

Article

On the Legal Status of Marine Genetic Resources in Areas beyond National Jurisdiction

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Abstract: The question of how to define the legal status of marine genetic resources (hereinafter MGRs) in areas beyond national jurisdiction (hereinafter ABNJ) is one of the important issues in the negotiation of the International Legally Binding Instrument under United Nations Convention on the Law of the Sea on the Conservation and Sustainable Use of Marine Biodiversity of Areas beyond National Jurisdiction. According to the theory of the order and justice value of the law, in combining the experiences of the international community in handling global ocean problems and characteristics of MGRs in ABNJ, it can be said that MGRs in ABNJ have the legal attribute of being the common heritage of mankind (hereinafter CHM). From the perspective of the principle of CHM, in applying the subject, object and content elements of legal relations as the research approach, the legal status of MGRs in ABNJ should be defined as follows: Firstly, an international management body should be established and the scope of actual resource developers should be defined in terms of subject elements. Secondly, the temporal scope, geographical scope and material scope of MGRs in ABNJ should be clarified in terms of object elements. Thirdly, the disposition of rights and obligations in the process of development and utilization of MGRs in ABNJ should be defined in terms of content elements.

Keywords: marine genetic resources; common heritage of mankind; BBNJ



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1. Introduction

Marine genetic resources (hereinafter MGRs) in areas beyond national jurisdiction (hereinafter ABNJ) refers to the genetic resources derived from the high seas and the Area [1]. In recent years, MGRs in ABNJ have increasingly attracted the attention of the international community. Its potential economic value has aroused the need to establish new regimes of international law [2]. Reviewing existing international legal documents, the 1992 Convention on Biological Diversity only regulates genetic resources in areas within national jurisdiction. The 1982 United Nations Convention on the Law of the Sea (hereinafter UNCLOS) established the high seas regime in Part VII and the Area regime in Part XI, respectively, based on the principle of freedom of the high seas and the principle of common heritage of mankind (hereinafter CHM) in ABNJ. However, the specific legal regimes concerning MGRs in ABNJ are still absent. The International Legally Binding Instrument under the United Nations Convention on the Law of the Sea on the Conservation and Sustainable Use of Marine Biodiversity of Areas beyond National Jurisdiction (hereinafter ILBI), as the latest legislative process in the field of the law of the sea, is intended to fill the legal gap. MGRs in ABNJ, including questions on benefit-sharing, is one of the core issues in negotiating the ILBI [3]. The two regimes concerning ABNJ established by UNCLOS have caused uncertainty in terms of the applicable regimes. The question of whether the new regimes of the law of the sea concerning MGRs in ABNJ apply to the principle of freedom of the high seas or the principle of CHM has always been the focus of argument in negotiating the ILBI.

At present, only a few developed states have the funds and technical conditions to develop and utilize MGRs in ABNJ [4]. They advocate the principle of freedom of the high

seas and benefit from MGRs in ABNJ. The potential value of MGRs in ABNJ is tremendous. It seems that the claim of freedom of the high seas does not set up development barriers. However, it will result in disordered competition, which will result in some problems such as maritime hegemony, uneven opportunities, the tragedy of Commons and inter-generational inequality. It will face an ethical dilemma and realistic questioning, which in contrast to the order and justice value of law. Therefore, to ensure fairness, stability and predictability of MGRs allocation in ABNJ, it is necessary to establish the new regimes relative to the law of the sea. The premise of establishing the new regimes is to reasonably define the legal status of MGRs in ABNJ [5]. The core issue in negotiating the ILBI is to choose the position to define the legal status of MGRs in ABNJ and then establish the legal regimes regarding access to and benefit-sharing of MGRs in ABNJ.

Given their own interests, there are four positions of the international community on this issue: Firstly, developed states believe that the principle of freedom of the high seas should be applied. Secondly, developing states advocate the application of the principle of CHM. Thirdly, some states such as South Africa assume that the principle of freedom of the high seas should be applied in the high seas and the principle of CHM in the Area. Fourthly, other states and international organizations represented by the European Union hold that the ILBI negotiations do not depend on determining the legal status of MGRs in ABNJ [6]. These four different positions reflect the different interests of different states. In order to realize the order and justice value of the law, the conservation and sustainable use of marine biodiversity of areas beyond national jurisdiction (hereinafter BBNJ) and the common interests of mankind ensure intra-generational equity and inter-generational equity [7]; the legal regimes regarding access to and benefit-sharing of MGRs in ABNJ should not only stimulate financial investment, technological research and the development of enthusiasm of the developed states, but also ensure equal opportunities and benefits-sharing for all states.

By evaluating the existing four different positions, the standpoint of the principle of CHM is the most consistent one out of the above legislative ideas. The principle of CHM has its institutional foundation of the law of the sea and its legal connotation has constantly evolved in practices of the law of the sea. Consequently, the principle has the potential to become the applicable principle of the ILBI. Firstly, this paper analyzes the necessities of defining the legal status of MGRs in ABNJ and admits the unified legal status of MGRs in ABNJ. Secondly, this paper justifies the legal attribute of CHM of MGRs in ABNJ in the context of the law of the sea. Lastly, taking the subject, object and content elements of legal relations as the research approach, this paper analyzes methods for defining the legal status of MGRs in ABNJ in ILBI from the perspective of the principle of CHM.

2. Preview of Defining the Legal Status of MGRs in ABNJ

In order to define the legal status of MGRs in ABNJ in the context of the law of the sea, the following premise questions should be answered: (1) demonstrate the necessities of defining the legal status of MGRs in ABNJ and (2) to figure out whether to endow MGRs in high seas and the Area with a unified legal status.

2.1. Necessities of Defining the Legal Status of MGRs in ABNJ

The legal gap on regulating MGRs in ABNJ means that there is a need to establish new regimes to maintain order and distribute benefits equally. The ILBI, which regards MGRs in ABNJ, includes questions on benefit-sharing as one of the core issues and is the institutional response to this realistic need. The reasonable definition of the legal status of MGRs in ABNJ is not only related to the establishment of the new regimes and the formation of marine order in ABNJ but also a reflection of the evolution of the trend of thought relative to the law of the sea and the value direction of distribution of the residual right in the law of the sea in ABNJ.

2.1.1. Institutional Core of the ILBI

The value of marine biodiversity is mainly reflected in the use of existing biotechnology for the biodiversity prospecting of MGRs and then developing some new varieties of resources and various biotechnological products. The exploitation of MGRs in ABNJ is the focus of attention for the conservation and sustainable use of BBNJ. As a result, the legal regimes concerning MGRs in ABNJ are also at the core of the ILBI. As an object of the law of the sea, defining the legal status of MGRs in ABNJ is a key issue and is the legal basis for the establishment of legal regimes regarding access to MGRs and benefit-sharing of MGRs in ABNJ.

The reasonable definition of the legal status of MGRs in ABNJ is the basis for establishing legal regimes regarding access to and benefit-sharing of MGRs in ABNJ, ensuring the good legal nature of the ILBI. Moreover, the domino effect will have a decisive impact on the institutional construction of the other three core issues of the ILBI: area-based management tools, environmental impact assessments, capacity building and marine technology transfer [3].

2.1.2. Internal Foundation for Establishing a New Marine Order in ABNJ

According to current international practices, there are three main types of marine resources in ABNJ: fishery resources in high seas, mineral resources in the Area and MGRs in ABNJ. There are mature legal regimes on fishery resources in high seas and mineral resources in the Area, which have formed a relatively stable, definite and predictable marine order, while legal regimes of MGRs in ABNJ are still absent. In practice, some developed states such as United States, Japan and Russia have developed and utilized MGRs in ABNJ using their technological and financial advantages [4]. These states advocate the principle of freedom of the high seas, causing a state of disorderly competition in the development and utilization of MGRs in ABNJ.

Order is one of the values of law. In social interaction, order always overwhelms disorder, which stems from human demands for continuity of life arrangements and the tendency to place social interaction under the regulation of rules. In the field of exploitation and utilization of MGRs in ABNJ, the current disordered competition has caused the realistic problems of marine hegemony, the tragedy of commons, unequal opportunities and inter-generational inequality. New legal regimes are needed to establish a new order to ensure the continuity and certainty of regulating MGRs in ABNJ. A reasonable definition of the legal status of MGRs in ABNJ is the precondition for establishing relevant legal regimes and also the internal foundation for establishing this new marine order in ABNJ.

2.1.3. Value Direction of Distributing Residual Rights in the Law of the Sea

The term of residual rights in the law of the sea refers to those rights which are not explicitly stipulated or prohibited by the law of the sea [8]. MGRs in ABNJ are a kind of object of residual rights in the law of the sea. As mentioned above, there is a realistic need to establish a new order in ABNJ and to form a rational distribution pattern on MGRs in ABNJ. On the legal status of MGRs in ABNJ, different standpoints represent different interests' pursuit. Legal regimes regarding access to and benefit-sharing of MGRs in ABNJ designed based on those standpoints may have similarities, but the interests maintained and the values embodied are far from one another. The definition of the legal status of MGRs in ABNJ affects the distribution pattern of MGRs in ABNJ and implies the value direction of the modern law of the sea in allocating residual rights in the law of the sea.

As to the issue of the distribution of rights or interests, justice is another value of law, which includes intra-generational equity and inter-generational equity. For the sake of the justice, it is necessary to uphold the correct value direction of the distribution of residual right by the law of the sea.

To define the legal status of MGRs in ABNJ and to establish relevant international legal regimes, it important to aim at guaranteeing intra-generational and inter-generational eq-

uity, balancing the interests between developed states and developing States and balancing the interests between contemporary and future generations.

2.2. *Justifications for the Unified Legal Status of MGRs in ABNJ*

Since it is necessary to define the legal status of MGRs in ABNJ, which covers both the high seas and the Area, the question of whether to follow the divide-rule approach of UNCLOS or admit MGRs in ABNJ with a unified legal status should be investigated. This paper chooses the latter one for the following reasons.

2.2.1. Integrity of MGRs in ABNJ

UNCLOS divides the oceans into various types of sea areas and places the marine living resources in different sea areas under different legal regimes, which, to some extent, ignores the integrity of marine ecosystems and the mobility of marine organisms. In practice, the flaws derived from the divide-and-rule system of UNCLOS for marine living resources have manifested in the conservation and management of straddling fish stocks. The Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 Relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks, which is the second implementing agreement of UNCLOS, is a response to this problem.

The integrity of MGRs in ABNJ is more obvious. In practice, it is generally difficult to distinguish whether MGRs come from the high seas or the Area because many marine living resources, even if they usually remain in the deep sea, are closely linked to the Area environment and are inseparable from one another [9]. As the latest progress of the law of the sea, the negotiation of the ILBI should sum up the past experiences, eliminate the gap between the system and reality, provide full consideration to the integrity of MGRs in ABNJ and admit its unified legal status.

2.2.2. Feasibility of International Law-Making

If MGRs in ABNJ are placed under two different institutional frameworks according to the divide-and-rule approach of UNCLOS, namely, the high seas regime and the Area regime, the contradiction between the above classification of sea areas and the conservation and management of marine living resources will be extended to ABNJ. Moreover, two sets of different regimes regarding access to and benefit-sharing of MGRs in ABNJ should be constructed according to the high seas and the Area, which not only increases the difficulty of the negotiation of the ILBI but also the difficulty of law application.

Bodenheimer, an American jurist, mentioned that, in addition to the inherent requirement of justice, the construction of a legal system should also be based on the standards of expediency, utility and feasibility [10]. International law-making is a game process of the international community. From the perspective of the negotiation of the ILBI, admitting MGRs in ABNJ a unified legal status is more conducive to reaching an agreement among the international community.

3. **Justifications for the Legal Attribute of CHM of MGRs in ABNJ**

There is an institutional basis for the law of the sea to admit the legal attribute of CHM of MGRs in ABNJ. In addition, the principle of CHM is of significance for the negotiation of the ILBI.

3.1. *Having the Institutional Basis of the Law of the Sea*

As the foundation of the Area regime, the principle of CHM has been legalized by UNCLOS. The application analysis of the principle in the law of the sea belongs to the interpretation of empirical law. According to the methods of interpretation of treaties defined by Articles 31 and 32 of the Vienna Convention on the Law of Treaty, the analysis of semantic interpretation, systematic interpretation, objective interpretation and historical interpretation is stated in the following subsections.

3.1.1. Semantic Interpretation

Article 136 of UNCLOS stipulates that: “The Area and its resources belong to the common heritage of mankind.” From the perspective of semantic interpretation, the scope of application of the principle of CHM includes the Area in the sense of the space and the resources in the Area [11]. At the very least, MGRs in the Area have not been explicitly excluded. By means of the semantic interpretation, the conclusion is still undefined and this needs to be further elucidated by the following methods of interpretation of treaties.

3.1.2. Systematic Interpretation

Reviewing the provisions of Part XI of UNCLOS, it can be observed that the provisions of this part refer to the provisions of the Area as a space in articles such as Articles 138, 141, 143 (1) and 143 (3), the provisions of resources in the Area such as Article 137 (2), the provisions of the Area and its resources such as Articles 137 (1) and 143 (2), as well as the provisions of activities in the Area such as Articles 139, 140, 142, 144 and 148. These particular regulations of UNCLOS can support the interpretation of MGRs accessed in the Area independent of the Area in the sense of space relative to the CHM.

In addition, according to Article 77 (4) of UNCLOS, the natural resources of the continental shelf include living and nonliving resources. There is no essential difference in the natural structure between the Area and the continental shelf except for their geographical location. Considering the inherent consistency of the law of the sea, it is appropriate to interpret the natural resources of the Area as including living resources and nonliving resources; the former also includes MGRs accessed in the Area.

3.1.3. Objective Interpretation

The principle of CHM is introduced into UNCLOS to prevent disorderly competition among states in developing MGRs in ABNJ and to avoid unilateral actions by a few developed states relying on the advantages of science, technology and capital that would result in unequal opportunities and inter-generational inequality [12]. The essence of CHM is to realize the common interests of all mankind through good ocean governance.

Firstly, in its preamble, UNCLOS states that the purpose of the Convention is to “promote the peaceful uses of the oceans, and the equitable and efficient utilization of their resources” and “the achievement of these goals will contribute to the realization of a just and equitable international economic order which takes into account the interests and needs of mankind as a whole and, in particular, the special interests and needs of developing States, whether coastal or land-locked”. To define the legal attribute of MGRs in ABNJ as CHM would result in the promotion of peaceful utilization, equal opportunities and fair benefit-sharing, which is in line with the purpose of UNCLOS.

Secondly, UNCLOS emphasizes the promotion of “the conservation of their living resources and the study, protection and preservation of the marine environment” in its preamble. The principle of CHM seeks a balance between the efficient exploration and development of MGRs in ABNJ and the prevention of the tragedy of Commons and further aims to maintain inter-generational equity and pays attention to the needs and rights of future generations for resources, which is in line with the purpose of UNCLOS.

3.1.4. Historical Interpretation

During the Third United Nations Conference on the Law of the Sea, the international community knew little about other living resources in ABNJ except for high seas fishery resources. Even after the discovery of the hydrothermal vent communities in 1977, the huge economic potential of MGRs in ABNJ did not attract the general attention of the international community [13]. The international community’s focus on developing resources in the Area is on mineral resources [5]. In response to the practical needs, Part VII of UNCLOS has set up a regime of conservation and management of high seas living resources for fishery resources. Part XI of UNCLOS has set up a regime of exploitation and management

of mineral resources in the Area without taking the relevant regimes of the MGRs in ABNJ into account.

Legislative gaps do not mean that the law of the sea negates the legal attributes of CHM of MGRs in ABNJ. When Arvid Pardo proposed to the United Nations General Assembly the institutionalization of CHM, the scope of application advocated by Pardo was not limited to the mineral resources in the Area. A review of the content of General Assembly resolution 2749 (XXV) would result in the same conclusion [14]. The preamble of UNCLOS also reaffirms General Assembly resolution 2749 (XXV) and advocates the development of the principles established in this resolution. Although Article 133 of UNCLOS defines resources in the Area as mineral resources, this is for historical reasons and it does not constitute an institutional obstacle for defining the legal attributes of MGRs in ABNJ as CHM. The scope of application of CHM should not be limited to the existing provisions of UNCLOS.

3.2. The Significance of the Principle of CHM for the ILBI

Since the principle of CHM was confirmed by Part XI of UNCLOS, it has not been implemented as expected in international practice. In response to this practical dilemma, based on coordination and compromise between developed and developing states, the recent law-making on the law of the sea has induced further evolution of the legal connotations of CHM. Looking back on the development of the modern law of the sea, the principle of CHM is not only the reflection of the evolution of thought relative to the law of the sea but also the foundation of future regimes of the law of the sea.

3.2.1. Conforming to the Ideological Trend of the Law of the Sea

Mare Liberum, published anonymously in 1609 by Hugo Grotius, laid the theoretical foundation for freedom of the high seas in the field of the law of the sea. Then, the winds of land domination blew into the sea and gradually shaped many of the fundamental features of the modern law of the sea. The principle of freedom of the high seas is increasingly restricted by treaty law and international customary law. The ideological trend of the law of the sea has the following impacts on international law-making: Firstly, the trend of regulation in ABNJ by the modern law of the sea has transferred from absolute freedom to reasonable restriction. Secondly, the value direction of modern law of the sea with regard to the distribution of maritime rights and interests has shifted from “first-come, first-served” individual benefit to unified management and shared benefit. The principle of the CHM has gradually replaced the long-cherished principle of the freedom of the high seas in ABNJ [15]. The Area regime established by Part XI of UNCLOS and the Agreement Relating to the Implementation of Part XI of the United Nations Convention on the Law of the Sea of 10 December 1982 (hereinafter 1994 Agreement) based on the principle of CHM is one of the examples of this trend.

Recognizing MGRs in ABNJ with the legal attribute of CHM, establishing legal regimes regarding access to and benefit-sharing of MGRs in ABNJ based on the principle of CHM conforms to the development trend of the law of the sea in the negotiation of ILBI. It also conforms to the ideological trend of the law of the sea, namely the regulation of the activities in ABNJ from absolute freedom to reasonable restriction.

In the first place, as a kind of resource in the global commons, MGRs in ABNJ are of the sharing characteristic, which means that the development and utilization of MGRs in ABNJ by various states requires explicit or implicit consent by other members of the international community. In addition, these activities should be implemented to achieve and enhance the common well-being of all mankind [7]. Determining MGRs in ABNJ with the legal attributes of CHM can activate the awareness of common interests in the international community and guide states to consider the rights and interests of other states while being self-interested in implementing ABNJ activities. Compared with the principle of freedom of the high seas, the principle of CHM is more in line with the sharing characteristics of the resources.

In the second place, the value of MGRs in ABNJ is concentrated in the intangible genetic information it carries, which requires plenty of funds and advanced technology to obtain it. Only developed states have the conditions to implement such exploitation and utilization activities currently. Therefore, defining the legal attributes of MGRs in ABNJ as CHM and establishing unified management of access to and benefit-sharing activities by the international community could ensure equal development opportunities for all states, promote peaceful use and achieve fair and equitable benefit-sharing.

3.2.2. Promoting the Establishment of New Regimes of the Law of the Sea

By reviewing the process of international law-making, even if the initial meaning of a legal term is vague and general, the legal term may evolve into a legal concept or even a legal principle with maturity in its connotation. UNCLOS and the 1994 Agreement established the Area system based on the principle of CHM. In the game of the international community, the legal connotation of the principle of CHM has been developing continuously. Currently, 168 States or regions have ratified or acceded to UNCLOS [16]. Consequently, the principle of CHM has been widely accepted and recognized by the international community because of its institutional basis of UNCLOS. It provides a good example for the international community to abandon “first-come, first-served” and advocate peaceful and cooperative development. Based on the status and role of the principle of CHM in ABNJ, it has the rationality and legitimacy to be the core of the new ABNJ system and can promote the establishment of the new regimes.

Looking back on the development of the law of the sea, it can be observed that the formulation of a convention or agreement is the product of compromise in complex international relations. Establishing new international legal regimes requires long-term historical accumulation and national game playing. The negotiation of ILBI is an obvious example. Currently, after 17 years of negotiations, there are still a lot of disputes in the international community, which means that the negotiation of ILBI is a long-term and difficult process.

At present, there are mainly two camps formed by developed states and developing states based on their respective interests in negotiating the ILBI. The principle of CHM aims to safeguard the common interests of all mankind and emphasizes sustainable development. The following system design based on this principle can effectively mediate the interest conflicts between developed states and developing states and is conducive to reaching an agreement in negotiating the ILBI. Firstly, setting up a relatively loose regime regarding access to MGRs in ABNJ to ensure equal development opportunities can loosen the constraints for developed states. Secondly, developing states are guaranteed to receive the benefits arising from the utilization of MGRs in ABNJ and can meet their reasonable demands by establishing a fair and equitable benefit-sharing regime. Thirdly, paying attention to the protection and balance of knowledge related to MGRs in ABNJ can mediate the tension between equity and efficiency in developing MGRs in ABNJ.

4. Definition of the Legal Status of MGRs in ABNJ from the Perspective of the Principle of CHM

MGRs in ABNJ, including questions on benefit-sharing, is one of the core issues in negotiating the ILBI. It is crucial to define the legal status of MGRs in ABNJ in the ILBI, which is the direction of the international law-making and the basis of the follow-up regimes. As mentioned above, MGRs in ABNJ have the legal attribute of CHM. It should be made clear that CHM is not a natural attribute of MGRs in ABNJ, but a legal attribute that needs to be affirmed by the ILBI. The establishment of the ILBI should take into account the practical experiences of the Area regime fixed by UNCLOS and define the legal status of MGRs in ABNJ with the revised legal connotation of CHM. Meanwhile, the establishment of the ILBI will also have far-reaching impacts on the development of the legal connotation of CHM.

On 18 November 2019, the United Nations issued the revised draft text of an agreement under the United Nations Convention on the Law of the Sea on the conservation

and sustainable use of marine biological diversity of areas beyond national jurisdiction (A/CONF.232/2020/3, hereinafter the Revised Draft of the ILBI) [17]. Article 5 (c) of the Revised Draft of the ILBI affirms the principle of CHM as the general principle of the ILBI. However, a large number of square bracket clauses exhibited in the Revised Draft of the ILBI indicates that the negotiation of the ILBI is long-term and arduous. In light of the Revised Draft of the ILBI, this paper analyzes methods to defining the legal status of MGRs in ABNJ from the perspective of the principle of CHM. The legal connotation of CHM in the Context of the Law of the Sea can be discussed from three aspects: subject, object and content elements of legal relations [18]. This paper applies the above approach as an analytical framework to provide suggestions for the negotiation of the ILBI.

4.1. Subject Elements: Establishing the International Management Body and Defining the Scope of Actual Resource Developers

In the international legal relations in which MGRs in ABNJ are located, its main subject elements involve the international management body and actual resource developers, which is analyzed in the following paragraphs.

4.1.1. International Management Body

In view of the inefficiency and conflict of ocean governance caused by the fragmentation of the existing ABNJ management mechanisms under the framework of UNCLOS, the ILBI needs to establish a horizontal coordinated international management body to promote integrated ocean governance in terms of effectively managing the activities regarding MGRs in ABNJ.

As for the establishment modality of the international management body, there are four modalities that have attracted the most attention in negotiating the ILBI: the modality of Conference of the Parties, the modality of association of existing institutions, the modality of setting up a new international organization and the modality of expansion of the authority of the International Seabed Authority [19].

Part VI of the Revised Draft of the ILBI adopts the modality of Conference of the Parties: Firstly, the Conference of the Parties should be established as the international management body addressing the conservation and sustainable use of BBNJ. It should adopt appropriate rules, guidelines or a code of conduct for the utilization of MGRs in ABNJ. As a general rule, decisions of the Conference of the Parties should be taken by consensus. Decisions of the Conference of the Parties should be made publicly available by the secretariat and should be transmitted to all States Parties in a timely manner. Secondly, a Scientific and Technical Body should be established under the authority and guidance of the Conference of the Parties. It should provide scientific and technical advice to the Conference of the Parties, monitor the utilization of MGRs in ABNJ and perform other functions as may be determined by the Conference of the Parties or assigned to it under the ILBI. Thirdly, a secretariat should be established to convene and service the meetings of the Conference of the Parties and of any other bodies that may be established by the Conference and perform other functions that may be determined by the Conference of the Parties or assigned to it under the ILBI. Fourthly, a clearing-house mechanism serving as a centralized platform should be established. The specific modalities for the operation of the clearing-house mechanism should be determined by the Conference of the Parties.

4.1.2. Scope of Actual Resource Developers

As to actual resource developers, Article 9 (1) of the Revised Draft of the ILBI provides that activities with respect to MGRs in ABNJ may be carried out by all States Parties and their natural or juridical persons. Meanwhile, Article 56 of the Revised Draft of the ILBI states that States Parties shall encourage non-parties to the ILBI to become parties and to adopt laws and regulations consistent with its provisions.

The definition of the scope of actual resource developers as the States Parties and their natural or juridical persons by the Revised Draft of the ILBI is consistent with the provisions of Article 3 (1) of Annex III of UNCLOS on the subjects of activities in the Area.

However, the relationship between the actual resource developers and the international management body needs to be further clarified. In this regard, the regulation provided by Article 153 (1) of UNCLOS is worth learning from, that is, the Conference of the Parties shall make unified arrangements and control in accordance with relevant provisions of the ILBI. Nevertheless, this does not mean that it is basically consistent with the UNCLOS. It is necessary to carry out specific system design according to the purposes and objectives of the ILBI and the characteristics of the development and utilization of MGRs in ABNJ.

4.2. Object Elements: Clarifying the Temporal Scope, Geographical Scope and Material Scope

In the international legal relations in which MGRs in ABNJ are located, the object elements, that is, the temporal scope, geographical scope and material scope of MGRs in ABNJ need be clarified in negotiating the ILBI.

4.2.1. Temporal Scope

Article 28 of the Vienna Convention on the Law of Treaties establishes the principle of non-retroactivity of treaties. Unless Contracting States grant retroactivity to a treaty, there is no retroactivity. In order to maintain the stability of international relations, reduce opposition and resistance by developed States and to respect the established legal status, the provisions of the ILBI should apply to the MGRs in ABNJ accessed after its entry into force. However, to achieve the purpose of fair and equitable sharing of resources based on the principle of CHM, the MGRs in ABNJ accessed in situ before its entry into force but accessed ex situ or in silico after its entry into force still need to bear the burden of the benefit-sharing responsibility according to Article 8 (3) of the ILBI.

4.2.2. Geographical Scope

UNCLOS divides the sea into internal waters, territorial waters, contiguous zones, exclusive economic zones, continental shelves, high seas and the Area. According to these regulations of UNCLOS, ABNJ includes two types of sea areas, namely, high seas and the Area. The Revised Draft of the ILBI defines ABNJ in Article 1 (4): "Areas beyond national jurisdiction means the high seas and the Area." In Article 3 (1), The Revised Draft of the ILBI also makes it clear that the scope of application of the ILBI includes the high seas and the Area. At present, the international community has basically reached a consensus on the geographical scope of MGRs in ABNJ, which is regulated by the ILBI, including the high seas and the Area. However, the question of how to deal with MGRs straddling and overlapping between ABNJ and areas within national jurisdiction still entails further discussion.

With regard to how to address this problem, suggested approaches in the second session of the intergovernmental conference of the ILBI (hereinafter IGC-2) included the following: Firstly, nothing should prejudice the rights, jurisdiction and duties of states under UNCLOS. Secondly, measures for the conservation and sustainable use of MGRs in ABNJ and those adopted for areas within national jurisdiction should be compatible in order to ensure the conservation and sustainable use of MGRs found in areas both within and beyond national jurisdiction. Thirdly, activities with respect to MGRs in ABNJ that are also found in areas within national jurisdiction should be conducted with due regard to the rights and legitimate interests of any coastal state under the jurisdiction of which such resources are found. Consultations, including a system of prior notification, should be undertaken with the state concerned, with a prioritization of avoiding infringement of such rights and interests. In cases where activities with respect to MGRs in ABNJ may result in the exploitation of MGRs that are found in areas both within and beyond national jurisdiction, the prior consent of the coastal state concerned should be required. Fourthly, the adjacent coastal states that have made a submission to the Commission on the Limits of the Continental Shelf should also be consulted [20].

The Revised Draft of the ILBI affirms the outcomes of the above negotiations. Article 9 (2) provides the following: "In cases where marine genetic resources of areas beyond

national jurisdiction are also found in areas within national jurisdiction, activities with respect to those resources shall be conducted with due regard for the rights and legitimate interests of any coastal State under the jurisdiction of which such resources are found.” Article 10 (5) provides the following: “States Parties shall take the necessary legislative, administrative or policy measures, as appropriate, to ensure that activities with respect to marine genetic resources of areas beyond national jurisdiction that may result in the utilization of marine genetic resources found in areas both within and beyond national jurisdiction are subject to the prior notification and consultation of the coastal States and any other relevant State concerned, with a view to avoiding infringement of the rights and legitimate interests of those States.”

4.2.3. Material Scope

During the first session of the intergovernmental conference of the ILBI (hereinafter IGC-1), there seemed to be convergence towards distinguishing between the use of fish and other biological resources for research into their genetic properties and their use as a commodity, with the ILBI applying only to the former. In that regard, suggestions in IGC-1 were made to develop a traceability regime to allow for benefit-sharing in the case of changes in use.

During the IGC-2, the president’s aid to negotiations (A/CONF.232/2019/1) proposed two options: Firstly, fish and other biological resources that are collected beyond a threshold amount shall be considered as a commodity. Secondly, if a species of fish is found to have value for its genetic material, that species of fish shall be treated as a marine genetic resource, regardless of the volume of the catch [20]. These suggestions are finally reflected in the Revised Draft of the ILBI such as Articles 8 (1) (a) and 8 (2) (a).

In addition, during the IGC-1 and IGC-2, participants raised the question on whether the ILBI would also be applicable to MGRs in ABNJ accessed *ex situ* and *in silico*. The Revised Draft of ILBI referred to the question in square bracket clauses in Articles 10 (3) and 10 (4), which requires further exploration and negotiation. As to whether MGRs in ABNJ contain derivatives, the square brackets clauses of Article 8 (1) (c) and 8 (2) (c) are still in place and need to be further negotiated.

4.3. Content Elements: Making Clear the Disposition of Relevant Rights and Obligations

Content elements refer to the disposition of rights and obligations in the process of development and utilization of MGRs in ABNJ. The definition of the legal status of MGRs in ABNJ should include but not be limited to the following contents in terms of content elements.

4.3.1. No Claim of Sovereignty or Sovereign Rights nor Be Appropriated

According to Article 9 (3) of the Revised Draft of ILBI, no state shall claim or exercise sovereignty or sovereign rights over MGRs in ABNJ, nor shall any state or natural or juridical person appropriate any part thereof. No such claim or exercise of sovereignty or sovereign rights nor such appropriation shall be recognized.

The regime of access to MGRs in ABNJ should be established to ensure equal opportunities for all states. It should also be recognized that the development and utilization of MGRs in ABNJ are phased. The initial access is the investment stage and the commercial utilizations are subject to a long research and development cycle. States with the ability should be encouraged to invest funds and technologies as much as possible to promote the generation and innovation of relevant knowledge, so as to advance the common well-being of mankind.

4.3.2. Used for Benefit of Mankind

Ensuring the fair and equitable sharing of benefits arising from the utilization of MGRs in ABNJ is for the benefit of mankind as a whole in order to contribute to the realization of a just and equitable international economic order. Moreover, the interests and needs

of developing states should be taken into consideration, in particular the least developed states, landlocked developing states, geographically disadvantaged states, small island developing states, coastal African states and developing middle-income states, in order to achieve substantive fairness [17].

The protection of rights and interests of resource developers should also be the focus of the regime of benefit-sharing of MGRs in ABNJ. Developed States with advanced technology play a major role in the development and scientific research of MGRs in ABNJ. The economic benefits of MGRs in ABNJ mostly come from follow-up scientific research products, while the scientific research process is time-consuming and expensive, which does not necessarily guarantee the expected benefits [21]. There are no equal exchanges between the access to and benefit-sharing of MGRs in ABNJ. The purpose of benefit-sharing is to redress the injustice and the imbalance of benefits caused by technological and capital asymmetry. When designing the regime of benefit-sharing, it should be realized that the purpose of the regime is to benefit the general rather than to exchange the benefits. The regime should be inclined to resource developers and promote the development activities of MGRs in ABNJ by means of incentives and rewards.

In addition, the regime of benefit-sharing should be coordinated with the regime of intellectual property protection of the MGRs in ABNJ. Intellectual property rights are the private rights of all states, which are designed to protect the intellectual achievements in the research and development of MGRs in ABNJ, while CHM is introduced in the law of the sea for the purpose of protecting benefits of the mankind as a whole. As a result, it requires the effective protection of the relevant intellectual property rights of resource developers on the premise of taking into account the benefits of the mankind as a whole.

4.3.3. Used Exclusively for Peaceful Purposes

All state parties shall use MGRs in ABNJ exclusively for peaceful purposes [17]. Non-peaceful use means non-use for the benefit of mankind as a whole [7]. States shall respect and properly take into account the rights, obligations and interests of other states affirmed by UNCLOS in the development of MGRs in ABNJ. State Parties shall fulfil, in good faith, the obligations assumed under the ILBI and exercise the rights recognized therein in a manner that would not constitute an abuse of right [17].

4.3.4. Conservation and Sustainable Use

Conservation and sustainable use of MGRs in ABNJ based on inter-generational equity should be guaranteed. As one of the core issues of the negotiation of the ILBI, the establishment of legal regimes of access to and benefit-sharing of MGRs in ABNJ aims to promote the conservation and sustainable use of MGRs in ABNJ. In view of the extraterritorial and international character of MGRs in ABNJ, the ILBI shall assume the cooperation obligations of each Contracting Party in the conservation and sustainable use of MGRs in ABNJ. In addition, area-based management tools as well as environmental impact assessments, as the other two core issues of the negotiation of ILBI, are institutional tools to ensure the conservation and sustainable use of MGRs in ABNJ.

5. Conclusion

As a new type of marine biological resources, the utilization value and development prospects of MGRs in ABNJ are gradually attracting international attention. However, due to the absence of relevant international regulations, only a few developed states with developing capacities currently advocate the principle of freedom of the high seas for the development and utilization of MGRs in ABNJ. The status quo has resulted in some practical problems such as disordered competition, uneven opportunities and inter-generational injustice in ABNJ and then faced with the questions of the order and justice value of the law. The ILBI aimed at regulating the conservation and sustainable use of MGRs in ABNJ came into being. A reasonable definition of the legal status of MGRs in

ABNJ is a prerequisite to ensure the good legal nature of the ILBI and to achieve good ocean governance, which is also one of the focuses of the current negotiations of the ILBI.

It is necessary to define the legal status of MGRs in ABNJ reasonably, which is the institutional core of the ILBI, the internal foundation for establishing a new marine order in ABNJ as well as the value direction of distributing residual rights in the law of the sea. At present, there are four positions of the international community on this issue: The position of freedom of the high seas held by developed states has no institutional basis in UNCLOS; the position of divide and rule held by some states, such as South Africa, is challenged due to the integrity of MGRs in ABNJ and the legislative feasibility of the ILBI; the position of avoiding controversy held by other states and international organizations represented by the European Union is also challenged due to the avoidance of the institutional basis of the ILBI. According to the theory of the order and justice value of the law and combining the experiences of the international community in dealing with global ocean problems and the characteristics of MGRs in ABNJ, it can be said that MGRs in ABNJ have the legal attribute of CHM.

From the perspective of the principle of CHM, taking the subject, object and content elements of legal relations as the research approach, the legal status of MGRs in ABNJ should be defined as follows: Firstly, an international management body should be established and the scope of actual resource developers should be defined in terms of subject elements. Secondly, the temporal scope, geographical scope and material scope of MGRs in ABNJ should be clarified in the aspect of object elements. Thirdly, the disposition of rights and obligations in the process of development and utilization of MGRs in ABNJ should be defined in terms of content elements.

In addition, it is of essential importance to balance the contradictions between fairness and efficiency in negotiating the ILBI. The principle of CHM aims at safeguarding public interests and the equitable sharing of marine interests. However, if there is an overemphasis on fairness but neglects the development of incentive mechanisms, it may sacrifice efficiency and even result in a situation where a few developed states work against the principle. Above all, it becomes a practical problem that whether the legal regimes formed under the principle of CHM are actually conducive to the fair development and rational distribution of resources. This can only be resolved by achieving consensus.

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