

# INTELLECTUAL PROPERTY RIGHTS BEYOND NATIONAL JURISDICTION: OUTLINING A REGIME FOR PATENTING PRODUCTS BASED ON MARINE GENETIC RESOURCES OF THE DEEP-SEA BED AND HIGH SEAS

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## I. Introduction

Processes of exploring and collecting marine genetic resources (MGRs) have identified more than 15,000 molecules; as of 2007, more than 37 products based on deep sea organisms had been patented (Zewers, 2008, 151-153). For the time being, a very small number of patents have originated from MGRs but their potential uses and benefits cannot be ignored. For instance, according to the results of International Census of Marine Microbes, “the value of the ecosystem services provided by coral reefs is estimated at more than \$5 million per square kilometre per year, in terms of revenues from genetic material and bioprospecting”<sup>1</sup>. Moreover, potential fields of application for MGRs include antioxidant, anti-fungal, anti-HIV, antibiotic, anti-cancer, anti-tuberculosis and anti-malarial uses. All the major pharmaceutical firms, including Merck, Lilly, Pfizer, Hoffman-Laroche and Bristol-Myers Squibb, have marine biology departments. The need to clarify the legal regime of MGRs and of their commercial exploitation through patent granting is of critical importance.

From a legal point of view, it first merits emphasis that the United Nations Convention on the Law of the Sea (LOSC)<sup>2</sup> does not specifically provide a clear legal regime relating to MGRs. The deep seabed beyond national jurisdiction is subject to the common heritage of mankind regime (art. 136 LOSC), which is managed by the International Seabed Authority (the Authority), and the water column beyond national jurisdiction is part of the high seas regime. There is considerable disagreement as to whether MGRs are or should be included in the Authority’s competence and whether they come under the “common heritage of mankind” regime. Even if MGRs are not directly part of the common heritage regime, their conservation and exploitation do constitute common concerns (Scovazzi, 2008, 3). MGRs should therefore enjoy protection in line with the existing legal instruments concerning common interests, such as biodiversity and genetic resources for food and agriculture.

This article therefore suggests that the exploitation of MGRs should be carried out according to two fundamental principles: the prior and informed consent to access and the fair and equitable sharing of benefits. It stands to question, however, whether the existing international regulation of intellectual property rights (IPRs) is compatible with these two principles. The World Trade Organization (WTO) Doha Ministerial Declaration<sup>3</sup> has charged the TRIPs Council with the task of examining the relationship between the Trade Related Intellectual Property Rights (TRIPs) Agreement<sup>4</sup> and the Convention on Biological Diversity

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(CBD)<sup>5</sup>. A group of 52 WTO members, has reached a compromise in July 2008: patent granting should be conditioned on the “disclosure of origin clause”. However, an amendment to the TRIPs Agreement has not yet been adopted and currently its feasibility is definitively uncertain.

In view of these overlapping legal regimes, any attempt at regulating the management and the exploitation of MGRs stands within the wider debate on the fragmentation of international law (Bevenisti, Downs, 2007, 595; Fischer-Lescano, Teubner, 2004, 999; Treves, 2007, 821)<sup>6</sup>. The article will demonstrate that the different legal regimes might operate in support of one another in the case at hand. Compatibility clauses and recent normative developments in each regime actually testify to an insurmountable interdependence between the LOSC, the CBD and the TRIPs Agreement. In short, legal quarrels relating to the management and exploitation of MGRs illustrate an inter-systemic dialogue (Gradoni, 2009, 27; Simma, Pyulkowski, 2006, 483).

The following analysis falls into two main steps. In the first part, the article demonstrates how the management and exploitation of MGRs falls within several legal regimes. It analyses the legal status of MGRs in the light of the LOSC, the patentability of inventions derived from MGRs in the light of the TRIPs Agreement, and MGRs’ access and commercial exploitation in the light of the CBD. This first part thus aims at identifying the principles and rules governing MGRs’ overall legal regime. It concludes that existing instruments are inefficient as well as inadequate to deal with MGRs. The second part thus explores alternative legal solutions as well as institutional mechanisms of coping with the management of MGRs and related IPRs.

## **II. A legal regime for MGRs: fragmentation and coordination between existing regimes**

MGRs are located at sea and thus, incontestably, the first instrument in which their legal status has to be looked for is the LOSC. However, as mentioned above, LOSC does not provide a specific regime for MGRs, in particular as far as the access to them and their exploitation are concerned. To this extent, two more instruments have to be analysed: the TRIPs Agreement, which regulates IPRs related to biotech products, and the CBD, which constitutes the “umbrella” convention with regard to the protection and the conservation of genetic resources.

### **1. LOSC or not LOSC?**

The LOSC is considered the “Constitution for the oceans”<sup>7</sup> and, as recalled by the UN General Assembly and repeatedly confirmed by states, it sets out the legal framework within which all activities in the oceans and seas must be carried out<sup>8</sup>. Thus, we have to identify under which LOSC provisions MGRs fall, considering the related context and subsequent practice<sup>9</sup>.

The LOSC does not contain any provision explicitly regulating MGRs and it does not use the expression “area beyond national jurisdiction”. It rather provides that areas beyond the national jurisdiction of coastal states are part of either the regime of the high seas or of the Area of the deep seabed. Art. 86 stipulates that:

The provisions of this Part (Part VII High Seas) apply to all parts of the sea that are *not* included in the exclusive economic zone, in the territorial sea or in the internal waters of a State, or in the archipelagic waters of an archipelagic State (emphasis added).

High seas are the water column, even superjacent to the continental shelf, which external limits can go beyond the 200 nautical miles (art. 76 LOSC). The floor and the subsoil of the areas beyond national jurisdiction fall under the Area (art. 1.1(1)) regulated by Part XI of the LOSC. This distinction cannot be easily applied to MGRs because of difficulties, for instance, in determining in which of the two regimes falls a microbe living in symbiosis with the local fauna or a microbe found in the proximity of a thermal vent falls.

The Area is submitted to the regime of the “common heritage of mankind” (art. 136 LOSC). The idea of common heritage of mankind was introduced by the Maltese representative, Mr Arvid Pardo, in a speech in front of the UN General Assembly in 1967<sup>10</sup>. In 1970, the UN General Assembly adopted resolution 2749(XXV) declaring that [t]he seabed and ocean floor, and the subsoil thereof, beyond the limits of national jurisdiction (...), as well as the resources of the area, are the common heritage of mankind. In those years, the optimism concerning technological developments and the movement promoting a New International Economic Order fuelled the rise of this regime which conveys the idea of equity in economic relations (Migliorino, 1982, 81; Brunnée, 2007, 561). It has been integrated in art. 137 LOSC on the legal status of the Area and its resources:

1. No State shall claim or exercise sovereignty or sovereign rights over any part of the Area or its resources, 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.

2. All rights in the resources of the Area are vested in mankind as a whole, on whose behalf the Authority shall act. These resources are not subject to alienation. (...)

3. No State or natural or juridical person shall claim, acquire or exercise rights with respect to the minerals recovered from the Area except in accordance with this Part. (...)

When LOSC was negotiated, the only resources in the Area taken into consideration where the mineral resources whose economical potential, even if exaggerated, was of great interest for both developed and developing countries (Glowka, 2010, 91; Leary, 2010, 47). The existence of living resources in the Area and their possible economical value was unknown at that time. This is the reason why art. 133 LOSC defines resources as “all solid, liquid or gaseous mineral resources *in situ* in the Area at or beneath the seabed, including polymetallic nodules”. Due to this narrow definition of the resources of the Area submitted to Part XI, some authors considered that the common heritage of mankind regime does not apply to MGRs (Leary, 2007, 95; Leary 2010). In particular, it has been noted that the system of exploitation and management of the resources brings with it a leading role of the Authority. Anyway the principal organ of the Authority, the Council, has actually a composition based on the representation of groups of interests, in particular those of the polymetallic nodules industry (art. 161.1 LOSC). This composition would not seem appropriate as far as the management of MGRs is concerned (Treves, 2010, 19).

However, the narrow definition of resources by Part XI for the purposes of the application of the common heritage regime does not preclude the application of all Part XI and the participation of the Authority. The regime applicable to MGRs has to comply with the provisions concerning the Area about marine scientific research (art. 143 LOSC) and the preservation of the marine environment (art. 145 LOSC). Indeed, bio-prospecting falls under the definition of marine scientific research in the view of the fact that art. 246 LOSC, applicable in the exclusive economic zone and on the continental shelf, includes marine scientific research projects carried out in order to increase scientific knowledge of the marine environment for the benefit of all mankind (para 3) and “of direct significance for the exploration and exploitation of natural resources, whether living or non-living” (para 5(a)). In its

last report, the Secretary General also recalls how the international community continues to recognize “importance of research on marine genetic resources for the purpose of enhancing the scientific understanding, potential use and application, and enhanced management of marine ecosystems”<sup>11</sup>. Moreover, no provision of LOSC distinguishes between marine scientific research carried out for commercial purposes, on the one hand, and research which does not have a direct commercial potential or which is not suitable for commercial exploitation, on the other (Scovazzi, 2010, 58). Thus, bio-prospecting in the Area must be performed in compliance with art. 143 LOSC which provides:

1. Marine scientific research in the Area shall be carried out exclusively (...) for the benefit of mankind as a whole, in accordance with Part XIII. (...)

3. (...) States Parties shall promote international cooperation in marine scientific research in the Area by: (a) participating in international programmes and encouraging cooperation in marine scientific research by personnel of different countries and of the Authority; (b) ensuring that programmes are developed through the Authority or other international organizations as appropriate for the benefit of developing States and technologically less developed States (...); (c) effectively disseminating the results of research and analysis when available, through the Authority or other international channels when appropriate.

Moreover, art. 135 LOSC states that the legal status of the waters superjacent to the Area and of the air space above those waters should not be undermined by the regime created by Part XI. Thus art. 143 LOSC on marine scientific research would be applicable only to MGRs located on the Area and, as already stated above, for MGRs it is very difficult to determine whether the resource is located on the seabed or in the water column. In the water column beyond national jurisdiction, all states enjoy the freedom of scientific research, guaranteed by arts 87.1(f) and 257 LOSC.

However, in the Area as well as in the water column, art. 241 applies and provides that “[m]arine scientific research activities shall not constitute the legal basis for any claim to any part of the marine environment or its resources”. The collection of samples for the creation of biotechnologies can thus be considered to amount to a use of resources in the interest of the “community” (Orrego Vicuna, 1978, 812). Just like all the activities carried out in areas beyond national jurisdiction, it has to be conducted with due regard to the community’s interest. This is further buttressed by the LOSC’s preamble stating that:

The States Parties to this Convention (...) will promote the peaceful uses of the seas and oceans, the equitable and efficient utilization of their resources, the conservation of their living resources,

Desiring by this Convention to develop the principles embodied in resolution 2749 (XXV) of 17 December 1970 in which the General Assembly of the United Nations solemnly declared inter alia that the area of the seabed and ocean floor and the subsoil thereof, beyond the limits of national jurisdiction, as well as its resources, are the common heritage of mankind, the exploration and exploitation of which shall be carried out for the benefit of mankind as a whole, irrespective of the geographical location of States.

These paragraphs of the Preamble encourage an interpretation of the relevant LOSC provisions in the sense of a regime for MGRs which takes inspiration from the common heritage of mankind regime, even if not considered as part of it, because of the narrow definition of resources contained in art. 133 LOSC and of the composition of the Authority. Only an amendment of the Convention would permit a complete application of Part XI to MGRs. This hypothesis would in any event require long negotiations because of the disagreement that prevails with regard to IPRs over biotechnologies.

Before considering the feasibility of such an amendment procedure, the regime described above, i.e. the relevant LOSC provisions, has to be examined and thus interpreted in

combination with the other relevant instruments, as required by the general rule of interpretation of treaties set by art. 31.3(c) of the Vienna Convention on the Law of Treaties (VCLT)<sup>12</sup>. Moreover, LOSC is a product of its time. It needs to be applied in the light of the normative evolutions that have occurred since it was adopted. Bearing in mind the number of states which are simultaneously party of the LOSC, the TRIPs Agreement and of the CBD, these two latter treaties will be analysed both separately and jointly.

## 2. MGRs in TRIPs

The TRIPs Agreement sets out the criteria for the release of patents on biotech inventions derived from genetic resources. Nonetheless, the grant of patents on inventions based on MGRs located in areas beyond national jurisdiction may give rise to problems of coordination with the LOSC regime.

### i. TRIPs Agreement Legal Framework

Inventions obtained from genetic resources, and even from MGRs, can be patented according to Section V of the TRIPs Agreement, which provides minimum standards of intellectual property protection (Correa, 2008, 227; Matsushita, Schoenbaum, Mavroidis 2006, 699). The TRIPs Agreement was concluded under the auspices of the WTO. Approximately 130 WTO state members (and parties to the Agreement at issue) are, at the same time, contracting parties of the LOSC.

Art. 27 TRIPs establishes that:

patents shall be available for any inventions, whether products or processes, in all field of technology, provided that they are new, involve an inventive step and are capable of industrial application.

Therefore, patents can be granted on inventions based on MGRs if these three essential conditions are simultaneously fulfilled. According to art. 28 TRIPs, a patent confers on its owner a series of exclusive rights, including the right to prevent third parties, not expressly authorized to the contrary, from making, using, offering for sale, selling or importing the product or the process covered by patent. The protection shall end not before than 20 years from the filing date (art. 33 TRIPs). Patent applications shall contain invention descriptions sufficiently clear and complete for the invention to be carried out by a person skilled in the art. Patent applicants may also be required so as to indicate the best mode for carrying out the invention, as known at the filing date or, where priority is claimed, at the priority date of the application (art. 29 TRIPs).

Some exceptions to patentability suitable for biotech inventions consisting in pharmaceutical products or processes are established by art. 27 TRIPs. Paragraph 2 provides that member states are allowed to exclude from patentability inventions the commercial exploitation of which is necessary to protect *ordre public* or morality, while, on the basis of paragraph 3, members may consider diagnostic, therapeutic and surgical methods for the treatment of humans and animals as non-patentable subject matter.

It shall be recalled that the TRIPs Agreement shall be interpreted in the light of its objectives. Pursuant to art. 7 TRIPs, the protection and enforcement of IPRs should contribute to the promotion of technological innovation and to the transfer and dissemination of technology, to the mutual advantage of producers and users of technological knowledge

and in a manner conducive to social and economic welfare. Moreover, art. 3.2 of the Dispute Settlement Understanding establishes that:

The dispute settlement system of the WTO [...] serves to preserve the rights and obligations of Members under the covered agreements, and to clarify the existing provisions of those agreements in accordance with customary rules of interpretation of public international law. Recommendations and rulings of the DSB cannot add to or diminish the rights and obligations provided in the covered agreements.

Therefore, WTO Agreements shall not be interpreted in “clinical isolation” (Board of Appeal in case *United States – Standards for reformulated and conventional gasoline*, Doc. WT/DS2/AB/R (29 April 1996) para 14; Marceau, 2001, 1081; Pauwelyn, 2003). They shall be read in accordance with the principles enshrined in the VCLT and especially through the systemic interpretation criterion, as established at its art. 31.3(c). Pursuant to this latter provision, any relevant rules of international law applicable in the relations between the parties shall be taken into account. Once applied to the WTO Agreements, as far as IPRs on MGRs are concerned, art. 31.3(c) may lead to taking into consideration the relevant provisions established by the LOSC and the CBD.

As a general remark, it shall be however noted that the extent of the notion of “parties”, as provided by art. 31.3(c) VCLT, is highly controversial (Linderfalk, 2008, 343). Attention shall be paid to the fact that, according to the WTO case-law, and especially to the report adopted by the Panel in the case *European Communities – Measures affecting the approval and marketing of biotech products*, art. 31.3(c) VCLT should be interpreted as requiring consideration of those only rules of international law which are applicable in the relations between all parties to the treaty which is being interpreted (Young, 2007, 907; MacGrady, 2008, 589; Thomison, 2007, 287)<sup>13</sup>. Therefore, as far as the WTO case-law is concerned, the systemic interpretation criterion is restrictively applied.

ii. TRIPs Agreement v. LOSC: is intellectual property on MGRs compatible with LOSC?

The standards provided by the TRIPs Agreement and even the attribution of exclusive rights to private individuals through the grant of patents may be considered, to some extent, as non compatible with some provisions set out by the LOSC. Indeed, as underlined by the Secretary General report on Oceans and Law of the Sea at the 62<sup>nd</sup> session of the United Nations General Assembly:

(...) the following questions may arise and require further consideration: whether filing a patent application is considered as a claim to part of the marine environment or its resources; whether the rights conferred by a patent are likely to interfere with the right to carry out marine scientific research; and whether the degree of confidentiality required prior to the filing for patents in order to safeguard the novel character of an invention is compatible with the requirement for dissemination and publication of data and research results<sup>14</sup>.

Firstly, the regime of the Area, as recalled above, is based on some basic principles according to which it is a commons and, as such, it is not subject to appropriation by individual states or persons, natural or juridical (art. 137 LOSC). Activities in the Area must be carried out for the benefit of mankind as a whole, as much as proceeds must be equitably shared among all states (art. 140 LOSC). As demonstrated above, even if MGRs cannot be directly encompassed in the common heritage regime regulated by Part XI LOSC, they constitute common concerns, submitted to common use. Therefore, the grant to natural or juridical persons of IPRs on inventions obtained from them could be considered as

incompatible with such qualification. Indeed the release of patents, according to the TRIPs' standards, would attribute to the holder the exclusive right to use and exploit commercially the invention and, to some extent, the natural resources over which it is based. Moreover, as a condition for the grant of IPRs, it is not required that activities on MGRs are carried out for the benefit of mankind as a whole and that economic benefits arising from them are equitably shared among all states.

Secondly, as recalled above, art. 241 LOSC provides for the non-recognition of marine scientific research activities as the legal basis for claims. Art. 241 implies that scientific research and bio-prospection on MGRs shall not constitute the legal ground for claims either of ownership or of exclusive use of the resources. In order to understand correctly the meaning of art. 241, preparatory works should be taken into consideration. Art. 241 was adopted with the aim of facing the risk that research might be used as the basis for claims of "exploitation rights or any other rights in areas beyond national jurisdiction" (Nordquist *et al.*, 1991, 463). Therefore, as underlined by some authors, it is clear that the grant of patents on inventions derived from MGRs, as far as they attribute to their holder the exclusive rights to use and exploit commercially the covered inventions, could be considered contrary to art. 241 (Salpin, Germani, 2007, 20-22). Indeed they imply a concurrent restriction of third parties' rights to use and exploit MGRs located beyond national jurisdiction, which is exactly the effect that art. 241 aims at avoiding.

Finally, according to art. 244 LOSC, states shall publicize and disseminate research results, knowledge, scientific data and information. The same is provided for scientific research undertaken in the Area, with specific reference to which art. 143.3(c) requires that scientific results, "when available", shall be duly disseminated. Moreover, pursuant to art. 246.3 marine scientific research shall be carried out in order to increase scientific knowledge of the marine environment for the benefit of all mankind. According to these provisions the dissemination of scientific results and knowledge shall be realized with special favour for developing countries, which shall be given the chance to increase their autonomous scientific and professional skill. Therefore, the grant of IPRs on marine scientific research results to private holders can be seen as contrary to the objectives set at arts 244 and 143.3(c) LOSC. It remains doubtful whether the description of the invention, as required to patent applicants according to the TRIPs Agreement, can be considered as fulfilling the LOSC provisions and guaranteeing the compliance of IPRs with LOSC requirements (Salpin, Germani, 2007, 22-23).

### 3. The protection of biological diversity beyond national jurisdiction

The CBD guarantees the protection of genetic resources on the basis of precise rules which regulate their conservation as well their commercial exploitation. Doctrinal positions disagree about the application of the CBD in areas beyond national jurisdiction.

#### i. CBD legal framework: a description

According to art. 1, the CBD's objectives consist of the conservation of biological diversity, the sustainable use of its components, and the fair and equitable sharing of benefits arising out of the utilization of genetic resources, including by appropriate access to genetic resources and by appropriate transfer of relevant technologies. States have the sovereign right to exploit their natural resources (art. 3 CBD). Consequently national governments have the authority to

regulate the access to genetic resources by foreign states, as well as by public and private institutions.

Two mandatory principles govern the access to genetic resources: first, the access to genetic resources is subject to the prior and informed consent of the national authority of the state on the territory or under the jurisdiction of which the resource is located; second, the terms upon which the access is authorised are agreed between the provider state and the user (art. 15 CBD). The content of such mutually agreed terms is left to the discretion of the parties. Nonetheless they shall ensure that benefits arising from the economic exploitation of the resources are fairly and equitably shared between the user and the provider state. Due to the vagueness of the notion of “fair and equitable sharing of benefits”, which the CBD does not define precisely, and considered that neither a model contract nor standard clauses are provided by the convention, such an objective cannot be easily reached. Practice demonstrates that the corresponding obligation is seldom fulfilled (Boschiero, 2006, 64; Carr, 2008, 131; Morin, 2003/2004, 307).

Given the practical difficulties faced by states and private operators, in 2002 the Conference of the parties of the CBD adopted the Bonn Guidelines on Access to Genetic Resources and Fair and Equitable Sharing of the Benefits Arising out of their Utilization (the Bonn Guidelines) (Chambers, 2003, 311; Jeffery, 2002, 747; Tully, 2003, 84)<sup>15</sup>. The Bonn Guidelines clarify the means through which the prior and informed consent and the fair and equitable benefit sharing should be applied by national governments and suggest legal formula according to which they could be concretely fulfilled.

Moreover, after lengthy negotiations, the Members of the Ad Hoc Open Ended Working Group on Access and Benefit-Sharing of the CBD (ABS Working Group) in October 2010 eventually agreed on the conclusion of a Protocol to CBD on “Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from Their Utilization”. Its text, finally adopted on the occasion of the tenth meeting of the Conference of the parties, held in Nagoya, Japan, will be deserved due attention in the following paragraphs<sup>16</sup>.

## ii. Do MGRs fall under the CBD?

Some authors maintain that the CBD cannot directly apply to MGRs neither in the water column or in the deep seabed beyond national jurisdiction because of its territorial scope, set out in art. 4 CBD, and because of the bilateral nature of the exploitation scheme (Matz-Lück, 2010, 63). We demonstrate to the contrary that MGRs can fall within the reach of the CBD.

The LOSC provides an important set of rules for the protection of the marine environment in Part XII. These provisions do not apply exclusively in the sense that Part XII has to be considered a sort of “umbrella” agreement (Nordquist, 1991, 423; Treves, 1995, 853-854) in the field of the protection of marine environment. This role of LOSC Part XII is performed by the integration mechanism set out in art. 237 which provides:

1. The provisions of this Part are *without prejudice to the specific obligations assumed by States under special conventions* and agreements concluded previously which relate to the protection and preservation of the marine environment and *to agreements which may be concluded in furtherance of the general principles set forth in this Convention*.

2. Specific obligations assumed by States under special conventions, with respect to the protection and preservation of the marine environment, should be carried out in a manner consistent with the general principles and objectives of this Convention. (emphasis added)

This provision highlights how the LOSC has an interdependent relationship with the existing instruments in the field of marine environment (Trevisanut, 2009, 415). The drafters of the LOSC had in mind the already existing texts in the field, but also the foreseeable future normative developments. Art. 237 in fact requires that subsequent instruments are applied consistently with the LOSC. Thus, the CBD has to be interpreted consistently with the LOSC also when it comes to marine biodiversity.

Art. 4 CBD provides:

Subject to the rights of other States, and except as otherwise expressly provided in this Convention, the provisions of this Convention apply, in relation to each Contracting Party: (...)

(b) *In the case of processes and activities, regardless of where their effects occur, carried out under its jurisdiction or control, within the area of its national jurisdiction or beyond the limits of national jurisdiction.* (emphasis added)

Some authors consider that art. 4.(b) CBD precludes its direct application to MGRs in the water column of the high seas or on the deep seabed (Matz-Lück, 2010, 63). Others affirm that the CBD would appear to apply to activities beyond national jurisdiction only to the extent that states regulate the activities of their own nationals. So far, no states has regulated the activities of its nationals with respect to genetic resources in areas beyond national jurisdiction (Leary, 2010, 57). The latter view is contestable in the light of existing regulations, both national and international, concerning activities carried out on the high seas. Indeed the freedom of high seas, rule and almost dogma beloved by states, does not mean that states can do anything they want. Actually the freedom of high seas is well regulated both by customary and treaty law. First of all, this freedom encompasses, *inter alia*, the freedom of navigation, the freedom to construct artificial islands and installations and the freedom of scientific research (art. 87.1.(a), (d), (f) LOSC) which shall be exercised by all States with due regard for the interests of other States in their exercise of the freedom of the high seas, and also with due regard for the rights under this Convention with respect to activities in the Area (art. 87.2).

The fundamental condition for enjoying these freedoms is the nationality of vessels. States enjoy freedoms and only their nationals can also enjoy them. Thus any vessel exercising an activity in the high seas has to be linked with a state, i.e. to fly its flag (arts 91-92 LOSC). Any vessel is subject to the exclusive jurisdiction of the flag state (art. 92.1 LOSC) which has to exercise “its jurisdiction and control” over it (art. 94 LOSC). Consequently the vessel collecting MGRs samples, which is an activity involving genetic material in the sense of the CBD, is under the exclusive jurisdiction of the flag state. For instance, the Australian Environment Protection and Biodiversity Conservation Act 1999 applies to Australian national, vessel and corporations in areas within and beyond Australia’s national jurisdiction<sup>17</sup>. Unfortunately, not all flag states are willing to integrate in their domestic order such an obligation and to exercise effectively their control on vessels (Ademuni-Odeke, 2005, 339; Momtaz, 1986, 715; Treves, 2004, 179). It may then be asked whether other states might come into consideration under art. 4.(b) CBD.

Processes or activities concerning MGRs can presumably be carried out or funded by a private actor, a research institute or a pharmaceutical company, which controls the activity or process. Private actors, and among them legal persons, have a nationality in conformity with international law criteria (Higgins, 1971, 327; Mann, 1973, 259; Stern, 1990, 897). States are bound by a due diligence obligation towards private actors having their nationality as far as serious violations of international law are concerned and as far as these violations occur on their territory or under their jurisdiction (Pisillo Mazzeschi, 1989; Condorelli, 1984, 95). It is

debatable whether such an obligation exists with regard to private actors' behaviour outside the state territory (Mann, 1984, 9; Rigaux, 1999, 211). However, even if it may well be possible to doubt the existence of such a general obligation, it is hardly plausible to deny that states must pay due diligence in specific sectors. For instance, art. 204 LOSC provides that states shall keep under surveillance the effects of "*any activities which they permit or in which they engage*" in order to determine whether these activities are likely to pollute the marine environment" (emphasis added). Reading art. 4(b) CBD in combination with art. 204 LOSC suggests that the state of nationality of private actors or even the state sponsoring the private activity does have a role to play<sup>18</sup>; this state, if it is a party to the CBD, would be bound by it in regards to activities and processes concerning MGRs beyond national jurisdiction.

This interpretation would be in line with the recommendation of the Subsidiary Body on Scientific, Technical and Technological Advice of the CBD (SBSTTA):

(c) *Concerned* about the threats to genetic resources in the deep seabed beyond national jurisdiction, *requests* Parties and *urges* other States, having identified activities and processes under their jurisdiction and control which may have significant adverse impacts on deep seabed ecosystems and species in these areas, as requested in paragraph 56 of decision VII/5, to take measures to urgently manage such practices in vulnerable deep seabed ecosystems with a view to the conservation and sustainable use of resources, and report on measures taken as part of the national reporting process<sup>19</sup>.

This statement was recalled by Decision VIII/21 of the eighth CBD Conference of the parties<sup>20</sup>. Moreover, as we will see below, the recently adopted Nagoya Protocol recognizes the need of finding an innovative solution addressing the fair and equitable sharing of benefits derived from the utilisation of "genetic resources (...) for which it is not possible to grant or obtain prior informed consent" (see Preamble). This careful roundabout expression seems to designate genetic resources not falling under the national jurisdiction of any state, such as MGRs. This last instrument thus supports the view that the CBD applies to MGRs in areas beyond national jurisdiction.

### III. A legal regime for MGRs: foreseeable solutions

Even if it was possible to determine the state exercising its jurisdiction or control over the activities and processes concerning MGRs in areas beyond national jurisdiction, it remains to determine who would be its counterparty. Two mandatory principles govern the access to genetic resources and the fair and equitable benefit sharing: the access shall be subject to the prior informed consent of the national authority of the state on the territory or under the jurisdiction of which the resource is located; the terms upon which the access is authorised shall be mutually agreed between the provider state and the user. It is evident that such a "national state" cannot be identified when dealing with MGRs in areas beyond national jurisdiction.

This section examines the means through which the international obligations just mentioned can be met when MGRs are concerned and identifies which would be the most appropriate authority as a counterparty of the users. It moves from the assumption that the TRIPs Agreement strengthens the intellectual property protection significantly, so that patent holders are given the right to exploit commercially and exclusively the covered inventions, even the pharmaceutical product derived from MGRs, for at least 20 years. From the developed-nations perspective, intellectual property is an essential means to create additional incentives to invent and produce biotech products, the usefulness of which cannot be denied.

As far as the G77 countries are concerned, the grant of patents on MGRs-based inventions gives rise to economic benefits that need to be equitably shared among the patent holders and the international community, with special consideration for the needs of developing countries.

Given the present conditions, a scholar correctly noted that it is hard to see how the majority of the international community will benefit from the monopoly protection provided to patent holders of biotechnology products derived from MGRs taken from ocean areas beyond national jurisdiction (McLaughlin, 2010, 73). Considering the inequity of such an outcome as well as the undeniable contribution of intellectual property protection to scientific and technological development, we are convinced that “states should seriously discuss viable and realistic options for [...] sharing benefits in a fair and equitable way” (Arico, 2010, 77; Scovazzi, 2010, 57)<sup>21</sup>. To this extent, we will now analyse four legal solutions based on existing legal tools. The foreseeable legal solutions demand institutional mechanisms that guarantee the protection and the “common” management of MGRs. Three possible institutional scenarios will be studied in closer detail.

## 1. Legal solutions

With the 2001 WTO Doha Ministerial Declaration, the issue of the relationship and the consequent coordination between the TRIPs Agreement and the CBD has gained interest and relevance. The application of CBD’s rules to inventions based on genetic resources, as well as on MGRs, is not easy. Some legal solutions are suitable: the application of the Bonn Guidelines, the hopeful entry into force of the Nagoya Protocol to the CBD, and the adoption of a disclosure of origin clause to be inserted in the TRIPs Agreement. Another forum contributes to the discussion: the United Nations Food and Agriculture Organization (FAO). The FAO International Treaty on Plant Genetic Resources for Food and Agriculture portrays a legal model for the exploitation of genetic resources which represents interesting features for a future regime for MGRs.

### i. MGRs and the Bonn Guidelines

The Bonn Guidelines provide clarifications that facilitate the concrete application of CBD and, in particular, the enforcement of both the prior and informed consent and the fair and equitable benefit sharing obligations (Chambers, 2003, 311; Jeffery, 2002, 747; Tully, 2003, 84). In order to pursue these objectives, paragraphs 13 ff. of the Bonn Guidelines establish that contracting parties shall set up National Focal Points, i.e. domestic authorities competent for the management of the access procedure by foreign institutions to genetic resources and for entering into the agreements addressed to define the terms of such an access. National Focal Points should develop framework agreements, as well as standardized material transfer agreements and benefit-sharing arrangements. Pursuant to mutually agreed terms, benefits should be shared fairly and equitably with all those who have been identified as having contributed to the resource management and to its scientific and commercial exploitation. The latter may include governmental, non-governmental or academic institutions, as well as indigenous and local communities (para 48). Moreover, benefits should be directed in such a way as to promote conservation and sustainable use of biological diversity. Ethical concerns of parties and stakeholders should be taken into consideration in drafting the mutually agreed terms (para 43.a).

Parties and stakeholders should define the conditions, the obligations, the procedures, the types, the timing, the distribution and the mechanisms upon which benefits should be

shared (para 45). These will vary depending on what is regarded as fair and equitable in light of the circumstances. Near-term, medium-term and long-term benefits should be considered. Monetary and non-monetary benefits may be agreed (see the not exhaustive list in Appendix II of the Bonn Guidelines). It clearly appears that some of the means suggested by the Bonn Guidelines are suitable also with MGRs and should be applied in order to guarantee the fair and equitable sharing of the benefits accrued from their exploitation, as required by art. 140 LOSC. For instance, monetary and non-monetary economic benefits accrued from the development and commercialization of patented inventions derived from MGRs might be fairly and equitably shared through either the attribution of payments, the setting up of joint ventures, the constitution of joint ownership of relevant intellectual property rights, or the sharing of research and development results, the transfer of relevant knowledge and technology, as well as the collaboration, cooperation and contribution in scientific research and development programs.

It should be noted that such a solution, and particularly the payment of royalties, might be considered to be in line with the system already provided by art. 82 LOSC. Indeed, this provision sets in place a mechanism for an international royalty to be levied for the exploitation of non-living resources of the continental shelf beyond 200 nautical miles. Art. 82 provides that coastal states shall make payments or contributions in respect of their exploitation and establishes the rate and the formula according to which the amount shall be calculated. Moreover, it provides that payments shall be made through the Authority, which shall distribute them to states parties, on the basis of equitable sharing criteria and with special regard to the needs of developing states, least developed and land-locked countries. As underlined by a scholar, “this revenue-sharing formula was developed with the unique characteristics of offshore oil and gas production in mind, but there is no reason why an appropriate formula could not also be found for revenues from commercialization of MGRs” (McLaughlin, 2010, 75).

The definition of fixed modalities according to which benefits should be shared represents an interesting and useful compromise between intellectual property protection and equity needs claimed by developing countries. In any event, when applied to MGRs, such method ineluctably faces difficulties due to the lack of an authority competent, according to international law, to manage their utilization, to authorize and discipline their exploitation and, consequently, to receive the amounts of money deriving from the sharing of the economic benefits accrued. Should an institution gain such competences in the future, the solutions suggested by the Bonn Guidelines may amount to suitable models to be taken into consideration.

## ii. MGRs and the Nagoya Protocol

After lengthy negotiations in the ABS Working Group, the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from Their Utilization was adopted on 29 October 2010 by the Conference of the parties of the CBD. The Protocol defines the modalities according to which the parties shall enforce the prior and informed consent and the fair and equitable benefit sharing obligations, as they are set out in the CBD. The content of many of its articles is either directly inspired or influenced by the Bonn Guidelines. As far as MGRs are concerned, it should be noted that, after long debates, the parties agreed on to introduce a provision dealing expressly with the sharing of benefits that arise from the utilization of genetic resources in transboundary situations or from uses for which it is not possible to grant or obtain prior informed consent (art. 10). Therefore,

notwithstanding the fact that many parties opposed that MGRs be included in the field of application of the Protocol, it eventually did consider their exploitation<sup>22</sup>.

The relationship between the Protocol and other international instruments is one of the most controversial points that arose during the negotiations. The parties agreed on the final draft of art. 4 whose first paragraph is directly inspired by the coordination clause provided in Art. 22 CBD and establishes that “the present instrument shall not affect the rights and obligations of any party deriving from any existing international agreement, except where the exercise of those rights and obligations would cause a serious damage or threat to biological diversity”. Paragraphs 2 and 3 provide for the Protocol’s implementation in a “mutually supportive manner” with other relevant international instruments and, in particular, with those specialised on access and benefit sharing. The Nagoya Protocol follows the Cartagena Protocol on Biosafety<sup>23</sup> – the first Protocol to the CBD – in this regard, demanding mutual support as a tool of interpretation. However, differently from the former, the Nagoya Protocol gives the provision on mutual support a broader ambit and an expressly binding character, as it is not limited to a general and preambulatory statement (Boisson de Chazournes, 2007, 829). Moreover, according to paragraph 3, useful and relevant ongoing work or practices under international instruments and relevant organizations deserve due regard in implementing the Protocol. Paragraph 4 finally provides for the only situation in which the Nagoya Protocol would be expressly subjected to the application of other international instruments; namely, the Protocol shall not apply to states which are at the same time parties to another international instrument providing for the access and benefit-sharing regime of a specific genetic resource, when this latter instrument is consistent with the letter and purpose of the CBD and its Protocol. It should be noted in conclusion that the formulation of art. 4 leaves discretionary freedom to the parties in dealing with MGR’s management, either through the application of already existing and consistent legal instruments or by way of the future adoption of a specific and consistent one.

As for its content, the Nagoya Protocol goes further than the Bonn Guidelines, by establishing the issuance of internationally recognized certificates by the competent national authorities (arts 6.3.e, 13.2, 17.2-4 Nagoya Protocol). It also provides for their notification to the Access and Benefit-Sharing Clearing House, a mechanism duly established by the Protocol as part of the Clearing-House mechanism set out in art. 18.3 CBD (arts 6.3.e, 14.2.c Nagoya Protocol). Such certificates shall evidence that the genetic resource has been obtained, accessed and used in accordance with prior informed consent and that mutually agreed terms have been entered into. The certificates shall contain minimum information, such as the identities of the issuing national authority, of the provider and of the user. Moreover, they shall specify the subject-matter covered and the geographic location of the access activity, the uses permitted and the correspondent restrictions, as well as the conditions of transfer to third parties. Lastly, the certificates shall contain a link to the mutually agreed terms regulating the benefit sharing (art. 17.4 Nagoya Protocol).

The Protocol provides that parties shall establish clear rules and procedures for mutually agreed terms (arts 5, 6.3.g, 18 Nagoya Protocol). Such terms may include a dispute settlement clause and terms on monetary and non-monetary benefit sharing, as well as on subsequent third-party use. Monetary and non-monetary benefits are listed in the Annex and are directly inspired by the Bonn Guidelines. According to arts 19 and 20, parties shall encourage the development, update and use of model contractual clauses for mutually agreed terms, as well as the draft of codes of conduct and best practice standards in relation to access and benefit-sharing, in consultation with users and providers from key sectors. Art. 17 provides that

parties shall take measures to monitor the utilization of genetic resources. For instance, they shall establish checkpoints and disclosure requirements.

As already mentioned, the Nagoya Protocol addresses the specific cases in which access and benefit-sharing of genetic resources occurs in transboundary situations or in situations in which it is not possible to grant or obtain prior informed consent. For this purpose, art. 10 of the Protocol provides for the establishment of a Global Multilateral Benefit-Sharing Mechanism. The parties shall further develop its functional modalities according to their needs. The benefits arising from the utilization of such resources shall be used to support the conservation of biological diversity and the sustainable use of its components globally.

As a concluding remark, it should be noted that the Nagoya Protocol would represent a workable solution with reference to MGRs' management. Indeed, the Protocol pursues the same legal objectives as the Bonn Guidelines, i.e. the fulfilment of the prior and informed consent and of the fair and equitable benefit sharing obligations. Anyway it might be much more effective. Indeed, it is binding and it provides for some solutions that are particularly suitable for MGRs, such as the creation of a Global Multilateral Benefit-Sharing Mechanism and the issuance of internationally recognized certificates. Should the former be effectively implemented, it could guarantee the conservation of biological diversity and the equitable sharing of benefits, while overcoming some of the specific difficulties of MGRs' management. Moreover, should a specific international body ultimately enjoy the competence to authorize the access and the commercial exploitation of MGRs, the issuance of internationally recognized certificates would certainly contribute to guaranteeing their correct administration and to avoiding abuses.

### iii. MGRs and the “disclosure of origin” clause

According to the Doha Ministerial Declaration, the TRIPs Council is called to “examine, *inter alia*, the relationship between the TRIPs Agreement and the Convention on Biological Diversity”, as well as to verify the opportunity to review the TRIPs Agreement's relevant provisions (Doha Declaration, para 19). Negotiations are still on the way, since the topic gives rise to strong debates between developed and developing countries<sup>24</sup>. Up to now, the main outcome of such consultations consists in the proposal of inserting a “disclosure of origin clause” within the TRIPs Agreement's provisions, in order to ensure the respect of the CBD's obligations at the moment of filing a patent application on inventions based on genetic resources detained by developing countries (Dutfield, 2005, 511; Girsberger, 2004, 451; Jeffery, 2004, 185). However, the proposal is currently under criticism, as well as the formulation and the insertion itself of the clause.

It should be noted that, starting with the beginning of the Doha Round up to the 2011 consultations, some WTO member countries have significantly modified their positions<sup>25</sup>. Originally some member states, such as the United States and Japan, maintained that no conflict exists between CBD and TRIPs Agreement, so that the contractual approach provided by the CBD would be the best means to reach its own objectives. Others, in particular developing countries and Norway, pushed in favour of amending the TRIPs Agreement, in order to insert a disclosure of origin clause. As far as the European Union is concerned, the disclosure of origin should have been mandatory in patent applications but its lack should have not affected the granting of patents, nor their legitimacy. Finally, according to Switzerland, a disclosure of origin clause should have been inserted in the Patent Cooperation Treaty<sup>26</sup>, out of the WTO forum. After long debates, in July 2008 a group of 52 Member states, composed of developing countries, such as the ACP Group, India, Brazil, Peru, as well

as China, together with Switzerland, the European Union, South-Africa and the African Group, has agreed on a common “Draft Modalities Text” (2008 DMT)<sup>27</sup>. The sponsoring member states propose the amendment of the TRIPs Agreement and that a mandatory disclosure of origin requirement be inserted in the text. According to the 2008 DMT, in order to comply with the latter requirement, either the provider country or the source of the genetic resources shall be disclosed in patent applications. Details of the proposed amendment, such as the nature and the extent of a reference to the prior and informed consent and to the fair and equitable sharing of benefits CBD’s obligations, as well as post-grant sanctions, are still subject to negotiations.

In spite of its vagueness, the 2008 DMT represents a very desirable compromise between developing countries and some developed states<sup>28</sup>. Nonetheless, according to Director General Pascal Lamy, the following consultations “have not created convergence, but have certainly shed light on divergences”<sup>29</sup>. Indeed, member states have been debating on four main points: the legal character of misappropriation; the adequacy of measures other than the disclosure requirement to address misappropriation and benefit sharing; the legal character and enforcement possibilities of a national based approach; and the administrative costs and burdens connected to the introduction of the disclosure of origin clause<sup>30</sup>. Each point can be crucial for patents on MGRs. Indeed, the provision of a narrow definition of ‘misappropriation’ (e.g., taking into account only illegal or illegitimate acts on those genetic resources which are located under the national jurisdiction of States), would clearly render the disclosure of origin clause unsuitable for MGRs. Moreover, the additional administrative costs of incorporating mandatory disclosure requirement might be excessively detrimental for investment and research development. This would clearly discourage states from insisting on its insertion as a requirement for patentability. Finally, should alternative solutions (such as national-based mechanisms or contract-based measures) be considered as more effective and less costly, the possibility of inserting a disclosure of origin clause would be eventually put aside.

The debate has not been settled yet, and the situation has not evolved, even after the adoption of the Nagoya Protocol.<sup>31</sup> The Doha Round is still open and new consultations have recently begun. Even if their outcomes can hardly be predicted, it is rather uncertain that a definite, precise and adequate compromise on a disclosure of origin clause can be attained. Should such an outcome be reached nevertheless, it could be very useful for the management of MGRs. Indeed it would guarantee the enforcement of the CBD’s obligations when patent applications on MGRs are filed, through the conclusion of mutually and agreed terms on access and utilization of MGRs and the definition of fair and equitable benefit sharing conditions. However, the good functioning of such a disclosure of origin clause for patents covering inventions on MGRs depends on the attribution, at international level, to a centralized institution of the competence to enter into the relevant agreements and to certificate the observance of the provided requirements.

#### iv. MGRs and the FAO International Treaty on Plant Genetic Resources for Food and Agriculture model

According to the concluding remarks presented by the Co-Chairpersons of the Informal Working Group to Study Issues Relating to the Conservation and Sustainable Use of Marine Biological Diversity beyond Areas of National Jurisdiction (the Informal Working Group), “practical measures to address the conservation and sustainable use of [MGRs] should be studied, without prejudice to ongoing discussions on their relevant legal regime”<sup>32</sup>. To this

extent, a proposal has been endorsed by the European Union and its member states, according to which “it is important to take note of the Multilateral System established by the International Treaty on Plant Genetic Resources for Food and Agriculture”<sup>33</sup>.

Before evaluating the adequacy of such a model for MGRs’ management, it is worth examining its main provisions. The International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA)<sup>34</sup> pursues the same objectives as the CBD, even if its field of application *ratione materiae* is narrower, i.e. only plant genetic resources for food and agriculture. In particular, the Treaty aims at guaranteeing the conservation and the sustainable use of such resources, as well as the fair and equitable sharing of benefits derived from their use, for sustainable agriculture and food security (art. 1 ITPGRFA). The Treaty is based on the Multilateral System, as established at its art. 10, which covers four specific categories of plant genetic resources (Annex I ITPGRFA).

The Multilateral System aims at facilitating the access to the covered genetic resources and the fair and equitable sharing of the benefits arising from their use. Pursuant to art. 12 ITPGRFA, genetic materials can be accessed by legal and natural persons only through the Multilateral System. Access is provided solely for the purpose of utilization and conservation for research, breeding and training for food and agriculture, if such purpose does not include chemical, pharmaceutical and/or other non-food/feed industrial uses. Recipients cannot claim any intellectual property or other rights that limit facilitated access to the resources, or their genetic parts or components, in the form received from the Multilateral System (Chambers, 2003, 319). Access to resources protected by intellectual and other property rights shall be consistent with relevant international agreements, and with relevant national laws.

Access to genetic resources and benefit sharing shall be governed by agreements entered into by the interested legal or natural persons, acting as providers and recipients, in accordance with the Standard Material Transfer Agreement (SMTA) adopted by the Governing Body, with Resolution 1/2006 of 16 June 2006 (Lawson, 2009, 244). The content of the SMTA complies with the ITPGRFA’s relevant provisions. On one hand, it provides that access to genetic resources shall be accorded expeditiously by the provider. On the other hand, the recipient shall undertake that the resources accessed shall be used or conserved only for the purposes allowed by ITPGRFA. In the case that the recipient commercializes a product incorporating genetic resources covered by the Multilateral System, the SMTA provides that he/she shall pay a fixed percentage of the sales into the mechanism established by the Governing Body for this purpose, or according to alternative payment scheme duly defined. Moreover, the recipient shall make available to the Multilateral System, all non-confidential information that results from research and development carried out on the resources supplied, and is encouraged to share through the Multilateral System non-monetary benefits that result from such research and development. After the intellectual property right on a product that incorporates resources covered by the Multilateral System has expired, the recipient should place a sample into a collection that is part of the Multilateral System, for research and breeding. As far as the law applicable to Material Transfer Agreements (MTAs) is concerned, it is provided that they shall be ruled in accordance with the general principles of law, including the UNIDROIT Principles of International Commercial Contracts 2004, the objectives and the relevant provisions of the ITPGRFA, and, when necessary for interpretation, the decisions of the Governing Body. Should any dispute arise, the SMTA provides for amicable dispute settlement, mediation and arbitration, to be carried out either under the rules of an international body agreed by the parties to the dispute, or, alternatively, of the International Chamber of Commerce.

As far as MGRs are concerned, the ITPGRFA may be considered as a workable model and as a useful compromise for the draft of a specific legal regime. The obligations established by the ITPGRFA, once applied with the necessary adjustments to MGRs, would guarantee that the prior and informed consent and the fair and equitable benefit sharing obligations are enforced. Firstly, the institution of a centralized system, charged, as the Multilateral System, with the task of overseeing the access to MGRs and the sharing of the benefits arising from the commercialization of the products based on them, would guarantee that equitable outcomes are reached. In contrast to the mutually agreed terms required by the CBD, the content of which is left to the discretion of the parties, the MTAs' content is standardized and their conclusion occurs under the Governing Body's supervision. Secondly, the institution of a Trust Fund, in favour of which payments should be made, guarantees that the benefit sharing is effectively enforced in favour of developing countries. Such a solution, once applied to MGRs, would be in line with the position endorsed by a legal scholar, who opines "global common fund trust" shall be constituted, since "the benefits associated with the exploitation of genetic resources of the deep sea could be shared by establishing a form of trust fund from royalties or other fees collected from developers of biotechnology derived from hydrothermal vents on the high seas" (Leary, 2010, 176).

## 2. Institutional solutions

The legal solutions call of an institutional mechanism that has competence over the MGRs in areas beyond national jurisdiction and that can take up the role of the "national state" in relation to the application of CBD principles and to the eventual entry into force of the Nagoya Protocol. The existing fragmentary information on genetic diversity and on the use of marine genetic resources beyond national jurisdiction<sup>35</sup> would also benefit from an unified regime under the supervision of an unique institutional mechanism in terms of coherence and reliability. Different possibilities may be thought of in this respect. Some suggest to invest the Authority with this competence. Due to difficulties connected to this option, others prefer that a new international institution be created for this purpose.

### i. A primary role for the Authority

Some authors suggest that the Authority should be the competent international body for MGRs. Due to the fact that MGRs commercial value was unknown by LOSC negotiators and that in 1970 the UN General Assembly declared all Area common heritage of mankind and not only its mineral resources, the analogy between MGRs and minerals has to be considered clear and thus MGRs are common heritage of mankind (de La Fayette, 2010, 63). This "dynamic" interpretation of the LOSC would be in conformity with the principles embodied in the preamble of the convention. As demonstrated above, the common heritage regime provided by Part XI applies only to MGRs located on the soil of the Area; the MGRs located in the water column cannot come within in such legal framework. This would lead to confusion because, first, the distinction between MGRs on the floor or in the subsoil of the Area and those in the water column is not easy; and second, there would not be unique regime for MGRs in areas beyond national jurisdiction but a fragmented one based on their location. This solution is detrimental to legal certainty.

For this reason, some authors suggest that a dynamic interpretation of LOSC should be supported by the amendment of the text as far as the competences of the Authority are concerned (Scovazzi, 2010, 59). Indeed, the composition of the Authority is explicitly oriented towards mineral industry (art. 161.1 LOSC). A change in its composition has to be

decided either by amendment or through a second agreement for the implementation of Part XI<sup>36</sup>. This would demand an unlikely diplomatic effort. It would also exclude states that are not parties to the LOSC but have an interest in MGRs. Conversely, it might induce non-parties to ratify the convention. In terms of institutional economics, this solution is interesting because it build on an existing system and an existing structure.

However, the Authority is not party to the CBD and cannot become one; according to art. 34 CBD only states and regional economic integration organizations can become parties. However, for the time being, it is the unique existing body having some competences in the area considered and, in particular, it has the right and duty to “adopt appropriate rules, regulations and procedures for *inter alia*: (...) the protection and conservation of the natural resources of the Area and the prevention of damage to the flora and fauna of the marine environment” (art. 145(b) LOSC). Thus the Authority is called upon to play a role in assessing the environmental impact of activities and processes in the Area, and only there. The water column does not fall under its competence.

Mining activities may have an impact on ecosystems in the Area and thus on the MGRs. Consequently stakeholders interested in the exploitation of such resources (both states and private actors) should support the involvement of the Authority in the debate and in the concrete management of the MGRs (Matz-Lück, 2010, 72; Scovazzi, 2004, 399-407). From this perspective the Authority, with its competences and co-operative role, would become one of the institutions called upon to manage the exploitation of MGRs. Delicate problems of coordination between international institutions may then arise because of possible overlaps of competences. The Nagoya Protocol offers a suitable, even if weak, solution affirming that “[d]ue regard should be paid to useful and relevant ongoing work or practices under [*other international instruments relevant to this Protocol*] and relevant *international organizations*” (emphasis added) (art.4.3 Nagoya Protocol). So, for creating and implementing a Global Multilateral Benefit-Sharing Mechanism for MGRs, pursuant to art. 10, states parties would have to take into consideration the work and practices of the Authority.

Some more problems may however come up when not all the parties to one agreement (for instance a future agreement on MGRs) are parties to other agreements (for instance the CBD, LOSC and TRIPs Agreement). An inter-systemic approach and a systemic interpretation of the relevant provisions might then be the rule.

## ii. No primary role for the Authority

Considering now the option in which the Authority is part of the debate but not “the one and only” international body for the management of MGRs, two main options can be considered. On the one hand, we can think about the adoption of an implementation agreement, following the example of the 1995 United Nations 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 (Straddling Stocks Agreement)<sup>37</sup>. A second option would be the adoption of an *ad hoc* convention for the management and the protection of MGRs in areas beyond national jurisdiction. Both solutions are supported by the Nagoya Protocol which asks future parties for considering “the need for and modalities of a global multilateral benefit-sharing mechanism to address the fair and equitable sharing of benefits derived from the utilisation of genetic resources (...) for which it is not possible to grant or obtain prior informed consent”

(art. 10 Nagoya Protocol ). A specialised instrument might contain such a mechanism and would be consistent with the Protocol itself (art. 4.2-4 Nagoya Protocol ).

*(a) Implementation Agreement for the provisions of the LOSC concerning the protection and the management of marine resources in areas beyond national jurisdiction, as far as MGRs are concerned*

It has been suggested to study in parallel the Area regime and the Straddling Stocks Agreement in order to delineate a feasible and viable regime for MGRs in areas beyond national jurisdiction (Treves, 2010, 16). Both regimes are *leges speciales* in respect to the high seas general regime in the sense that the latter does not apply when the former do. Moreover they both deal with the management, the protection and the exploitation of natural resources and they both create systems of control based on international institutions. However, the Straddling Stocks Agreement relies on subregional and regional organizations; different from the Area centralised system.

Considering that MGRs are renewable resources, and that their variety might be better protected at a regional or subregional level, the Straddling Stocks Agreement option is of some interests. It presents a very pragmatic solution and would hopefully guarantee an effective protection thanks to the proximity of the competent organ. This option can also have minor costs for coastal states of regional seas where governance bodies already exist. This is perfectly in line with Recommendation XI/8 of the SBSTTA which “(f) (...) *urges* Parties and other States to cooperate within *the relevant international and/or regional organizations* in order to promote the conservation, management and sustainable use of marine biodiversity in areas beyond national jurisdiction, including deep seabed genetic resources”<sup>38</sup> (emphasis added). Presumably, this solution would also promote a direct involvement of the interested industry and private actors, in general. Consequently, this solution could better promote the particular interests of a region.

Some drawbacks of such a decentralised system persist, however; in particular there is the risk that the protection regimes becomes unduly fragmented. Compliance with and enforcement of international obligations would be entrusted to a regional or subregional body through the conclusion of an agreement by the interested states. The powers given to this body can then be more or less strong, the means allocated more or less efficient for guaranteeing the protection of MGRs. This possible fragmentation of protection could undermine the “common” dimension of MGRs management and exploitation in areas beyond national jurisdiction.

*(b) Convention for the management and protection of MGRs in areas beyond national jurisdiction*

A unified regime for MGRs beyond national borders could consist in an *ad hoc* agreement regulating all the relevant aspects (protection, management and exploitation) and creating an institution, an international organization in charge of the enforcement. This new agreement would be a sort of “CBD only for MGRs”. We can consider this agreement as a complement of the actual CBD and the LOSC, an agreement providing for a unique regime for MGRs, independently of their location in the water column or on the Area, guaranteed by a machinery similar to the Authority but where other interests would be represented.

Such an *ad hoc* agreement would create a new centralised body which would be the only counterparty for states and private actors interested in activities beyond national jurisdiction and thus the only authority in charge of granting access to them and of managing the benefit sharing products. This new institution could be a Multilateral System for MGRs, inspired by the FAO example mentioned above. The main difference with the FAO Multilateral System would be that this new institution would also be party to the potential agreements regulating the activities concluded with states party or private investors. Thus, all contracts should have a “public” dimension in reason of the participation of the institution. For this reason, the new machinery should be closer to the Area regime than the FAO Multilateral System concerning the contractual aspects.

Moreover, the creation of a centralised body has the advantage of guaranteeing a uniform protection and uniform standards of exploitation for MGRs. In theory, this institution would guarantee a “common” management of the MGRs as it should be less influenced by particular/regional interests. The creation of such an institution and machinery would however imply an important economical cost for states party. We consider that the conclusion of such an agreement could be reached only after the determination of the commercial treatment of biotech products deriving from MGRs. Only then states would be keen to regulate their protection and management, to determine their legal status and common use.

It is also necessary to consider that this agreement would have to be placed in a crowded legal context, its links and relationships with the other instruments have to be discussed and regulated by the negotiators. In particular, it would be useful to create links with the CBD, LOSC and TRIPs Agreement, links as “legal gateways” between the texts (compatibility clauses and, eventually, recalls of the existing agreements in the new one) and links between the regimes. The latter suggestion would consist, for example, in creating a system of exchange of information and data between the technical organs of each regime or in the participation of technical organs of one regime in the meeting of the others.

#### **IV. Concluding remarks**

In the first part we demonstrated that several legal instruments overlap when it comes to the governance of MGRs. While they stand in a relationship of complementarity and mutual support, they manage MGRs inadequately and in an inefficient manner. That is the reason why we support the view that an *ad hoc* regime for the management and exploitation of MGRs should be adopted. To the extent that MGRs are considered to be global commons (if not part of the common heritage of mankind) ethical and moral concerns cannot be left out (Leary, 2010, 57-59)<sup>39</sup>.

Each solution explored above brings with it useful features for putting together the future regime. One main conclusion can be drawn: a compromise between IPRs’ protection and MGRs’ management can only be realized via a new instrument, either a protocol or an annex to an existing instrument, or an *ad hoc* agreement, creating an institutional machinery for guaranteeing prior and informed access to MGRs and the fair and equitable benefit sharing. It might in the end indeed be suitable to have a “common heritage without mentioning it” (Treves, 2010, 23).

## Notes

1. UNGA Res. 66/70, Oceans and the Law of the Sea (22 March 2011) para 61. More than 2,700 scientists, from 80 different countries, put their 10 years efforts together in order to realise the most precise and reliable census of marine life. For more information, *see* their website: [www.coml.org](http://www.coml.org).
2. United Nations Convention on the Law of the Sea, adopted 10 December 1982, entered into force 16 November 1994, 1833 UNTS 3.
3. WTO Ministerial Conference, Doha Declaration, Doc. WT/MIN(01)/DEC/1 (14 November 2001) para 19.
4. The TRIPs Agreement is contained in Annex 1C of the Marrakesh Agreement Establishing the World Trade Organization, signed in Marrakesh (Morocco) on 15 April 1994.
5. Convention on Biological Diversity, adopted 5 June 1992, entered into force 29 December 1993, 1760 UNTS 79.
6. International Law Commission. Fragmentation of International Law, UN Doc. A/CN.4/L.682 (13 April 2006).
7. A Constitution for the Oceans, Remarks made by the President of the Third United Nations Conference on the Law of the Sea, T.T.B. Koh, in Official Text of the United Nations Conference on the Law of the Sea with Annexes and Index, E.83. V., S XXXIII.
8. UNGA Res 62/215, Oceans and the Law of the Sea (22 December 2007).
9. 'Treaties are living instruments'; *see* International Law Commission, Report Sixtieth Session UN doc. A/63/10 (2008) Annex A. Treaties over time, in particular: Subsequent Agreement and Practice 365.
10. UN Doc. A/C.1/PV.1515 (1 November 1967)
11. *See* above n 1, para 62.
12. Vienna Convention on the Law of Treaties, adopted in Vienna on 23 May 1969, entered into force 27 January 1980, 1155 UNTS 331.
13. European Communities – Measures affecting the approval and marketing of biotech products, Reports of the Panel, Doc. WT/DS291/R, Doc. WT/DS292/R, Doc. WT/DS293/R, (29 September 2006) para 1.145.
14. UNGA Res. 62/66 Oceans and the Law of the Sea, Addendum 2 (10 September 2007) para. 241.
15. Bonn Guidelines on Access to Genetic Resources and Fair and Equitable Sharing of the Benefits Arising out of their Utilization, adopted by the Conference of the parties of the CBD with Decision VI/24, at its sixth meeting (The Hague, 7-19 April 2002).
16. 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, COP 10 Decision X/1, Nagoya, (18-29 October 2010). It will be open for signature from 2 February 2011 to 1 February 2012, entering into force after the fiftieth instrument of ratification will have been deposited.
17. *See* above n 1, para 155.
18. Under the regime set in Part XI, a state can sponsor the application of a private actor for carrying out activities of exploration and exploitation of the Area (art. 153 LOSC). Pursuant to ITLOS' Advisory Opinion on "Responsibilities and obligations of States sponsoring persons and entities with respect to activities in the Area" (1 February 2011, Case No. 17, available at ITLOS website: [www.itlos.org](http://www.itlos.org)), from sponsorship follows an obligation of due diligence for the sponsoring state concerning the activities carried out by the sponsored private actors (paras 116 ff.). Sponsorship might be considered as a

- confirmation of the existence of effective control and, consequently, confirm the application of Art. 4(b) CBD.
19. SBSTTA 11 Recommendation XI/8 “Marine and coastal biological diversity: conservation and sustainable use of deep seabed genetic resources beyond the limits of national jurisdiction” Montréal, Canada (28 November - 2 December 2005).
  20. COP 8 Decision VIII/21 “Marine and coastal biological diversity: conservation and sustainable use of deep seabed genetic resources beyond the limits of national jurisdiction” (20-31 March 2006) Curitiba, Brazil, para 3.
  21. EU intervention on Agenda Item 5.g – Marine genetic resources, with a particular focus on the relevant regime in accordance with the Convention, the Informal Working Group to Study Issues Relating to the Conservation and Sustainable Use of Marine Biological Diversity beyond Areas of National Jurisdiction, Third meeting (1-5 February 2010) New York, 2.
  22. International Institute for Sustainable Development (19 July 2010) 4-5.
  23. Cartagena Protocol on Biosafety to the Convention on Biological Diversity, adopted 29 January 2000, entered into force 11 September 2003, 1760 UNTS 79.
  24. Council for Trade-Related Aspects of Intellectual Property Rights, The Relationship between the TRIPs Agreement and the Convention on Biological Diversity. Summary of Issues Raised and Points Made. Note by the Secretariat, Doc. IP/C/W/368/Rev.1 (8 February 2006); Council for Trade-Related Aspects of Intellectual Property Rights, Minutes of the meeting, 8-9 June 2010, Doc. IP/C/M/63 (4 October 2010); General Council Trade Negotiations Committee, Issues related to the extension of the protection of geographical indications provided for in article 23 of the TRIPs agreement to products other than wines and spirits and those related to the relationship between the TRIPs agreement and the Convention on Biological Diversity. Report by the Director-General, Doc. WT/GC/W/633. TN/C/W/61(21 April 2011).
  25. See Council for Trade-Related Aspects of Intellectual Property Rights, Doc. IP/C/W/368/Rev.1, Doc. IP/C/M/63 (n 24); General Council Trade Negotiations Committee (n 24).
  26. Patent Cooperation Treaty, adopted 19 June 1970, amended 28 September 1979, modified 3 February 1984 and 3 October 2001, entry into force 1 April 2002.
  27. Draft Modalities for TRIPs Related Issues. Communication from Albania, Brazil, China, Colombia, Ecuador, the European Communities, Iceland, India, Indonesia, the Kyrgyz Republic, Liechtenstein, the Former Yugoslav Republic of Macedonia, Pakistan, Peru, Sri Lanka, Switzerland, Thailand, Turkey, the ACP Group and the African Group Doc. TN/C/W/52 (19 July 2008).
  28. The main oppositions to such a compromise are expressed by the United States and Japan.
  29. ‘Opening statement by TNC Chair Pascal Lamy’, Trade Negotiations Committee (22 March 2010), available at [www.wto.org/english/news\\_e/news10\\_e/tnc\\_dg\\_stat\\_22mar10\\_e.htm](http://www.wto.org/english/news_e/news10_e/tnc_dg_stat_22mar10_e.htm).
  30. General Council Trade Negotiations Committee (n 24).
  31. ‘Nagoya gives new context to old views in intellectual property council’, Council for Trade-Related Aspects of Intellectual Property Rights (1 March 2011), available at [www.wto.org/english/news\\_e/news11\\_e/trip\\_01mar11\\_e.htm](http://www.wto.org/english/news_e/news11_e/trip_01mar11_e.htm).
  32. Letter dated 15 May 2008 from the Co-Chairpersons of the Informal Working Group to Study Issues Relating to the Conservation and Sustainable Use of Marine Biological Diversity beyond Areas of National Jurisdiction, addressed to the President of the General Assembly, UN Doc. A/63/79 (16 May 2008).

33. EU intervention on Agenda Item 5.g (n 21) 2. The point is dealt with also by the Secretary-General's report on Oceans and Law of the Sea which extensively describes the FAO Treaty's objectives and obligations. *See* UNGA Res. 64/66, Oceans and the Law of the Sea, Addendum 2 (19 October 2009) paras 112-113.
34. International Treaty on Plant Genetic Resources for Food and Agriculture, adopted 3 November 2001, entered into force 29 June 2004. The contracting parties are 123; neither Japan nor the United States have ratified it, even if the United States is signatory since the 2002
35. *See* above n 1, para 62.
36. Agreement relating to the Implementation of Part XI of the United Nations Convention on the Law of the Sea of 10 December 1982, adopted 28 July 1994, entered into force 28 July 1996, 1836 UNTS 42. For the time being, 140 LOSC states parties are also parties to this Agreement.
37. Adopted 4 August 1995, entered into force 11 December 2001, 2167 UNTS 3. 77 LOSC parties have also ratified party of the Straddling Stocks Agreement.
38. *See* above n 19.
39. Leary, on the contrary, prefers to leave "morality and ethics to those more learned in philosophy", defining fundamentalist "views and interpretations of international law that are not very useful as a means to achieving practical and just solutions of difficult political, economic and social problems".

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