have argued that there is currently a legal gap for MGRs in areas beyond national jurisdiction.

1 Global Environment Facility "Areas Beyond National Jurisdiction" GEF <<https://www.thegef.org/topics/areas-beyond-national-jurisdiction>>.

2 United Nations Convention on the Law of the Sea [UNCLOS], art 133(a).

To address that legal gap, the United Nations General Assembly decided to set up a Preparatory Committee to “develop a legally binding instrument” under UNCLOS on the “conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction”.³ This includes the management of MGRs.⁴ The task of the Preparatory Committee is to manage the balance between the access to the benefits and incentives to extract and conduct research on genetic material from marine areas beyond national jurisdiction. Disagreement between states concerning this balance, however, has made the task of the Preparatory Committee difficult.

This article aims at reviewing the possible regulation of MGRs in the new legally binding instrument. By first looking at other international instruments that regulate similar resources, and then taking into account the recommendations set forth by the Preparatory Committee in 2017, the article will discuss the best way to regulate MGRs in light of the nature of the resource. Different views on the matter submitted by potential member states will also be reviewed. Furthermore, the article will address the issues that are not settled by the Preparatory Committee on MGRs. The focus will therefore be on whether the instrument should be in line with the freedom of the high seas or the common heritage of mankind (CHM), regulate the rights to access, what types of benefits should be shared, and the relation between MGRs and intellectual property rights (IPRs).

1.1 What are MGRs?

Genetic resources come from the genetic material of living organisms.⁵ MGRs are used for several purposes today. This includes cosmetics, medicine and bio-remediation.⁶ Recently, genetic materials from the deep sea have been of great interest for researchers, since the extreme conditions in the deep sea are

3 “Second Session of the Preparatory Committee on BBNJ” Sustainable Development Goals Knowledge Hub <<http://sdg.iisd.org/events/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-4/>>.

4 Report of the Preparatory Committee established by General Assembly resolution 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, Part III, Section A, II, 2.2.

5 Natalie Y Morris-Sharma “Marine Genetic Resources in Areas beyond National Jurisdiction: Issues with, in and outside of UNCLOS” (2017) 20(1) Max Planck Yearbook of United Nations Law Online, ch 3 at 76.

6 Kirsten E Zewers “Debated Heroes from the Deep Sea — Marine Genetic Resources” (2008) 2 WIPO Magazine.

dissimilar to any terrestrial habitat, with its inhabitants surviving in harsher climates than most other species.⁷

In the work of the Preparatory Committee, it is acknowledged that the full scope of the term “MGRs” is not settled.⁸ One way of looking at the concept is by comparing existing instruments, and how the term is regulated in other international agreements. This would create coherence in the public international law.⁹ Some guidance could be found in the CBD. The CBD defines genetic resources as “genetic material of actual and potential value”. This is distinct from genetic material, which means any material within “plant, animal, microbial or other origin containing functional units of heredity”.¹⁰ This is a fairly wide definition, imposing few limits on what genetic material is.

When defining the term, it is also important to establish what should be excluded from the definition. For example, the 1995 Fish Stock Agreement might overlap with genetic resources, since fish contain genetic material. To address this overlap, there have been suggestions that there should be a distinction between fish used for their genetic material and fish used as a commodity.¹¹ Living organisms can also be found on the minerals of the seabed.¹² The regulation of minerals in UNCLOS could therefore potentially come in conflict with the regulation of genetic material. The definition of the term will determine the extent of the agreement, particularly in relation to other agreements.

For the purpose of this article the exact definition of MGRs and their relation to other conventions is not essential. It is the nature of the resource that is imperative when establishing how the resource should be managed. The nature of genetic resources allows for the resource to be extracted once. It is not valuable for its quantity, but for its quality. There is therefore no great risk of over-exploitation.¹³

An MGR is not a profitable resource solely from exploitation. The economic benefit is generated from products of research done on the genetic material.¹⁴ This research can take years, even decades.¹⁵ The need for time-consuming

7 Zewers, above n 6.

8 Report of the Preparatory Committee, above n 4, at Part III, Section B.

9 Morris-Sharma, above n 5, at 76.

10 Convention on Biological Diversity [CBD], art 2.

11 Morris-Sharma, above n 5, at 77.

12 James McNish “New species could help monitor impact of future deep-sea Mining” (25 September 2017) Natural History Museum <<http://www.nhm.ac.uk/about-us/news/2017/september/new-species-could-help-monitor-impact-of-future-deep-sea-mining.html>>.

13 At least not if used only for its purpose.

14 Morris-Sharma, above n 5, at 85.

15 Marjo Vierros “Marine Genetic Resources — Current Uses and Schemes for Benefit-

research makes the prospect of profits far-reaching. The lengthy research will also be costly. Moreover, the research may not yield results. Years of research can be done on genetic material that eventually turns out to be of no use. The prospects of monetary benefits are therefore highly uncertain when extracting genetic material. Investing in marine genetic materials is therefore risky, potentially discouraging investors.

Genetic resources can be found both on the seabed and in the water column.¹⁶ Also, MGRs are not limited to the high seas or the Area, but can be found either migrating, straddling or otherwise living in areas within national jurisdiction.¹⁷ The genetic material may not give a financial benefit on its own, but be dependent on other material to do so. Some of these materials may derive from other areas. The final product of financial benefit might be a product composed of several elements, some of which may originate from areas within a jurisdiction.¹⁸

2. REGULATIONS RELATED TO THE MANAGEMENT OF GENETIC RESOURCES IN AREAS BEYOND NATIONAL JURISDICTION

2.1 Management of Fishing and the Freedom of the High Seas

Fishing is one of the few resources in areas beyond national jurisdiction already managed by UNCLOS. The regulation of fishing might therefore be useful for assessing the management of MGRs in areas beyond national jurisdiction.

The high seas have conventionally been free from sovereignty. The traditional view is that no state can claim jurisdiction to any part of the seas. This view is clearly expressed as far back as Grotius' *Mare Liberum* in 1609.¹⁹ Although some areas of the sea today are under the jurisdiction of states,²⁰ the principle of freedom of the high seas is still well founded. The freedom ensures all states, whether landlocked or coastal, access to the resources found in the

Sharing" (2016) United Nations University <<https://globaloceanforumdotcom.files.wordpress.com/2016/03/mgr-and-bioprospecting-vierros.pdf>>.

16 Morris-Sharma, above n 5, at 85.

17 Eva Heafy "Access and Benefit Sharing of Marine Genetic Resources from Areas Beyond National Jurisdiction: Intellectual Property — Friend, Not Foe" (2014) 14(2) *Chicago Journal of International Law* 493 at 497.

18 Morris-Sharman, above n 5, at 85.

19 David Armitage "Grotius & the Freedom of the Seas" (13 April 2016) Online Library of Liberty <<http://oll.libertyfund.org/pages/grotius-the-freedom-of-the-seas>>.

20 Such as the exclusive economic zone, the continental shelf, contiguous zone and territorial sea.

high seas. One aspect of the freedom of the high seas as codified in UNCLOS (1982) is that it should be exercised without hindrance from other states.²¹

Fishing is part of the fundamental freedom of the high seas. The freedom to fish is codified in UNCLOS, art 87(1)(e) which governs the freedom to the resources in the water column. Fish are the only resource directly regulated by the freedom of the high seas. Fishing has been a traditional use of the high seas, and the rights to fish are on a first come, first served basis. The access is therefore free for any state.

Since the ratification of UNCLOS, restrictions have been imposed that somewhat limit the freedom to access and exploit fish. UNCLOS was ratified at a time when it was believed that fish were an inexhaustible resource. Today, we are painfully aware of the risk that over-fishing poses. As it was realised that fish were not in fact inexhaustible, there was a growing consensus in the international community that there was a need to manage the conservation of fishing. This led to the 1995 Fish Stock Agreement.²² The agreement imposes certain restrictions on the rights to fishing on the high seas to manage and conserve fish stocks.²³ States are forced to cooperate for the conservation and management of the fish stocks of the high seas. As of October 2017, 86 states and the European Union have ratified the convention.²⁴

The limit imposed by the Fish Stock Agreement does not undermine the freedom to fish according to UNCLOS. Article 116 specifically authorises limits on the freedom to fish.²⁵ This means that in spite of the restrictions, fishing is still a freedom of the high seas, open to any state to utilise.

The reason for the regulation of fishing lies much in the nature of the resource. Although fish are not inexhaustible, they are renewable. If fishing is done in moderation, there will always be more left.²⁶ As long as there is more left, the exploitation does not hinder other states in accessing the resource. The restrictions therefore, to some degree, enforce the freedom of the high

21 “The Law of the Sea: Extension of Control over Marine Resources” University of Groningen <<http://www.rug.nl/research/portal/files/3265509/h7.pdf>> at 201.

22 Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stock and Highly Migratory Fish Stocks (New York, 4 August 1995) [Fish Stock Agreement].

23 Fish Stock Agreement, above n 22, art 1.

24 List of member states (3 April 2018) UN <https://www.un.org/Depts/los/reference_files/chronological_lists_of_ratifications.htm#Agreement%20for%20the%20implementation%20of%20the%20provisions%20of%20the%20Convention%20relating%20to%20the%20conservation%20and%20management%20of%20straddling%20fish%20stocks%20and%20highly%20migratory%20fish%20stocks>.

25 UNCLOS, art 116.

26 Acknowledging that other threats than over-exploitation may lead to fish stocks going extinct, such as pollution and climate change.

seas, namely the right to exercise one's freedom without interference from other states. Also, the transboundary nature of straddling and migratory fish stock meant that fishing on the high seas could affect the resource within a jurisdiction.²⁷ Regulation of fishing on the high seas was therefore deemed necessary not to interfere with the resources found within a state's jurisdiction. The management of fish thus reflects the balancing of the freedom of the high seas in relation to the nature of the resource itself.

2.2 Management of Mineral Resources and the Common Heritage of Mankind

Minerals are another resource in the areas beyond national jurisdiction managed by UNCLOS that might be useful for assessing possible management strategies for genetic resources.

Part XI of UNCLOS regulates the Area. This section was incorporated into UNCLOS in 1994 by an implementation agreement. As of October 2017, 149 states and the European Union have ratified the implementation agreement of pt XI.²⁸

UNCLOS defines the Area as "the seabed and ocean floor and subsoil thereof, beyond the limits of national jurisdiction".²⁹ Separated from the high seas water column, pt XI seeks to regulate the exploitation of resources on the seabed. Specifically, art 136 defines these resources as "solid, liquid or gaseous mineral resources *in situ* in the Area". Consequently, pt XI primarily seeks to regulate mineral resources on the seabed.

Currently, there are in particular three resources that are of interest for exploitation in the Area. These are seafloor massive sulphides, polymetallic nodules and cobalt-rich crusts.³⁰ The presence of methane hydrates has also been of interest lately, and might be a relevant resource for mining in the future.³¹

The management of the Area is overseen by the International Seabed Authority (ISA).³² No exploration or mining can be done without its permission.

27 Trond Bjørndal and Gordon Munro "The Management of High Seas Fisheries Resources and the Implementation of the U.N. Fish Stocks Agreement of 1995" (Institute for Research in Economics and Business Administration, Working Paper No 06/02, Bergen, 2002) at 3.

28 List of member states, above n 24.

29 UNCLOS, art 1(1).

30 Seabed Minerals Authority, Cook Islands Government "Frequently Asked Questions" SMA <<http://www.seabedmineralsauthority.gov.ck/faqs>> at Q 1.

31 Tuillo Scovazzi "The Concept of Common Heritage of Mankind and Genetic Resources of the Seabed beyond the Limits of National Jurisdiction" (2007) XIV(25) Agenda Internacional 11.

32 UNCLOS, pt XI, s 4.

Access to the resources in the Area is therefore not free for anyone to exploit, but depends on prior consent. ISA's task is to manage the resource on behalf of all mankind.³³ This restriction of access is often seen as a contrast to the freedom of the high seas.³⁴

Also, in the management of the Area, the nature of the resource is imperative. In contrast to fish, these resources are not renewable.³⁵ Once they are used, they will not come back. This might have had an impact on their regulation under UNCLOS. Allowing over-mining by one state could lead to an exhaustion of the minerals, denying other states access. If the other states were denied the benefits, the minerals would in effect not be accessible to all, only to those who could afford mining first. This would leave less advantaged states without access, as they could not reach the minerals before they were exhausted.

The minerals in the Area are the "common heritage of mankind".³⁶ The CHM indicates that the resources should be accessible to all. This is based on the concept that the areas beyond national jurisdiction should be accessible to all as *res communis* rather than *res nullius*.³⁷ The sea belongs to everyone, not to no one. The common heritage regime seeks to ensure that all can profit by it.

According to UNCLOS, the provision on CHM entails certain obligations for its usage.³⁸ These include prohibition of appropriation, the use for peaceful purposes, regulation of access, and that the resources should benefit all of mankind.³⁹ The last obligation is specific to the mineral resources of the Area. It includes features such as sharing of monetary benefits⁴⁰ as well as sharing of non-monetary benefits, prohibition of acquisition⁴¹ and the consideration of all states and people when exploiting, irrespective of geography. When exploiting, states should also take into account the economy of developing states.⁴² Sharing of benefits should be done equitably, so that no single state can

33 Dire Tladi "The Common Heritage of Mankind and the Proposed Treaty on Biodiversity in Areas beyond National Jurisdiction: The Choice between Pragmatism and Sustainability" (2014) 25(1) Yearbook of International Environmental Law 113 at 126.

34 See, for example, written submissions from Group of 77 and China (5 December 2016) UN <http://www.un.org/depts/los/biodiversity/prepcom_files/rolling_comp/Group_of_77_and_China.pdf>, and USA (20 December 2016) UN <http://www.un.org/depts/los/biodiversity/prepcom_files/rolling_comp/United_States_of_America.pdf>.

35 Seabed Minerals Authority, Cook Islands Government "Frequently Asked Questions" SMA <<http://www.seabedmineralsauthority.gov.ck/faqs>> at Q 5.

36 UNCLOS, art 136.

37 Tladi, above n 33, at 124.

38 UNCLOS, art 137.

39 Morris-Sharma, above n 5, at 81–82.

40 UNCLOS, art 140(2).

41 Article 137.

42 Article 140(1).

be the sole profiteer of the resource.⁴³ When taking into account the economy of developing states, there are several matters that have to be considered. Not only shall the benefits be shared with these nations, but the general economy of the state must also be considered. If the utilisation of the resource creates competition with the resources mined in a developing state, this could affect their economy negatively. This is one example of how the developing countries must be considered when the resource is exploited. Consistent with the *res communis* perspective, the purpose of the regulation in pt XI is to ensure that the seabed is not just exploited by those who could afford it first, but can be used by all.

It should be noted that to this day no seabed mining has begun. Deep-sea mining is expensive, and advanced technological equipment is needed. The minerals are found at great depths, and the hostile environment makes mining difficult. Mining on land is therefore much more profitable.⁴⁴

2.3 The Convention on Biological Diversity and the Nagoya Protocol

The CBD is the first instrument to regulate resources on a holistic, ecosystem level.⁴⁵ The aim of the Nagoya Protocol to the CBD is the “fair and equitable sharing of the benefits arising out of the utilization of genetic resources, including by appropriate access to genetic resources and by appropriate transfer of relevant technologies, taking into account all rights over those resources and to technologies, and by appropriate funding”.⁴⁶ Both access and benefit-sharing of genetic resources is thus regulated by the CBD.

The Nagoya Protocol⁴⁷ was set up specifically to regulate the exploitation of genetic material, particularly material found in developing countries.⁴⁸ These countries often host the genetic material with most potential value, but may not have the resources to conduct the necessary research. The intention of the Protocol is therefore to ensure that the states where the resource is found can take part in the benefits of the resources.⁴⁹

43 Article 140(2).

44 Scovazzi, above n 31, at 15.

45 *CBD Guidelines: The Ecosystem Approach* (Secretariat of the Convention on Biological Biodiversity, Montreal, 2004) CBD <<https://www.cbd.int/doc/publications/ea-text-en.pdf>> at 3.

46 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 (Secretariat of the Convention on Biological Diversity, Montreal, 2011), art 1.

47 Nagoya Protocol, above n 46.

48 Nagoya Protocol, Preamble.

49 Alex Benkenstein and Siseko Maposa “Governing the High Seas: Marine Genetic

The CBD and its Nagoya Protocol regulate the management of ecosystems within national jurisdictions.⁵⁰ They do not therefore regulate MGRs in areas beyond national jurisdiction. By October 2018, 196 parties have ratified the CBD, and 109 of these are members of the Nagoya Protocol. Saint Kitts and Nevis, Serbia, Tuvalu, and Venezuela have ratified the Nagoya Protocol as of November 2018, and will be member parties within a few months of this date.⁵¹

The Nagoya Protocol regulates access to the genetic material, benefit-sharing obligations and compliance obligations. The state where the resource is found can set conditions for access.⁵² Benefit-sharing is regulated on a domestic level.⁵³ Sharing of both monetary and non-monetary benefits shall be done between the party providing the resource and the party exploiting the resource.⁵⁴ The parties shall establish conditions for access to the resource beforehand.⁵⁵ These provisions are aimed at domestic regulations. Since there is a providing party and an exploiting party, the regulation does not suit well for resources beyond national jurisdiction, where there is no provider.

Similar to the management of mineral resources in areas beyond national jurisdiction, there is a particular focus on the consideration of developing nations in the CBD: according to art 8, the parties must create conditions to “promote and encourage research which contributes to the conservation and sustainable use of biological diversity, particularly in developing countries”.

The Protocol establishes an Access and Benefit-sharing Clearing-House⁵⁶ for genetic material in accordance with the Convention. The purpose of the Clearing-House is to “serve as a means for sharing of information related to access and benefit-sharing”.⁵⁷ The Clearing-House is therefore a mechanism to ensure non-monetary benefit-sharing.

Although the Nagoya Protocol was set up to regulate areas within national jurisdiction, art 10 commands parties to “consider the need for and modalities of a global multilateral benefit-sharing mechanism to address the fair and equitable sharing of benefits derived from the utilization of genetic resources [...] for which it is not possible to grant or obtain prior informed consent”. MGRs in areas beyond national jurisdiction are genetic resources for which it would not be possible to grant or obtain prior informed consent. The Protocol therefore

Resources in Areas beyond National Jurisdiction” (South African Institute of International Affairs, Policy Insights 51, July 2017) at 3.

50 CBD, art 4.

51 Parties to the Nagoya Protocol (entered into force 12 October 2014) CBD <<https://www.cbd.int/abs/nagoya-protocol/signatories/default.shtml>>.

52 Nagoya Protocol, art 7.

53 Article 5.

54 Article 5.

55 Article 6.

56 Article 14; see CBD, art 18.

57 Nagoya Protocol, art 14.

urges parties to consider benefit-sharing for these resources. According to Tladi, art 10 of the Protocol was clearly aimed at MGRs in areas beyond national jurisdiction.⁵⁸ This is a bold statement without factual support. Nevertheless, the article is clearly suitable for MGRs in areas beyond national jurisdiction.

Notably, the Convention does not mention the “common heritage of mankind”, but uses the phrase “common concern of humankind”.⁵⁹ The concept is meant to express the shared responsibility all states have for the sustainable use of resources.⁶⁰ The “common concern of humankind” was explained by Dinah Shelton as issues that “inevitably transcend the boundaries of a single state and require collective action in response”.⁶¹ The concept was first introduced in the CBD, but has also been addressed in the United Nations Framework Convention on Climate Change (Paris Agreement) 2015.⁶² Common concern of humankind addresses a specific issue, as opposed to the CHM, which addresses a specific area or resource.⁶³ Bowling, Pierson and Ratté explained that the “common heritage framework is thus better suited for managing the sustainable exploitation of shared resources, whereas the CCH [common concern of humankind] framework provides a basis for protecting shared resources that are being threatened by a global problem”.⁶⁴ The concept means that there exists a common responsibility to prevent harm, and a shared accountability if harm arises. It does not entail benefit-sharing, such as the CHM.

Therefore, the regulation of “common concern of humankind” may not be suitable for the issue of MGRs in areas beyond national jurisdiction. As mentioned above, the concept is aimed at particular issues, such as the protection of shared resources that face a global threat. The concept is thus effective for threats, such as climate change, where all states must take action in order to save the resource. MGRs face no similar global threat. There is no danger of over-exploitation. The issue is the possible appropriation of the resource and the concern that only certain states will benefit from the utilisation. The new implementation agreement is meant to regulate biodiversity as a whole. In conserving biodiversity as a whole, the concept can be useful. The conservation of biodiversity calls for action from all states. However, the expression gives no aid in the specific regulation of MGRs.

58 Tladi, above n 33, at 120.

59 CBD, Preamble.

60 Chelsea Bowling, Elizabeth Pierson and Stephanie Ratté “A Common Concern of Humankind: A Potential Framework for a New International Legally Binding Instrument on the Conservation and Sustainable Use of Marine Biological Diversity in the High Seas” UN <http://www.un.org/depts/los/biodiversity/prepcom_files/BowlingPiersonandRatte_Common_Concern.pdf> at 5.

61 At 3.

62 At 2.

63 At 3.

64 At 3.

Although the Protocol does not mention the CHM, the access and benefit-sharing mechanism is similar in several ways, such as the controlled access and equitable sharing of benefits.

2.4 Intellectual Property Rights

Today, the profits of MGRs derive from IPRs on the product of these resources. MGRs' relation to IPRs is commented on in the recommendation of the Preparatory Committee. Their suggestion is that the regulation could manage the relationship to intellectual property rights. They do not explore any further what this relationship should be.

The concept of IPRs gives the creator legal right to an innovation, and the ability to prevent others from benefiting from the innovation.⁶⁵ IPRs include the rights to patents, copyright, industrial design, plant varieties, trademarks, trade dress and trade secrets. For MGRs, it is the right to patents that is most relevant. The right to patent protection usually lasts for 20 years from filing date for members of the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS).⁶⁶ Consequently, the exclusivity only lasts for 20 years. This is also recognised by the World Intellectual Property Organization (WIPO).⁶⁷

WIPO is a UN institution created to manage the protection of intellectual properties.⁶⁸ Through WIPO the Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore was established to discuss the relation between IPRs and genetic resources. The result of their negotiations could be important for the regulation of MGRs in areas beyond national jurisdiction.

IPRs are usually subject to national jurisdiction, but there are several international agreements between states on the matter. According to TRIPS, the patents can be taken "in all fields of technology, provided that they are new, involve an inventive step and are capable of industrial application".⁶⁹ There is a general international consensus that the notion of invention and novelty must be present in order for the product to be patentable.⁷⁰ Hence, it is not the genetic material as such that will be patented, but "inventions that are useful

65 World Intellectual Property Organization "What is Intellectual Property?" WIPO <http://www.wipo.int/edocs/pubdocs/en/intproperty/450/wipo_pub_450.pdf> at 3.

66 Agreement on Trade-Related Aspects of Intellectual Property Rights [TRIPS], art 33.

67 World Intellectual Property Organization "Patents" WIPO <<http://www.wipo.int/patents/en/>>.

68 World Intellectual Property Organization "WIPO — A Brief History" WIPO <<http://www.wipo.int/about-wipo/en/history.html>>.

69 TRIPS, art 27(1).

70 Zewers, above n 6.

derivatives of the organism” and “genetically modified organisms”.⁷¹ These are the products of research and development based on the genetic material.

According to TRIPS, member states can exclude certain inventions from patentability if patentability goes against the state’s morality.⁷² This can include genetic material. Some states, such as the US, have allowed for the product of genetic material to be patented.⁷³ In the US, patents cannot be taken on naturally occurring products, but the standard for inventiveness is not high. Heafy argues that even the isolation of a genetic material might be patentable.⁷⁴ Other states, such as Brazil, have been more reluctant to allow IPRs on MGRs.⁷⁵

The acceptance of discrepancy in the regulation of the relationship between genetic resources and IPRs makes TRIPS impractical for the regulation of MGRs in areas beyond national jurisdiction. For some states, the IPRs on genetic resources might be profitable, while other states might not benefit from such IPRs. Statistics show that the US is the state which has patented most marine organisms, and that it is only developed countries that hold a significant number of patents.⁷⁶ If one state allows for IPRs in areas beyond national jurisdiction, this can affect the other states’ rights to the same resource. Since the resources in question are beyond the jurisdictions of any states, there is a need for a common regulation of the relationship between IPRs and MGRs.

Currently, there is no global obligation to share information or technologies regarding the product during the patent period or after. Only the product itself will therefore be shared with others. Patents are consequently incompatible with the CHM or a system of benefit-sharing.

For MGRs, there is no regulation that specifically addresses the IPRs. There is also uncertainty about the relation to UNCLOS today. Some states argue that the right to profit is established in the regulation of fisheries in UNCLOS.⁷⁷ They argue that the right to profit includes the right to intellectual property, since this is the most profitable means of utilising MGRs. Other states argue that since IPRs are not mentioned, they fall outside the scope of the Convention.⁷⁸

In respect to IPRs’ relation to UNCLOS, there have been discussions regarding the difference between bioprospecting and marine scientific research. Marine scientific research in general is regulated in UNCLOS, pt XIII, while

71 Zewers, above n 6.

72 TRIPS, art 27(2) and (3)(a).

73 Zewers, above n 6.

74 Heafy, above n 17, at 506.

75 Claudio Chiarolla “Intellectual Property Rights and Benefit-Sharing from Marine Genetic Resources in Areas beyond National Jurisdiction: Current Discussions and Regulatory Options” (2014) 4(3) *Queen Mary Journal of Intellectual Property* 171.

76 Vierros, above n 15.

77 Zewers, above n 6.

78 Zewers, above n 6.

art 143 holds a specific provision for marine scientific research in the Area.⁷⁹ According to pt XIII, marine scientific research must be “subject to the rights and duties of other States as provided for in this Convention”⁸⁰ and “shall not constitute the legal basis for any claim to any part of the marine environment or its resources”.⁸¹ Additionally, the scientific research must be carried out for peaceful purposes.⁸² According to art 143, marine scientific research in the Area must be done for the benefit of all of mankind. Unlike other regulations of the Area, this article is not limited to research on minerals, but includes all marine scientific research.

Bioprospecting has commonly been associated with the research of genetic material for commercial purposes.⁸³ UNCLOS does not explicitly distinguish between bioprospecting and marine scientific research. IPRs create a legal basis for a claim to the product of a marine genetic resource. If bioprospecting is not distinguished from IPRs, UNCLOS would hinder the patentability of such a product.

It has been argued that the establishment of IPRs for genetic resources could be used to limit the production and availability of innovations based in deep seabed genetic resources, in order to make profits or discourage the conduct of research for improvement of the innovation.⁸⁴

The difference between bioprospecting and marine scientific research can be difficult to establish. Something that initially starts off as marine scientific research can end up being usable for commercial purposes. Nevertheless, the prospect of profit from bioprospecting is distinguishable from non-commercial scientific research. The distinction is apparent since the UN General Assembly wants a separate regulation for MGRs.

79 Scovazzi, above n 31, at 17.

80 UNCLOS, art 238.

81 Article 241.

82 Article 240(a).

83 Scovazzi, above n 31, at 17.

84 “Marine and Coastal Biodiversity: Review, Further Elaboration and Refinement of the Programme of Work” (Subsidiary Body on Scientific, Technical and Technological Advice, CBD, Eighth Meeting, Montreal, 10–14 March 2003) CBD <<https://www.cbd.int/kb/record/meetingDocument/4761?RecordType=meetingDocument&Event=SBSTTA-08>> at 25.

3. RECOMMENDATIONS FROM THE PREPARATORY COMMITTEE

In resolution 69/292 the General Assembly of the United Nations established a Preparatory Committee to give recommendations for a legally binding instrument regulating the use of marine biodiversity in areas beyond national jurisdiction. In July 2017, at its fourth session, the Preparatory Committee published their recommendation for the instrument to regulate marine biological diversity. The instrument is meant to implement provisions to UNCLOS.⁸⁵

For the material scope,⁸⁶ the Preparatory Committee proposes that the text would address “in particular [...] marine genetic resources”, and that this would include the questions of “sharing of benefits, measures such as area-based management tools, including marine protected areas, environmental impact assessments and capacity-building and the transfer of marine technology”.⁸⁷ The controversial topic of MGRs is therefore highlighted as an aim for the instrument.

In Part III, Section A, III, 3, the Preparatory Committee specifically addresses the issue of MGRs. The Committee recommends a provision on access and benefit-sharing, including objectives for the benefit-sharing. The recommendation does not give details on the specific regulations of these issues. Furthermore, the Preparatory Committee suggests that the instrument should regulate the types of benefits that should be shared and modalities of the benefit-sharing.⁸⁸ Subsequently, the Preparatory Committee suggests that the text “could” regulate the relationship to intellectual property rights.⁸⁹ Finally, the Committee recommends regulating monitoring of the utilisation of MGRs in areas beyond national jurisdiction.⁹⁰ Thus, the recommendation includes access and benefit-sharing, and a probability of regulation of the relation to IPRs.

The recommendation in Section A must be read in relation to Section B, where the Preparatory Committee recognises that further discussions are required on “whether the instrument should regulate access to marine genetic resources; the nature of these resources; what benefits should be shared; whether to address intellectual property rights; and whether to provide for the monitoring of the utilization of marine genetic resources of areas beyond national

85 Jacqueline Joyce Espenilla “Access, Conservation, and Sustainable Use of Marine Genetic Resources in Areas Beyond National Jurisdiction: Emerging Issues of Consensus and Contention” (2016) *Columbia Journal of Environmental Law* [Field Report] 1 at 3.

86 Report of the Preparatory Committee, above n 4, at Part III, Section A, II, 2.2.

87 At Part III, Section A, II, 2.2.

88 At Part III, Section A, III, 3.2.2.

89 At Part III, Section A, III, 3.2.3.

90 At Part III, Section A, III, 3.3.

jurisdiction”. Consequently, the recommendation does not settle the issue of whether access to benefits should be regulated, whether the benefits shared should be monetary or non-monetary, what the marine genetic resources are, or how the regulation should be monitored. The word “whether” suggests that it is not just the modality of the regulation that is controversial; even regulation in itself is disputed. However, for benefit-sharing, the recommendation does not suggest that there are disputes on whether benefit-sharing should take place or not, only what benefits should be shared and the modality of the sharing. In Section B the Preparatory Committee also confirms that further discussion is needed in relation to the freedom of the high seas and the CHM. This includes whether the resources should be subject to either the CHM, the freedom of the high seas, or neither of these.

The recommendation shows that the management of MGRs is far from settled. Although an implementation agreement is confirmed, much of its content regarding MGRs is uncertain. The following discussion will address the unanswered questions of access and benefit-sharing, and the relation to IPRs. The topic of CHM and the freedom of the high seas will also be discussed in respect to these questions. Before the discussion, it is useful to look at some propositions by the states on how to manage MGRs in areas beyond national jurisdiction.

3.1 Submissions of States on the Management of MGRs

Several states offered submissions to the Preparatory Committee regarding their views of how the biodiversity beyond national jurisdiction should be managed, including MGRs. For the purpose of perspective, this article will focus on three of the submissions that portray widely dissimilar views of the matter.

3.1.1 Common heritage of mankind

Several developing countries, including the Group of 77 and China, submitted a statement presenting the view that MGRs should be regulated as CHM in the new instrument.⁹¹ This includes equitable sharing, taking into account the need of developing countries and countries without access to the material. According to the Group 77 and China, the benefits should be both monetary and non-monetary. Consideration should also be taken of future generations, as implied

⁹¹ Group of 77 and China’s written submission on the 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 (5 December 2016) UN <http://www.un.org/depts/los/biodiversity/prepcom_files/rolling_comp/Group_of_77_and_China.pdf> at 1.

by the word “heritage”. The resources shall also only be used for peaceful purposes.⁹²

The Group of 77 and China also states explicitly that the instrument should “include a provision on access to marine genetic resources”,⁹³ and a need for an international regime to monitor the exploitation. If this regime were to be applied, MGRs would be regulated much the same way as mineral resources in the Area.⁹⁴ The CHM is only used in UNCLOS for the regulation of mineral resources. Equitable sharing of benefits and the consideration of the needs of developing countries is a subset of this regime. The implementation agreement would therefore include monetary and non-monetary benefit-sharing. The relation to IPRs is not mentioned. However, since IPRs and the CHM are currently incompatible, it is a fair assumption that IPRs on products of MGRs would not be accepted.

Diverging from the regulation of mineral resources in the Area, the submission includes a suggestion on a clearing-house mechanism, similar to the one created in the CBD. By establishing such a mechanism, ISA should be taken into consideration.⁹⁵

A notable submission to the second session of the Preparatory Committee on MGRs is Bangladesh. Sharing the view that MGRs should be the CHM, they find support for this view in UNCLOS’s regulation of the Area. In their submission, Bangladesh suggested that pt XI of UNCLOS could be interpreted to include MGRs as the words “[the] Area” and “resources” were “purposefully separated”.⁹⁶ They take the existing regulation of the Area to include the regulation of MGRs. An objection to this approach is the interpretation in line with the object and purpose of the regulation of the Area.⁹⁷ Since the use of genetic material was not an issue when the provision was drafted, the object and purpose was not to regulate this resource. Consequently, Bangladesh believes that there is no legal gap for MGRs.⁹⁸ The view has not received international support, but the interpretation shows how the genetic resources could fit into the already existing regime of the regulation of the Area.

92 At 1.

93 At 2.

94 UNCLOS, pt XI.

95 Group of 77 and China’s written submission, above n 91.

96 Bangladesh’s written submission on the 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 (5 December 2016) UN <http://www.un.org/depts/los/biodiversity/prepcom_files/rolling_comp/Bangladesh-marine_genetic_resources.pdf>.

97 Vienna Convention on the Law of Treaties 1969, art 31(1).

98 Bangladesh’s written submission, above n 96.

3.1.2 Freedom of the high seas

Certain developed countries, including the United States, hold the view that genetic resources are subject to the freedom of the high seas, and that the resources are therefore accessible on a first come, first served basis.⁹⁹ Their view is that the freedom of the high seas codified in UNCLOS includes the freedom to extract and exploit MGRs. Similarly to Bangladesh, they believe that there is “no legal gap” for MGRs in UNCLOS.¹⁰⁰ Conversely, they do not believe that the regulation is found in UNCLOS, pt XI, but in the freedom of the high seas.

According to the US, there is precedent for treating the water column and seabed separately.¹⁰¹ Separate treatment of the water column and the seabed is found both in the regulation of the continental shelf in relation to the exclusive economic zone and in the separation between the high seas and the Area. The US believes that the instrument should only cover MGRs in the Area.¹⁰²

Notably, the US opposes the use for “common heritage of mankind” for MGRs in areas beyond national jurisdiction, even in the Area.¹⁰³ They do however not entirely exclude benefit-sharing. If benefit-sharing regimes were placed on MGRs, these should be focused on “capacity building and conservation”,¹⁰⁴ not on monetary benefit-sharing. They also suggest that access to the resource could be a benefit that could be shared.

The US mentioned in their submission that the relationship between the regulation of MGRs and intellectual property rights should be clarified in the instrument, and that the instrument should not undermine the intellectual property rights.¹⁰⁵ By this they mean that the IPRs that currently can be taken on MGRs should be respected in the new implementation agreement. In their view, the freedom of the high seas includes the freedom to profit from the high seas, and IPRs are currently the most profitable system for MGRs. Their view

99 USA’s written submission on the 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 (9 September 2016) UN <http://www.un.org/depts/los/biodiversity/prepcom_files/USA_Submission_of_Views_Expressed.pdf>.

100 At 1.

101 At 3.

102 USA’s written submission on the 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 (20 December 2016) UN <http://www.un.org/depts/los/biodiversity/prepcom_files/rolling_comp/United_States_of_America.pdf> at 4.

103 USA’s written submission, above n 99, at 1.

104 At 3.

105 At 7 and 9.

of how MGRs on the seabed should be regulated in the new implementation agreement is therefore closer to the regime of freedom of the high seas.

3.1.3 A new regime

All the views presented above use provisions of UNCLOS as a framework for regulating MGRs in areas beyond national jurisdiction.¹⁰⁶ The submissions both regard the regulation of MGRs as a freedom of the high seas and CHM as mutually exclusive. A third view is that these two regimes are not mutually exclusive, and that both can be used to find a more pragmatic approach.

The European Union (EU) forwarded this view in their submission to the second session. They proposed that access should remain free in accordance with the provision concerning marine scientific research in UNCLOS.¹⁰⁷ By this, the EU means that there should be no institution or other process that has to give prior consent to the exploitation of the resource. This view leans towards the regime of the freedom of the high seas.

The EU believes that benefit-sharing should take place. However, they stated that the benefit-sharing should be limited to non-monetary benefits. This view was based on the nature of the marine genetic material. The lengthy and costly research process, combined with the risk of not finding anything of value and that such findings often were of no financial benefit on their own, could make monetary sharing discouraging. The EU uses the nature of the resource to distinguish genetic resources from mineral resources, and concludes that the resources should therefore not be regulated in the same ways.

The modality for the benefit-sharing proposed by the EU is based on different parts of UNCLOS. By looking at arts 242 and 244(1) and (2), they suggest that international cooperation should be promoted, knowledge resulting from marine scientific research should be available, and there should be promotion of information flow and transfer of knowledge.¹⁰⁸ The EU further suggests that this should be done through “establishment of, *inter alia*, programmes of technical cooperation, seminars, conferences, promot[ing] the

106 Tuillo Scovazzi “The Conservation and Sustainable Use of Marine Biodiversity, Including Genetic Resources, In Areas beyond National Jurisdiction: A Legal Perspective” (2010) UN <http://www.un.org/Depts/los/consultative_process/ICP12_Presentations/Scovazzi_Presentation.pdf> at 1.

107 EU’s written submission on the 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 (22 February 2017) UN <http://www.un.org/depts/los/biodiversity/prepcom_files/rolling_comp/EU_Written_Submission_on_Marine_Genetic_Resources.pdf> at 3.

108 At 4.

exchange of scientists".¹⁰⁹ They thus recommend building on the sharing and transfer of information already found in UNCLOS, pts XIII and XIV.¹¹⁰

Management of resources through a clearing-house or ISA is not mentioned in the submission of the EU. Neither is the relation to IPRs. The EU's pragmatic view does not mention the CHM either, but proposes benefit-sharing as a separate concept from CHM. This approach does not use the current system of UNCLOS to classify the resource, but suggests a new regime for sharing of benefits and freedom of access, without the resource being a CHM.

4. HOW SHOULD MGRS BE MANAGED?

On opposite sides of the spectrum we find the views that the genetic resources are either regulated by the existing regimes of the freedom of the high seas or the CHM, as proposed by the US and the Group of 77 and China. The first question that shall be addressed is whether the management of MGRs fits into either of these two regimes.

4.1 Freedom of the High Seas

As outlined above, the US proposes that the implementation agreement should only regulate the genetic resources in the Area, since the resources in the water column are subject to the freedom of the high seas. This includes free access and no sharing of the benefits.

Treating the water column and the seabed differently can create difficulties in classification of species. Some species live both on the seabed and in the water column. Others migrate depending on which period in their life at which they are harvested. The genetic material will be the same independent of when in their lifespan they are harvested. Different regimes may therefore apply to the same species if the two sections are treated differently.

The tradition of separating the seabed and the water column is generally a technique to differentiate the resources found in the two sections. The same MGRs can be found in both the water column and the seabed, and there is therefore no reason to separate them in a new implementation agreement.

The US believes that MGRs are part of the freedom of the high seas. This includes the freedom to access the resource and freedom to use it for profits. Their claim is based on the assumption that the list of freedoms of the high seas in UNCLOS is inexhaustive, and that resources are free unless specifically mentioned not to be. Therefore, by not mentioning MGRs, these resources

¹⁰⁹ At 4; see UNCLOS, art 269.

¹¹⁰ EU's written submission, above n 107, at 4.

are subject to the freedom of the high seas. The formulation in UNCLOS, art 87 “*inter alia*” suggests that the list of freedoms is not exhaustive, as the US suggests.

The United Nations General Assembly’s desire to address the issue suggests that the status of MGRs in areas beyond national jurisdiction is unregulated, and not a part of the current regime of the high seas. Also, since the discovery of the use of MGRs is fairly recent, the intent to regulate the resource was not present during the conception of UNCLOS. It could, however, be argued that the regime of the freedom of the high seas would be a suitable regime based on the nature of MGRs. Only one small sample of the genetic resource has to be extracted and preserved in order to obtain the information needed for research. The rest of the species of the particular resource will be left in the ocean for others to utilise. The risk of over-exploitation that there will be no resource left for other states or future generations to use is not present for MGRs.

Profits of MGRs are currently based on the exclusive rights given by IPRs, such as patents, not due to the quantity of exploitation, as is the case for fish. If the freedom to profit from the resources exists, there should be no objection to IPRs. Making genetic resources patentable creates exclusivity to the resource, preventing other states from utilising it. The exclusivity is not sovereignty in the sense of international jurisdiction. However, the two concepts share many similarities. Both exclusivity and sovereignty give one party exclusive rights with the ability to deny others this right. To claim that the high seas are completely free would be an inaccuracy, since there are restrictions on the freedom. One of these restrictions is that no state can claim sovereignty of any part of the high seas. States are not free to limit others’ access to or utilisation of the high seas. This is based on the notion that the high seas are *res communis*, not *res nullius*.¹¹¹ An IPR preventing others from utilising the same resource would therefore be a hindrance to other states.

Through the use of exclusivity to profit, the regime of freedom of the high seas excludes benefit-sharing. There is consensus that the new implementation agreement will include benefit-sharing, it is just the modality that is uncertain. Combining the new implementation agreement and the traditional views of the freedom of the high seas might therefore be difficult.

4.2 Common Heritage of Mankind

The concept of CHM was developed specifically for mineral resources on the seabed in UNCLOS, pt XI. The concept is not used for any other resource in UNCLOS. It is therefore difficult to make the concept directly applicable to

111 Tladi, above n 33, at 124.

other resources or the water column, as Bangladesh suggested.¹¹² However, this does not mean that the concept cannot be used to regulate MGRs in the new implementation agreement. CHM implies both a restriction in access, and a regime for equitable benefit-sharing and conservation, if used in consistency with the concept currently applying to mineral resources in the Area.¹¹³

There are some differences between the nature of mineral resources and genetic resources. MGRs differ from mineral resources in that they are not exhaustive. When extracted, there will be more resources left for other states to utilise. The limited amount of the resource is one of the reasons that the profits of mineral resources are equitably shared. There is no limited amount of MGRs. Additionally, the minerals that can be mined in the Area are currently extracted from some developing countries, so a competition for the resource in areas beyond national jurisdiction could greatly affect the economy of these states. This is not the case for MGRs in areas beyond national jurisdiction, since the environment in the deep sea is vastly different from any terrestrial climate.

It can be argued that the quantity-based profits of mineral resources could cause complications if the minerals were accessed on a first come, first served basis. The access would only be a reality for those who could afford it first. Regulation of access can therefore be necessary for mineral resources. Because genetic resources are not exhaustible, there is less need to regulate the access. Once extracted and exploited, they can still be found in the sea. These differences could suggest that the two resources should be regulated differently. However, mineral resources and genetic resources in areas beyond national jurisdiction are also similar in certain ways. Being in the open seas and in need of advanced technology to reach, there are very few, if any, states that can access the resources today. The concept of CHM would ensure access to all and equitable sharing of benefits where these obstacles for utilising the resource are present.

Two arguments against a regulation of MGRs as a CHM are that the concept inhibits research development, since it does not create sufficient incentives for investment, and that it undermines the freedom of the high seas. The incentives for research and development could be hindered due to the cost of extracting the resource, storage, and developing it through research being too high. The risk of not finding anything of use is also too large when seen in relation to the economic profits to be gained from the product if the profits are to be shared. As discussed, the profits of MGRs are largely based on the administering of IPRs for the product of the resource. Since IPRs gives exclusive rights, it does not allow for the benefit-sharing that is fundamental for the resource to benefit all of mankind. The CHM regime is not consistent with the use of IPRs.

112 At 119.

113 UNCLOS, art 140.

Due to profits based on IPRs, using the regime of the CHM would undermine the freedom of making profit from the resources of the high seas.¹¹⁴ However, inconsistency is not necessary. If the marine areas beyond national jurisdiction are seen as free from a *res communis* perspective, the CHM could be seen as a tool to ensure that all have access to the resources found within the areas beyond national jurisdiction.¹¹⁵ Just as the CHM can be seen as a perpetuator for access to a resource from a *res communis* perspective, the freedom of the high seas could be seen as a method of benefiting all.

IPRs are often seen as the incentive to conduct research on MGRs. If there were no incentive to conduct research and develop MGRs, the research would be impeded. These developments could result in life-saving medicine or new technology that benefits humans. Thus, ultimately, humankind would suffer from the lack of development. The lack of incentive that regulating access and sharing benefits creates would therefore be contradictory to the benefit of mankind. This view does however exclude other methods of compelling research on MGRs. These methods will be explored in more detail below.

MGRs differ from minerals and fish in such ways that using either of the regimes would lead to unfortunate results. Using the freedom of the high seas would create a claim to parts of the ocean, since this is appropriation that undermines the freedom of the high seas. Respectively, the CHM would inhibit incentives for research that could benefit all of mankind. Neither of the regimes that have been presented are therefore optimal for the regulation of MGRs in areas beyond national jurisdiction.

4.3 A New Regime

The alternative third way was presented by the EU. Their position does not strictly follow the regime of the freedom of the high seas or the CHM, but is much more pragmatic. They suggested that access should be free, but benefits could be shared. This approach includes both the freedom of the high seas and the sharing aspects of the CHM.

Sharing benefits could amend some of the negative consequences of free access. Since a first come, first served approach to genetic resources currently means a right to exclude others from their use for a period of time, advantages would be created for already advantaged states, since only those with the necessary means could profit. If the benefits were shared, the exclusivity of the resources would be reduced. As the resources are potentially of great value to all humankind, creating an incentive for investment through free access could be necessary to benefit all of mankind.

114 Tladi, above n 33, at 124.

115 At 124.

In the EU's approach, the benefits shared are limited to non-monetary benefits such as transfer of information and technology. Since the incentive for research and development is the potential profits, the reasons for excluding monetary benefit-sharing are the cost, risk and time of profiting from the resources. Monetary benefit-sharing is often regarded as a hindrance to research development.¹¹⁶ Non-monetary benefit-sharing, such as information and technology transfer, does not really amend the aspect of exclusivity to the resource. The phrase "benefit-sharing" instead of "the CHM" is however not limited to non-monetary benefits in itself. The term can be used for many types of benefit-sharing without the other constraints associated with CHM.¹¹⁷

A more pragmatic regime could be structured in different ways. As seen above, MGRs do not fit well into any of the existing systems, and a new, pragmatic approach might be the best solution for the implementation agreement. The new regime creates an option for picking and mixing regulations that are suitable specifically for MGRs, balancing incentives for research and development against allowing all states a right to the resource.

Neither a strict use of the freedom of the high seas regime nor the CHM are optimal for the regulation of MGRs. The following discussion will therefore look at ways to manage MGRs in a way that balances incentive for research development and equitable sharing, not bound by the existing regimes.

4.3.1 Access

The main issue regarding access is whether or not access should be free from conditions and prior consent. In UNCLOS, the regulation of access to resources is a concept of the CHM, and regulated by the ISA.¹¹⁸ In the CBD, there is also regulation of access, but the access is granted from the state where the genetic resource is found.¹¹⁹ There is no state that has the jurisdiction to grant access to MGRs in areas beyond national jurisdiction. If access is going to be regulated in the implementation agreement, a system like the ISA is therefore more applicable.

The Group of 77 and China are open to discussing different modalities of access, but are set on regulating access.¹²⁰ Regulating access could be an obstacle to investment in research and development in areas beyond national jurisdiction. Time-consuming and costly research into MGRs in these areas would be more unattainable. This could discourage investment in research on MGRs in areas beyond national jurisdiction.

116 At 126.

117 Tladi, above n 33.

118 UNCLOS, pt XI, s 4.

119 Nagoya Protocol, art 6.

120 Group of 77 and China's written submission, above n 91, at 3.

As discussed, for genetic resources there is no need to save the quantity of the resource, such as with mineral resources. One of the main reasons for controlled access to mineral resources is the potential of over-exploitation. Genetic resources do not face this threat, so there is less need for regulation of access. Yet unrestricted access on a first come, first served basis would in practice only grant access to those who could afford it. This would leave many developing countries without access to the resources, at least for a period of time.

Since the research and development of MGRs could potentially benefit all of mankind, there is an urgency to let those who can conduct research, do so. The loss the freedom of access creates for other states could be amended by sharing the benefits or other regulations.

4.3.2 Benefit-sharing

Most states agree that there should be some form of benefit-sharing. Even the US admits that a benefit-sharing mechanism might be necessary.¹²¹ Agreement on benefit-sharing is also apparent from the recommendations of the Preparatory Committee. Only a need for further discussions on the modality of the benefit-sharing is mentioned, not the question of whether benefit-sharing should be included in the agreement or not.¹²² The focus in the following subsections will therefore be on the modality of benefit-sharing. The major division in what types of benefits should be shared is the division between monetary and non-monetary benefit-sharing.

(i) Monetary benefit-sharing

Monetary benefit-sharing could eliminate the negative effects of not being able to access the resource. The states that do not have the resources to access and research would not be excluded from the benefits that the deep sea has to offer. The main argument against monetary benefit-sharing is its effect on the incentive for researching and developing MGRs.¹²³ If restrictions were put on the access to resources, and the benefits were to be shared, this might discourage investment in research and development.

Monetary benefit-sharing is used in UNCLOS for the regulation of mineral resources in the Area, and in the CBD between the state that exploits and the state that hosts the genetic resource. For mineral resources the limited quantity of the resource creates a need for sharing. If benefits were not shared, only the first to exploit the minerals could profit. In the CBD the state that has the

121 USA's written submission, above n 99.

122 "Second Session of the Preparatory Committee on BBNJ", above n 3.

123 EU's written submission, above n 107.

resource may not have the money to exploit it, so benefit-sharing is a mechanism to ensure that the state hosting the genetic resource can profit from the resource. Neither of these reasons are applicable to MGRs in areas beyond national jurisdiction.

IPRs are often seen as contrary to monetary benefit-sharing. Since they create exclusivity to the profits, this is to some extent accurate if we use the current regulation of IPRs, where royalties derive from the products' exclusivity. Alternatives to this regulation of IPRs will be discussed below.

(ii) Non-monetary benefit-sharing

There are several approaches to non-monetary benefit-sharing. For example, the US proposes access as a benefit in itself. A proposition of the Group of 77 and China is a clearing-house mechanism, similar to the regulation in the CBD where information and technologies are available.¹²⁴ In the CBD, the clearing-house mechanism works as a facilitator for non-monetary benefit-sharing.¹²⁵ The EU does not specifically mention a clearing-house mechanism, but suggests establishing a common facility for the transfer of information and technologies, which would be a "practical, effective and efficient" way of benefit-sharing.¹²⁶ The US underlines that they want technology transfer to be voluntary.¹²⁷

Transfer of technology and information creates a flow of knowledge that could lead to a more advanced global understanding of MGRs. It would give developing states a chance to learn about the marine genetic resource without the cost of extraction out at sea. Additionally, it could potentially lead to further research and development of the genetic resource. As the rights to utilise the resource are still exclusive to the patent holder, sharing the knowledge would not substantively affect their prospect of profits. Technological and informational sharing therefore enforces the notion of *res communis* without greatly affecting the holder of the patent. Sharing of such non-monetary benefits could be done through already established organisations, such as the ISA or through a clearing-house mechanism. Monitoring the non-monetary benefit-sharing of MGRs falls outside the ISA's scope. Since the clearing-house mechanism is created for non-monetary benefit-sharing, this might be the better solution.

IPRs could be used as an incentive for research and development of MGRs in accordance with non-monetary benefit-sharing. Non-monetary benefit-sharing is not necessarily incompatible with IPRs. Information and technologies could be available, although the exclusive right of profit rests with the patent holder. In fact, IPRs could be used as a means for information to be accessible.

124 Group of 77 and China's written submission, above n 91, at 2.

125 CBD, art 18(3).

126 EU's written submission, above n 107, at 4.

127 USA's written submission, above n 99, at 7.

The IPRs could be published, and therefore the skill and working physical embodiment of the IPR is shared with the scientific community, who can learn from the research and development.¹²⁸ Just the fact that the product is on the market, shares valuable information with the scientific community. The product is publicly known, and information can be gathered about it.¹²⁹ However, only knowing the product gives very little information. Knowing the origin of the genetic resource might be imperative to the understanding of the product. Disclosure of the source of origin is nevertheless not currently a global criterion for patents, making that information on the marine genetic resource hidden from the scientific community.

Informational and technological sharing is not part of the global regulation for IPRs. WIPO does not have regulation that is consistent with information or technology sharing or disclosure requirements.¹³⁰ Sharing such information may even be seen as contradictory to IPRs in some states, as these are often used to hold product information secret. Negotiations on the relation between IPRs and genetic resources are ongoing in the Intergovernmental Committee in WIPO.¹³¹ To enable the sharing of information and technology for MGRs subject to a patent, regulation may have to change. The following discussion will therefore explore changes in the regulation of IPRs that could be harmonised with benefit-sharing.

If non-monetary benefit-sharing is to be regulated in the implementation agreement, there is a need for a change in the system of IPRs allowing for disclosure of origin. Such a criterion is already established in certain jurisdictions. Notably, the Norwegian Patent Act (Patentloven) § 8 b contains an obligation to disclose the origin of biological material.¹³²

Heafy suggests several ways in which IPRs could be regulated to better enforce the benefit-sharing regime.¹³³ First, she recommends a commons reciprocity system, where all the information of IPRs could be recorded.¹³⁴ This is very similar to the CBD clearing-house. Secondly, she suggests a commons trust fund where the patent holders pay a royalty, which is used to preserve biodiversity in the areas beyond national jurisdiction. India already operates

128 Heafy, above n 17, at 502.

129 At 502.

130 Thomas Greiber "Access and Benefit Sharing in Relation to Marine Genetic Resources from Areas Beyond National Jurisdiction: A Possible Way Forward" (2011) Federal Agency for Nature Conservation <https://www.bfn.de/fileadmin/MDB/documents/service/Skript_301.pdf> at 27.

131 World Intellectual Property Organization "Genetic Resources" WIPO <www.wipo.int/tk/en/genetic/>.

132 Patentloven 1967 § 8 b.

133 Heafy, above n 17.

134 At 518.

with such a system.¹³⁵ The system is a form of monetary benefit-sharing, where the patent holder must give away some of the profits to the benefit of the commons. An already existing institution could manage the fund.¹³⁶ Although the trust fund could be used to benefit all of mankind by preserving biodiversity, it does not affect the exclusivity of the patent. This change would not amend the fact that IPRs are a claim to parts of the sea. Thirdly, she recommends exception from protection where the genetic material is used for non-commercial purposes.¹³⁷ Only experimental research would be allowed to use the resource. This regime could be even stricter if the utilisation was limited to the commons trust fund.¹³⁸ This suggestion does somewhat limit the exclusivity of the IPR, making it available for other states.

Fourthly, she proposes the idea of a compulsory or commons licence. The compulsory licence to use the genetic material would be given to others on certain conditions, such as a monetary payment or grant-back or assign-back of improvements.¹³⁹ The monetary conditions may create a further segregation between developed and developing countries, as only developed countries might be able to afford the licence and subsequent research. There should also be rules for what conditions could apply, as the conditions could be used as tools to exclude certain states or organisations from being granted a licence. It could also make the resource so unattainable, that the practicality of the compulsory licence would be low. The commons licence is very similar to the experimental exception, granting licences only for non-commercial usage. Lastly, for IPRs to better enforce benefit-sharing, Heafy proposes a shorter time frame for exclusivity. This would lessen the similarity to sovereignty of the resources, while still creating an incentive for investment.

Some of Heafy's suggestions appear to be alternative, while others — such as, for example, the trust fund and exception for non-commercial purposes — could be used in combination. Such changes to the current regime of IPRs could be compatible with benefit-sharing and transfer of technologies. The incentive for research and development would also remain intact. However, one obstacle when limiting IPRs is that the price of the final product could be increased. The limits to the exclusive rights could reduce the profits for the patent holders, encouraging them to seek profits elsewhere. If a product of an MGR is a life-saving medicine or other product that might benefit the environment, the increased prices could be devastating. An increase in the price of the product would first and foremost affect developing countries that could

135 At 518.

136 At 519–520.

137 At 520.

138 At 521.

139 At 521.

not afford it. Limiting the price of the final product depending on the cost and time of the research could be a solution to this hurdle. However, enforcing such price limits could be discouraging for research development, as it limits profits.

Heafy's recommendations build on the use of IPRs for products of MGRs. The main argument for IPRs is the incentive it creates for research and development. However, it is not inconceivable that a system for motivating research and development could be created without the use of IPRs. Currently, there are only a few developed states that have marine genetic resource-based patents.¹⁴⁰ This locks out many states from the benefits of MGRs. An alternative system might therefore be desirable. One such alternative to IPRs could be to create a research fund for MGRs. For products developed using MGRs from areas beyond national jurisdiction, the researcher could receive a one-time payment. This would eliminate the exclusivity of the resource, as the researcher would not have exclusive rights. The division between bioprospecting and marine scientific research would be less prominent. Instead of granting an IPR, the sum would be paid only if the scientific research generates profitable product. Since there would be no claim to the genetic resource, the system would be in accordance with UNCLOS, art 241 on marine scientific research. Also, the fund would be compatible with the high seas as *res communis*, as it enables all states to access and use MGRs.

Reward as an alternative to IPRs is not a revolutionary system. As long ago as 1999, it was acknowledged that IPRs do not have any advantage over the reward system.¹⁴¹ Usually the concept is discussed in relation to national jurisdiction. Governments are commonly the funders of such rewards. In areas beyond national jurisdiction, there is no government to fund a reward. To establish such a fund would therefore call for a regulation for payment to the fund. This regulation should decide if both states and organisations should have to pay, which country or organisation has to pay money into the fund, and the amount each country or organisation should pay. This could be based on different states' economies, interest in research in MGRs in areas beyond national jurisdiction, or participation in the research. A new committee or an already existing body could monitor the fund, as Heafy suggested for the IPR fund.¹⁴²

Technological transfer, information-sharing and disclosure of origin could be combined with such a trust fund. This would stimulate further knowledge and development of MGRs. Unlike IPRs, non-monetary benefit-sharing would

140 Benkenstein and Maposa, above n 49, at 5.

141 Steven Shavell and Tanguy van Ypersele "Reward Versus Intellectual Property Rights" (National Bureau of Economic Research Working Paper Series, Cambridge, Massachusetts, 1999) at 1.

142 Heafy, above n 17, at 519–520.

not be contradictory to the fund. The prospect of monetary profit could create incentives for research and development without the exclusivity of IPRs. The fund would therefore maintain the incentive for research while allowing for benefit-sharing.

5. CONCLUSION

Since many important developments might come from MGRs in areas beyond national jurisdiction, there is a desire to create incentives for research. However, these incentives tend to create exclusivity and unfair distribution of the resources in the areas beyond national jurisdiction. Existing regulations of the freedom of the high seas and the CHM cannot be applied to MGRs. Using either of these concepts for the new implementation agreement does not seem like a viable option, since the nature of MGRs does not suit the rationale behind the concepts. There is also strong opposition to the use of these concepts for MGRs in areas beyond national jurisdiction. A more applicable and pragmatic system is the concept of access and benefit-sharing.

Access to genetic resources does not necessarily need to be regulated in order to ensure that all states can benefit, if the benefits are shared in some way. Although IPRs could be modified to allow for benefit-sharing, the risk of overpriced vital products that only benefit those who could afford them makes such a regulation risky. Reward instead of exclusivity could work just as well as an incentive for research and development of MGRs in areas beyond national jurisdiction. This would also remove the conflict with marine scientific research and appropriation of the sea. Funding such a reward system could however be problematic. Due to the wide discrepancies between the views of the US and Group of 77 and China, a pragmatic approach appears to be the best solution. Drawing on elements from both the freedom of the high seas and the CHM, there is a possibility to arrive at a solution that many states could agree upon.