

# THE MANAGEMENT OF SEABED LIVING RESOURCES IN “THE AREA” UNDER UNCLOS

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## I. INTRODUCTION

In the challenging and fascinating world of the deep seabed, important developments in the technology for seabed exploration and exploitation took place during the negotiations of the III United Nations Conference on the Law of the Sea (1973-1982). Many other occurred after the adoption of the Convention (UNCLOS). All these developments provided unexpected knowledge of the wealth of the deep ocean.

The deposits that are known to be significant in the deep seabed beyond the limits of national jurisdiction (named “the Area” by UNCLOS) include nodules, crusts, sulphides, hydrates, oil, phosphorites and aggregates. There may possibly be other substances yet undiscovered.

Actually, due to the changes in international market conditions and the technical difficulties that arose in connection with the exploitation of the polymetallic nodules, it is unlikely that these or other mineral resources will be commercially developed for many years. Nevertheless, the genetic resources associated with certain marine minerals, which were discovered while UNCLOS was being negotiated, have provoked great scientific and economic interest and could be the first resources of the Area to be exploited.

The last Resolution adopted by the United Nations General Assembly, reiterates the importance of the ongoing elaboration by the International Seabed Authority, pursuant to article 145 of the Convention, of rules, regulations and procedures to ensure the effective protection of the marine environment, the protection and conservation of the

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natural resources of the Area and the prevention of damage to its flora and fauna from harmful effects that may arise from activities in the Area<sup>1</sup>. It also calls to the relevant global and regional bodies, in accordance with their mandates, to investigate urgently how to better address, on a scientific basis, including the application of precaution criteria, the threats and risks to vulnerable and threatened marine ecosystems and biodiversity in areas beyond national jurisdiction. It also encourages the exploration of a range of potential approaches and tools for their protection and management, using the existing treaties and other relevant instruments in accordance with general international law rules, in particular with the Law of the Sea Convention<sup>2</sup>.

The purpose of the present work is to provide an overview of the legal implications of the “management” of the living resources of the Area, in the framework of the United Nations Convention on the Law of the Sea<sup>3</sup>.

## II. THE AREA: A LEGALLY DEFINED MARITIME AREA

The Convention establishes a comprehensive framework for the regulation of all ocean space, conscious that its problems are closely interrelated and need to be considered as a whole<sup>4</sup>.

Different issues are ruled in the Convention on a “spatial” (geographical) basis, and the rights that are recognized to the States are related to the different maritime areas. This is made clear by the way the Convention is structured, since nine of its Parts deal with different maritime areas<sup>5</sup>. The two general parts -Protection and preservation of the marine environment and Marine scientific research, also establish rules taking into account the different maritime areas<sup>6</sup>. The rest of the rules refer to the granting of rights to States under special circumstances and to procedural matters<sup>7</sup>.

Considering the maritime space as a whole, we find that beyond the zones under sovereignty and jurisdiction of coastal States there are two different maritime areas: the high seas and the Area, each of them with its particular legal status.

The high seas is defined in UNCLOS in a negative way, as all parts of the sea that are not included in the zones under national jurisdiction: exclusive economic zone, territorial sea, internal waters or archipelagic waters. It is interesting to point out that, in the light of Parts VI and XI of UNCLOS, the term high seas refers only to the water column. Accordingly, the seabed, and ocean floor and subsoil underlying high seas, are

<sup>1</sup> A/RES/58/240, paragraph 14.

<sup>2</sup> Ibidem, parag. 52.

<sup>3</sup> Hereinafter “the Convention” or “UNCLOS”.

<sup>4</sup> UNCLOS, Preamble, paragraph 3.

<sup>5</sup> Part II: Territorial Sea and Contiguous Zone, Part III: Straits, Part IV: Archipelagic States, Part V: Exclusive Economic Zone, Part VI: Continental Shelf; Part VII: High Seas, Part VIII: Islands, Part IX: Enclosed or Semi-enclosed Seas; Part XI: The Area.

<sup>6</sup> Part XII and XIII.

<sup>7</sup> Part I: Part I: Introduction, Part X: Right of Access of Land-locked States to and from the Sea and Freedom of Transit, Part XIV, Development and Transfer of Marine Technology; Part XV: Settlement of Disputes; Part XVI: General Provisions; Part XVII: Final Provisions.

not a part of it. The seabed, ocean floor and subsoil are either continental shelf or the Area.

The high seas are open to all States and the six freedoms which were part of international customary law are guaranteed by UNCLOS<sup>8</sup>. But, even though the resources of the high seas can be freely appropriated by those who exploit them, this freedom must be exercised under the conditions laid down by UNCLOS and by other rules of international law, which require to necessarily take into consideration the interests of other States. It is also expressly established that the freedoms of the high seas shall be exercised with due regard for the rights granted under UNCLOS with respect to activities in the Area<sup>9</sup>.

On the other hand, the Area is specifically defined in the Convention, as the seabed and ocean floor and subsoil thereof, beyond the limits of national jurisdiction<sup>10</sup>. This definition is contained in the first article of UNCLOS, among the terms defined for the purposes of the whole Convention.

The definition of the Area set forth in Article 1 of UNCLOS necessarily follows the definition which arises from the General Assembly Resolutions regarding the Area. The Preamble of the Convention also notes that the desire was that the Convention developed “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, the ocean floor and the subsoil thereof, beyond the limits of national jurisdiction, as well as the resources of the Area are common heritage of mankind (...)”<sup>11</sup>. As a result of this status, the Area shall not be subject to appropriation and no State shall claim or exercise sovereignty or sovereign rights over any part thereof. The exploration of the Area and its resources shall be carried out for the benefit of mankind as a whole and, for this purpose, the Resolution called for an international regime to be established including appropriate international machinery.

UNCLOS maintains this concept and in Part XI sets forth the regime for the exploration and exploitation of mineral resources in the Area<sup>12</sup>.

For this purpose, UNCLOS established the International Seabed Authority, an intergovernmental organization, through which States Parties shall organize and control activities in the Area, with the specific aim of managing its resources on behalf of humankind.

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<sup>8</sup> UNCLOS arts. 86 to 89. Freedoms of: navigation, overflight, freedom to lay submarine cables and pipelines, freedom to construct artificial islands and other installations permitted under international law, freedom of fishing, freedom of scientific research. See also arts. 116-119.

<sup>9</sup> UNCLOS, Art. 87.

<sup>10</sup> UNCLOS art. 1, 1 (1).

<sup>11</sup> UNCLOS, Preamble, paragraph 7: “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”.

<sup>12</sup> Arts. 134-135.

Therefore:

- The Area is a determined geographic zone, different from high seas.
- Both of them are maritime areas, established under the Law of the Sea Convention, that extend beyond national jurisdiction but their boundaries do not always coincide, since we can find either continental shelf or the Area underlying the high seas.
- Their legal status is essentially different. In the high seas, States enjoy the aforementioned six freedoms, while the Area and its resources are common heritage of mankind.

The Convention expressly establishes that activities in the Area and any kind of activities in the marine environment must be carried out having mutual<sup>13</sup> “reasonable regard”. This provision must be read together with article 87(2) which establishes that all States, in exercising freedoms of the high seas must have due regard... “for the rights under this Convention with respect to activities in the Area”.

### III. THE PRINCIPLE OF THE COMMON HERITAGE OF MANKIND<sup>14</sup>

Opposed to the freedoms of high seas is the concept of common heritage of mankind, which rules the Area and its resources. The rationale of such concept can be found in *the need to manage natural resources in a rational way, so that their benefits are shared equitably among nations; the hereditary condition, so they can be passed on to future generations; the use for exclusively peaceful purposes and the need for an international mechanism to implement the management of these resources*<sup>15</sup>.

Building upon the concept of Resolution 2749 (XXV), UNCLOS affirms that 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,

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<sup>13</sup> Art 147, paragraphs 1 and 3. Cfr, NANDAN, S.N, LODGE, M.W., ROSENNE, S., *United Nations Convention on the Law of the Sea 1982 - A Commentary*, Volume VI, Martinus Nijhoff Publishers, The Hague-London-New York, 2002, pp. 214-215.

<sup>14</sup> The same applies to the ultra-terrestrial space in the “Agreement that must rule the activities of States on the moon and other celestial bodies”, of 1979. Argentina presented a project in 1970 which introduced for the first time the concept of common heritage of mankind for the resources of the moon and other celestial bodies. Cf. COCCA, Aldo A., *Consolidación del derecho espacial: Contribución del pensamiento argentino a la codificación del derecho del espacio*, Ed. Astrea, Buenos Aires, 1971 and ARMAS BAREA, Calixto, “Patrimonio común de la humanidad: naturaleza jurídica, contenido normativo y prospectiva”, in *Anuario IHLADI*, Vol. 10, 1993, p. 28-30.

<sup>15</sup> Cf. ARMAS BAREA, Calixto, “Patrimonio común de la humanidad: naturaleza jurídica, contenido normativo y prospectiva”, in *Anuario Hispano-Luso-Americano de Derecho Internacional*, Vol. 10, 1993, p. 13-43; KISS, Alexandre-Charles, “La notion de patrimoine commun de l’humanité”, in *Recueil des Cours*, V. 175-II, 1982; PAOLILLO, Felipe, “Naturaleza jurídica del principio del ‘Patrimonio Común de la Humanidad’”, in *Anuario Hispano-Luso-Americano de Derecho Internacional*, Vol. 7, 1984, Madrid, pp.353-371 and KISS, Alexandre, “The Common Heritage of Mankind: Utopia or Reality?”, in CAMINOS, Hugo (Ed), *The Law of the Sea*, The Library of Essays in International Law – Ashgate, Great Britain, 2001, pp.324-325.

and that all rights over the resources of the Area are vested in mankind as a whole, on whose behalf the Authority shall act.

## **1. Evolution of the concept**

As regards the historical evolution of the common heritage of mankind concept we must point out the relevance, with regard to the Law of the Sea, of the proposal made by Malta's representative, Ambassador Arvid Pardo, to the UN General Assembly to the effect that the seabed and ocean floor beyond the limits of national jurisdiction should be considered "common heritage of mankind" and that the commercial exploitation of their resources should benefit mankind as a whole<sup>16</sup>.

However, the concept had already been advanced in the 1830s by the Venezuelan jurist Andrés Bello, who argued that those things which could not be held by one nation without detriment to the others ought to be considered by the international community as "common heritage"<sup>17</sup>.

Some decades later A. G. de Lapradelle, a French jurist, anticipated the idea that the oceans should be "le patrimoine de l'humanité" and that the resources should be administered by the League of Nations<sup>18</sup>.

The Argentinean jurist José León Suárez also described "the riches of the sea" as the "heritage of the whole human race"<sup>19</sup>.

The idea of the exploitation of seabed resources, including those of the continental shelf through an international organization for the benefit of all mankind had been considered by the International Law Commission (ILC) in 1953, during its work for the preparation of draft articles on the Regime of the High Seas and the Regime of the Territorial Sea for the first United Nations Conference on the Law of the Sea. The Commission concluded that, at that time, the idea was not practicable<sup>20</sup>.

The expression "common heritage of mankind" as such, was first used, with a broader meaning, by the president of the First United Nations Conference on the Law of the Sea, the Thai prince Wan Waithayakon, who in his opening speech declared that "the sea is common heritage of mankind"<sup>21</sup>.

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<sup>16</sup> UN document GAOR A/C.1.PV.1515, 1967, "Examination of the Question of the Reservation Exclusively for Peaceful Purposes of the Seabed and the Ocean Floor, and the Subsoil thereof, Underlying the High Seas beyond the Limits of Present National Jurisdiction, and the Use of their Resources in the Interests of Mankind".

<sup>17</sup> BELLO, Andrés, *Principios de Derecho de Gentes*, Imprenta de Fuentenebro, Madrid, 1843, p. 38. Cf. NANDAN, S., LODGE, M, ROSENNE, S., "The Development of the Regime for Deep Seabed Mining", Jamaica, 2002, p. 4-5.

<sup>18</sup> LAPRADELLE, Albert G. de, "Le droit de l'Etat sur la mer territoriale, *Revue générale de droit international public*, Vol. 5, 1898, p. 321. Cf. NANDAN, S., LODGE, M, ROSENNE, S., "The Development of the Regime for Deep Seabed Mining", Jamaica, 2002, p. 4-5.

<sup>19</sup> Cited in NANDAN, S., LODGE, M, ROSENNE, S., *The Development of the Regime for Deep Seabed Mining*, Kluwer Law International, 2002, p. 5.

<sup>20</sup> See *The Law of the Sea, Concept of the Common Heritage of Mankind, Legislative History of Articles 133 to 150 and 311(6) of the UNCLOS*, United Nations, New York, (1996) p. 3.

<sup>21</sup> 1958. Cfr. NANDAN, S.N, LODGE, M.W., ROSENNE, S., *op.cit.*, Volume VI.

## 2. Resolution 2749 (XXV) of 1970

In 1965, scientific studies on marine and ocean seabed wealth were disseminated, in particular on polymetallic nodules. This aroused a great interest in all States, which began to carry out unilateral acts.

The UN Economic and Social Council (ECOSOC) was also considering the question of marine resources and in 1966 adopted Resolution 1112 (XL) stating that “the mineral and food resources of the sea beyond the continental shelf, excluding fish<sup>22</sup>, constitute reserves of raw materials which are as yet not fully being utilized, and that the rational use of these resources to ensure optimum yield and minimum waste is of vital importance to all countries”.

Pardo’s proposal was discussed intensively in the Committee on the Peaceful Uses of the Seabed and the Ocean Floor beyond the Limits of National Jurisdiction (The Seabed Committee)<sup>23</sup> and at the First Committee of the General Assembly.

After long negotiations, in 1970, the United Nations General Assembly adopted its Resolution 2749 (XXV)<sup>24</sup> in which it solemnly declared that 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 geographical location of States<sup>25</sup>.

As a result of this status, the Area shall not be subject to appropriation and no State shall claim or exercise sovereignty or sovereign rights over any part thereof. The exploration of the Area and of its resources shall be carried out for the benefit of mankind as a whole and, for this purpose, the Resolution calls for an international regime to be established including appropriate international machinery.

It is also established that the general conduct of States in relation to the Area shall be in accordance with the principles embodied in the Charter of the United Nations and other rules of international law in order to maintain peace and security and promote international cooperation and mutual understanding. Besides, the Area shall be open to use by all States exclusively for peaceful purposes.

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<sup>22</sup> This phrase “the mineral and food resources of the sea beyond the continental shelf, excluding fish” replaced the original proposal “the resources of the sea”.

<sup>23</sup> It was established by the UN General Assembly, Resolution 2467 (XXIII) of 21 December 1968 (A/AC.138)

<sup>24</sup> General Assembly Resolution 2749 (XXV). Was adopted by 108 affirmative votes, none negative and 14 abstentions.

<sup>25</sup> The same juridical classification applies to the ultra-terrestrial space in the “Agreement that must rule the States’ activities on the moon and other celestial bodies” (1979). It was the Argentine Republic which in 1970 presented a project in which the concept of common heritage of mankind was first introduced for the resources of the moon and other celestial bodies. Cf. COCCA, Aldo A, *Consolidación del derecho espacial: Contribución del pensamiento argentino a la codificación del derecho del espacio*, Ed. Astrea, Buenos Aires, 1971 and ARMAS BAREA, Calixto, “Patrimonio común de la humanidad: naturaleza jurídica, contenido normativo y prospectiva”, in *Anuario IHLADI*, Vol. 10, 1993, p. 28-30.

### **3. Subsequent evolution: Conventional adoption of the principles embodied in Resolution 2749 (XXV)**

In the works of the Committee on the Peaceful Uses of the Seabed and the Ocean Floor beyond the Limits of National Jurisdiction, once Resolution 2749 (XXV) was already adopted, we can find many references to considerations about the resources of the Area which would fall under the common heritage of mankind regime set forth in the Convention, among others:

- In 1970, a Working paper submitted by the United Kingdom on the international regime that should govern the exploration of the seabed and ocean floor, referred to the resources concerned affirming that “for this purpose, the definition of resources of the Convention on the Continental Shelf might be drawn (...) Sedentary living resources capable of commercial development would also be subject to the regime, although we do not at present know of any such existing substantial depth”<sup>26</sup>.
- In 1971, a Working paper submitted by Malta entitled “Draft Ocean Space Treaty” stated, in a more comprehensive manner, that the problems of the ocean space are insoluble unless the new international legal order establishes international institutions with powers to administer ocean space beyond national jurisdiction and to manage its living and non-living resources on behalf of the international community<sup>27</sup>.
- A working paper submitted by Canada: States that it is not clear whether the international regime is to govern exploitation of mineral resources only or living seabed resources as well, and noted that both the living and mineral resources of the seabed fell within the exclusive sovereign rights of the coastal State under the 1958 continental shelf convention. Moreover, it affirmed that according to some experts, significant living seabed resources were not found beyond depths of approximately 1800 meters, which in most cases would place them well within the outer limits of the continental margin<sup>28</sup>.
- In 1972, the Report of the Committee on the discussions stated that a number of delegations felt that the regime should cover both living and non-living resources of the seabed. Some delegations felt however that it should only apply to the non-living resources. Several speakers referred to the definition of natural resources contained in article 2, paragraph 4, of the Convention on the Continental Shelf as deserving consideration”<sup>29</sup>.
- The Statement by the Vice-Chairman of Subcommittee I of the Work Programme<sup>30</sup>, demonstrated that, when referring to the resources that were common heritage of mankind in the terms of Resolution 2749 (XXV), many delegations interpreted that such resources were the same resources as the ones in the continental shelf, that is to say minerals and sedentary species.<sup>31</sup>. Accordingly, the activities in the Area

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<sup>26</sup> A/8021, Annex VI. Cf. *The Law of the Sea – Concept of the Common Heritage of Mankind*, United Nations, Division for Ocean Affairs and the Law of the Sea, New York, 1996, pp. 154-155.

<sup>27</sup> A/AC.138/53 and A/8421, Annex i, sect 11. Cited in *ibidem*, pp. 205-209.

<sup>28</sup> A/AC.139/59, in *ibidem*.

included the “conservation of living resources” and the dispositions of protection of the marine environment regulated “the protection and conservation of the natural resources of the Area”.

The minutes and the documents of the III Conference show that, in the discussions, there were two main opinions with regard to the resources of the seabed. On the one hand, there was great emphasis put on the economic value of the minerals, as reflected in the interventions by producing and exporting countries as well as importers. The documents prepared by the Secretariat or presented by the different delegations relating to their abundance or value also reflect this point of view. In this way, the whole discussion about the regime was focused on mining activities.

On the other hand, some countries attempted to have a regime of the living resources of the superjacent waters similar to that of the seabed. In this regard, many delegations sought to prevent that the freedom of fishing be affected, which led them to oppose to any inclusion of living resources in the regime applicable to the common heritage of mankind.

Nevertheless neither the negotiations of the III Conference, nor the works of the Seabed Committee considered that these “sedentary species from the Area” should be included in the high seas’ regime. It was stated that it was unlikely that economically relevant living resources might exist beyond the continental margin; therefore, to legislate over these species would have no practical consequence.

It is essential to take into account that chronology played an important role in this whole process. In 1977, when hydrothermal vents and their ecosystem were discovered, the definition of “resources” for the purposes of the application of what subsequently became Part XI, had already been adopted.

Until the Third Session, in 1975, “Resources” were defined as follows: “resources” means *in situ* resources. This definition was different from that of “mineral resources”, which included different categories of minerals. Both terms had accordingly been defined for the purposes of this text<sup>32</sup>. In the Fourth Session, pursuant to a proposal for amendments submitted by the United States, “resources” was limited to *in situ* mineral resources. However, the scope of the definition was at the same time limited to “for the purposes of this Part”, that is the regime of the Area.

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<sup>29</sup> A/8271, paras. 55-69.

<sup>30</sup> A/AC.138/SC.I/L.17

<sup>31</sup> A/8771 Annex II, sect. 1. *ibidem*, p. 238: “Declaration of Principles. Resolution 2749 (XXV): Resources interpreted: The resources referred to in this article [are] [include] the *mineral* and *other non-living resources* of the Area [and of the water column] [together with living organisms belonging to *sedentary species*, that is to say, organisms which, at the harvestable stage, either are immobile on or under the seabed or are unable to move except in constant physical contact with the seabed or the subsoil] or [These resources referred to in these articles constitute the organic and inorganic content composing the Area]

<sup>32</sup> A/CONF.62/C.1/L.16 (1975 mimeo), para. 3 (Chairman, First Committee), Cfr, NANDAN, S.N, LODGE, M.W., ROSENNE, S., *op.cit.*, Volume VI, p. 73. This text was introduced by the Chairman of the First Committee with an explanatory note indicating that this was due to a technical and legal reason, as “Resources”, in general, and “mineral resources” are often used interchangeably, which leads to confusion when dealing with technical questions.



In fact, at the Fourth Session, in 1976, it was established that: “Resources means mineral resources *in situ*” and from that moment on, the same definition was maintained<sup>33</sup>. At the Tenth Session it was adopted as it was finally introduced in UNCLOS<sup>34</sup>.

Even though the negotiation took five more years after the hydrothermal vents were discovered, nobody ignores that, the problems that the negotiators had to face were so hard that it was absolutely impossible even to think about reopening the agreement that had been reached. Additionally, it has never been easy for scientific knowledge and its bearing upon laws and regulations to be quickly understood and incorporated into a current negotiation.

#### **IV. INTERNATIONAL SEABED AUTHORITY**

The International Seabed Authority (ISA) is an intergovernmental organization created by the Convention as the autonomous body through which States Parties shall organize and control activities in the Area, with the specific aim of managing its resources<sup>35</sup>.

There was general agreement from the outset of discussions at the Seabed Committee that international machinery would be needed to administer the new international regime for the area of the seabed beyond national jurisdiction. However, it was not until 1974 (Second Session of UNCLOS III) that it was generally accepted that an International Seabed Authority (ISA) would be established to deal with seabed activities and the resources of the Area<sup>36</sup>.

Developing States supported the need to put in place an international machinery in order to develop the application of the principle of the common heritage of mankind to marine resources of the seabed. Socialist States opposed to this idea and Western European States believed it was too early to be applied. The General Assembly Resolution 2467C (XXIII)<sup>37</sup>, requested the Secretary-General “To undertake a study on the question of establishing in due time appropriate international machinery for the promotion of the exploration and exploitation of the resources of the seabed beyond national jurisdiction,

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<sup>33</sup> Cf. Sixth Session (New York, 23 May-15 Jul 1977), A/CONF.62/WP.10 and Eighth Session (Geneva, 19 March-27 April 1979; Resumed eighth session: New York, 19 July-24 August 1979) A/CONF.62/WP.10/Rev.1: The concept of “Resources” is used in the same way as in the Fourth Session. Similar in the Ninth Session (New York, 3 March-4 April 1980; Resumed ninth session: Geneva, 28 July-29 August 1980)

<sup>34</sup> A/CONF.62/L.78: “a) ‘resources’ means all solid, liquids or gaseous mineral resources in situ in the Area at or beneath the seabed, including polymetallic nodules; b) resources, when recovered from the Area, are referred to as ‘minerals’”

<sup>35</sup> Art. 157 UNCLOS and 1994 Agreement, Annex, Section 1, 1). Besides, it is established that the Authority will have the powers expressly conferred by the Convention and the accessory powers, compatible with itself, which may be implicit and necessary for the exercise of those faculties and functions with regard to the activities in the Area. Its status as an autonomous international organization is explicitly acknowledged in the Agreement subscribed with the United Nations (ISBA/3/A/L.2 and ISBA/3/C/L.2).

<sup>36</sup> Cfr. NANDAN, S.N, LODGE, M.W., ROSENNE, S., *op.cit.*, Volume VI, p. 336.

<sup>37</sup> 21 December 1968.

and the use of these resources in the interests of mankind and, once the study is received to request the drawing up of a more detailed report on the various types of international machinery, its status, structure, functions and powers<sup>38</sup>.

Resolution 2749 (XXV) declares that “an international regime applying to the area (of the seabed beyond national jurisdiction) and its resources and including appropriate international machinery to give effect to its provisions shall be established”.

The importance of the Authority keeps growing proportionally to the importance of the discoveries and to the economic development of the resources as well as to the conservation of the marine ecosystem. An author pointed out: If the Authority didn't exist, we would have had to invent it<sup>39</sup>!

The norms that rule its functioning are contained in Part XI of UNCLOS and in the 1994 Agreement. The Agreement relates “to the implementation” of the Convention, which means that the application of UNCLOS must be carried out in accordance with the Agreement from the moment of its entry into force. It is beyond the scope of this work to analyze in detail the modifications that such instrument introduced in the regime of Part XI.

As we have seen, the fundamental principle that gave origin to the whole regime of the Area is that the seabed and ocean floor and its resources are the common heritage of mankind<sup>40</sup>. Therefore, 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 and all rights over the resources of the Area are vested in mankind as a whole, on whose behalf the Authority shall act. Minerals extracted from the Area could only be alienated in accordance with relevant rules of UNCLOS, the 1994 Agreement and the provisions adopted by the Authority<sup>41</sup>.

This principle, embodied in Resolution 2749 (XXV) of the General Assembly, has been included in UNCLOS and has not been modified by the 1994 Agreement. It is the responsibility of the Authority to ensure that the scope of this principle is not modified through the functioning of its own organs or the activities of States.

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<sup>38</sup> GA Resolution 2574C (XXIV).

<sup>39</sup> Elizabeth Mann Borgese, “Biodiversity and Climate Impact in International Waters – The International Seabed Authority: New Tasks”, in Papers of Workshop “The International Seabed Authority: New Tasks”, International Ocean Institute Canada, Dalhousie University, 1999, p. 1. The Authority began to perform functions in Kingston (Jamaica), on November 16, 1994, and since then ten periods of sessions have taken place (until 2004).

<sup>40</sup> General Assembly Resolution 2749 (XXV) from 17<sup>th</sup> December 1970.

<sup>41</sup> Arts. 133, 136 and 137 UNCLOS.

Activities in the Area are defined as “all activities of exploration for, and exploitation of, the resources of the Area”.

## **1. Organs of the Authority**

The Authority has three main organs: the Assembly, the Council and the Secretariat. The subsidiary organs are the Legal and Technical Commission and the Finance Committee.

## **2. Functions of the Authority and instruments adopted in its framework**

According to the mandate provided for in the Convention and the Agreement, the Authority elaborates and adopts rules, regulations and procedures for exploration and exploitation of minerals of the deep seabed. Such rules, regulations and procedures shall incorporate applicable standards for the protection and preservation of the marine environment.

The Authority has already adopted the “Regulations on Prospecting and Exploration for Polymetallic Nodules in the Area” - the Mining Code- and, accordingly, entered into the first 15-year contracts for exploration for polymetallic nodules with the seven pioneer investors. Its elaboration and adoption involved a great legislative task. It took three years of negotiations in formal, informal and “informal-informal” meetings, and was finally adopted by consensus on July 13<sup>th</sup> 2000<sup>42</sup>. The Code establishes the rules that States, companies or other entities shall follow when exploring the seabed for polymetallic nodules. This is a first step that should be followed by the Code for exploiting nodules and the rules necessary for all other minerals.

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<sup>42</sup> The Legal and Technical Commission commenced work on the draft regulations for prospecting and exploration for polymetallic nodules in March 1997. As the basis for its work, the Commission used the working papers prepared by Special Commission 3 of the Preparatory Commission for the International Seabed Authority and for the International Tribunal for the Law of the Sea between 1984 and 1993. The Commission also took into account the provisions of the Agreement and the special situation of the registered pioneer investors under resolution II of the Final Record of the Third United Nations Conference on the Law of the Sea (UN7CLOS III). The Commission worked extensively on the draft regulations during its meetings in March 1997, August 1997 and March 1998 (the third and fourth sessions of the Authority), completing its work in March 1998. The draft regulations proposed by the Commission were submitted to the Council under the symbol ISBA/4/C/4/Rev.1. On 13 July 2000 the Council decided to adopt and apply provisionally the Regulations on Prospecting and Exploration for Polymetallic Nodules in the Area, pending their approval by the Assembly (ISBA/6/C/12.). The Regulations were approved by the Assembly on 13 July 2000 (ISBA/6/A/18). Cf. ISBA/6/A/9, para. 24-31, “Report of the Secretary General of the International Seabed Authority under article 166, paragraph 4, of the United Nations Convention on the Law of the Sea, 3-14 July 2000.

One of the consequences of the existence of such a contractual relationship is the obligation for contractors to submit annual reports in accordance with the provisions of the contract. In that regard, the standard clauses set out in annex 4 to the Regulations contain detailed provisions relating to the format and content of such annual reports. The objective of these reporting requirements is to establish a mechanism whereby the Authority, and particularly the Legal and Technical Commission, can be provided with the information necessary to carry out its responsibilities under the Convention, particularly those relating to the protection of the marine environment from the harmful effects of activities in the Area.

The Legal and Technical Commission's functions include making recommendations to the council with regard to the protection of the marine environment, taking into account the views of recognized experts in that field. In 2001, the Legal and Technical Commission adopted the "Recommendations for the Guidance of the Contractors for the Assessment of the Possible Environmental Impacts Arising from Exploration for Polymetallic Nodules in the Area"<sup>43</sup>. The aim is to define the biological, chemical, geological and physical components to be measured and the procedures to be followed by the Contractor to ensure the effective protection of the marine environment from harmful effects which may arise from its activities in the Area, and to provide guidance to prospective contractors in preparing work plans for exploration for polymetallic nodules. Given that these recommendations are based on current scientific knowledge about the marine environment and available technology, they will have to be reviewed in the future taking into account improvements in science and technology, which are foreseen in the regulations.

The Authority is currently drafting the rules and regulations for the exploration of hydrothermal polymetallic sulphides and cobalt-bearing crusts, as requested by the Russian Federation in 1998<sup>44</sup>.

Dealing with the nature and fundamental principles of the Authority, UNCLOS established that the Authority shall have the powers and functions expressly conferred by the Convention<sup>45</sup>. They are not limited to Part XI and its Annexes; the powers and functions of the Authority are also established in other parts of the Convention<sup>46</sup>.

Additionally, the Authority has such "incidental powers" -consistent with the Convention- as are implicit in and necessary for the exercise of its powers and functions with respect to activities in the Area<sup>47</sup>. "Incidental powers" are those unwritten powers that are necessary for an international organization to effectively perform such powers and functions as are expressly conferred upon it<sup>48</sup>.

One of the powers and functions of the Assembly and the Council –the latter due to the provisions of the 1994 Agreement- is "to initiate studies and make recommendations for the purpose of promoting international cooperation concerning activities in the Area and encouraging the progressive development of international law relating thereto to its codification"<sup>49</sup>.

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<sup>43</sup> ISBA/7/LTC/1. See also

<sup>44</sup> ISBA/4/A/18, parr. 14, 31 August 1998, Statement of the President on the Work of the Assembly during the Resumed Fourth Session. Report of the Secretary-General of the International Seabed Authority under article 166, paragraph 4, of the United Nations Convention on the Law of the Sea, parr. 46, ISBA/5/A/1, 28 July 1999.

<sup>45</sup> Article 157.2.

<sup>46</sup> Arts. 82, 84.2, 143, 144, 160.2.j, 209, 256, 273, 274, 287.2, 288.3, 305, 308.3.5, 311.6, 314, 316.5, 319.1.a y b y 319.3.

<sup>47</sup> Art. 157.2 in fine.

<sup>48</sup> Cfr, NANDAN, S.N, LODGE, M.W., ROSENNE, S., *op.cit.*, Volume VI, pp.360-62

<sup>49</sup> Art. 160.2.j.

## **V. DEFINITION OF “RESOURCES” FOR THE PURPOSES OF PART XI AND RESOURCES PRESENT IN THE AREA**

Taking into account both, the provisions of the Convention and what the advances in the knowledge of the reality of the deep seabed have shown, we could think about the resources of the Area in a broad sense and, in a more restricted one, for the Purposes of Part XI.

The two categories include three types of resources:

- Mineral resources
- Living resources
- Objects of an archaeological and historical nature

For the purposes of Part XI, which sets up the international mechanism called for by Resolution 2749 (XXV), “resources” means all solid, liquid or gaseous mineral resources in situ in the Area at or beneath the seabed, including polymetallic nodules. The resources, when recovered from the Area, are referred to as “minerals”<sup>50</sup>.

In article 133, the terms set out apply only for the purposes of Part XI. In the preparatory works of article 133, other resources were mentioned specifically and separately. But the Conference, bearing in mind the exiguous information available, decided not to include them in order to not to limit the concept and consequently only made a special reference to polymetallic nodules<sup>51</sup>.

So, even though the polymetallic nodules were the main reason to negotiate the regime set forth in Part XI, the activities related to the exploration and exploitation of other minerals were already foreseen at the time, and therefore included in the definition of resources of article 133 among the minerals different from polymetallic nodules which exploration and exploitation the Authority has the obligation to regulate<sup>52</sup>.

The polymetallic nodules, the cobalt-rich ferromanganese crusts and the polymetallic sulphides are the deep sea minerals that seem to have the highest economic value<sup>53</sup> and,

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<sup>50</sup> UNCLOS art. 133.

<sup>51</sup> Cfr, NANDAN, S.N, LODGE, M.W., ROSENNE, S., *op.cit.*, Volume VI, p. 75.

<sup>52</sup> Cf. article 151, para 9 and article 162 para 2 (o) (ii). On the contrary, Glowka affirms that the hydrothermal vents, their associated biological communities as well as the activities related to them fall into an international legal void. Cfr: GLOWKA, Lyle, “Testing the Waters: Establishing the Legal Basis to Conserve and Sustainable Use Hydrothermal Vents and Their Biological Communities”, in *InterRidge News* 8.2, November, 1999.

<sup>53</sup> Cf. ISA, *Ibidem* and *Polymetallic Nodules I*, Brochure, September 2000; Cf. ISA, *Status of Deep Seabed Mining Technology for Exploration and Exploitation of Mineral Resources*, Brochure, September 2000; ISBA/8/A/1, August 2002, "Summary presentations on polymetallic massive sulphide deposits and cobalt-rich ferromanganese crusts" and HEIN, J., “Cobalt-Rich Ferromanganese Crusts: Global Distribution, Composition, Origin and Research Activities”, in *Polymetallic Massive Sulphides and Cobalt-Rich Ferromanganese Crusts: Status and Prospects*, ISA Technical Study N° 2, 2002; ISA, *Cobalt-rich iron-manganese crusts*, Brochure, September 2000.

as we have already said, the Authority is working on the regulations applicable to their prospection and exploration.

We will now refer briefly to the special characteristics of the sulphides and their ecosystem, in order to be able to consider what rules have to be applied for the protection of such ecosystem.

### **1. Massive polymetallic sulphides deposits**

The existence of hydrothermal systems was confirmed in 1977, at the Galapagos Rift off the coast of Ecuador, at a depth of 2,500m. Their existence was predicted at the beginning of the seventies, because water sampling studies along the Galapagos Rift had indicated some kind of vents. In 1979, however, the first high temperature (350 degrees C) black smokers and associated polymetallic sulfides plus were found, with an unexpected and abundant vent-specific fauna, which we shall refer to later on<sup>54</sup>.

Cold seawater penetrates deep into cracks in the earth's crust so, when it approaches the magma -which in these areas is relatively close to the ocean floor- it is heated up to 300-400°C. At this point, it becomes extremely corrosive, capable of dissolving the basaltic rock and leaching out metals and other elements, thus becoming enriched with a variety of mineral compounds. By the time it approximates to the ocean floor again, this water has become a mineral-rich hydrothermal solution, and this superheated fluid rises and rises out into the ocean through cracks in the seafloor.

This fluid mixes with cold ocean bottom seawater -of 2°C- and with the cold and pressure, the vent water cools and dumps its load of minerals thereby constructing mineral chimney-like structures along the fissure, from which hot fluids and mineral particles escape. At the same time sulphide minerals precipitate from the hydrothermal solution as small particles appearing as "black smoke", a black cloud of tiny metallic sulphide and other particles. These particles initially precipitate out of the hot vent fluid as it mixes with the cold seawater on and around the chimney.

In places, the structures collapse and the fragments are recemented by continuous sulphide precipitation slowly building a sulphide mound. The collapsed chimneys can grow very quickly; some of them have grown up to 9 m in 18 months<sup>55</sup>. Hydrothermal vents can last for tens to hundreds of years but, when the physical conditions change, some of them turn off and degrade, while new ones are born.

In addition to the chimney structures, heated water may also appear as a diffuse flow around the vent field. In fact, in some places the superheated rising water mixes with cold seawater before emerging onto the seafloor and forms diffuse flow areas, with the outflow of warm water over a large area but does not build sulphide chimneys.

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<sup>54</sup> See [www.ocean.washington.edu](http://www.ocean.washington.edu)

<sup>55</sup> 30 feet, cf. [www.pmel.noaa.gov/vents](http://www.pmel.noaa.gov/vents).

## **2. Living resources**

In the deep ocean, water is cold and darkness surrounds everything. The sunlight only penetrates up to approximately 300 meters under the surface (the photic zone), which is nothing compared with the depth of the oceans. The plants are the base of the food chain on land and in shallower waters; they transform the inorganic material into organic matter by photosynthesis, which is carried out with the solar energy. But on the deep ocean floor there is no sunlight so the fauna is scarce, everything looks like a desert. The sparse animals of the deep ecosystem feed from sediments that settle from surface waters, i.e. from a small part of the phytoplankton and zooplankton originated in the photic zone that reaches the deep ocean floor, where it becomes food for the living resources of the seabed.

All the mineral deposits found in the deep sea host living organisms that are closely related to them but as each mineral resource has particular characteristics and components, the living organisms that live inextricably bound to them are different; specially those hosted by the polymetallic sulphides which have their own features and potential economic value independent of their hosting minerals.

### ***A) The ecosystem of hydrothermal vents***

Until the discovery of the hydrothermal vents, it was believed that the base of the food chain of all the ecosystems of the deep seabed was the organic matter (plankton) produced in the photic zone, which upon death sink to the ocean floor. On the vent communities, the base of the ecosystem's food chain is a sulphide-oxidising bacteria which comes up with the water. The energy source is not sunlight; this is a chemosynthetic ecosystem, because the bacteria transforms compounds dissolved in the hot springs into energy through chemosynthesis<sup>56</sup>.

As it mixes with the cold water, the hot water emerging from the vent creates a rising plume of warm water, forming a gradient of temperature and the water around the chimney cools down to around 15°C-20°C. From the resources point of view, vent fields can be divided into three areas: the vent opening, where most of the biomass is concentrated; the near-field, and the periphery<sup>57</sup>.

We discover an amazing change in the circumstances of life around hydrothermal vents. Away from hydrothermal sites at this depth only sparse animal abundance can be found, about twenty worms and stars per square meter<sup>58</sup>. While around the vents there can be a

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<sup>56</sup> cfr. RONA, *op.cit.*

<sup>57</sup> cf. RÉ, *op.cit.*, p. 70.

<sup>58</sup> for example, in BIOTRANS, a research area in the West European Basin, North Atlantic, the density of the larger animals living on the sediment, the megafauna, amounts to 2.5 per m<sup>2</sup>. In WWF (Sabine Christiansen) *BIOTRANS. A Potential MPA*, Briefing, <http://www.ngo.grida.no/wwfneap/Publication/briefings/BIOTRANS.pdf>

million animals in a surface of the same size<sup>59</sup>. That is the reason why they are called “oases in the desert of the deep oceans”<sup>60</sup>.

Hydrothermal vents are also rich in biodiversity, nearly 500 new animal species have been identified, more than 90 per cent of which are not found anywhere else (endemic)<sup>61</sup>. This marine ecosystem is probably one of the most productive in the deep ocean, and it is largely independent of the sunlight. Apart from the lack of sunlight, there is a very hostile environment -little oxygen, high temperatures and pressures, and high concentration of sulphide- which would make life impossible for most of the living species on Earth<sup>62</sup>. As already mentioned, the physical and chemical characteristics of vent systems are extreme in terms of temperature, pressure, pH and toxic levels of metal and gases, which are very similar to environmental conditions existing on Earth billions of years ago<sup>63</sup>.

The food web of the vent communities is short; some of the species found on the vents of the Pacific Ocean differ from the ones found on the Atlantic Ocean<sup>64</sup>. The most common species are:

- Base of the food chain: The sulphide-oxidising bacteria that reside in and on the chimneys and mounds built up from the seabed itself<sup>65</sup>, These micro-organisms act as the biological interface with the extreme physical and chemical environments of the seabed and can be free-living or symbiotic<sup>66</sup>. They are also called hyperthermophiles, and are unique because of their capacity to grow at very high temperatures.
- Tube worms: found in the Pacific vents, they can reach up to 3 meters<sup>67</sup>. They are the fastest growing marine invertebrates known; they can grow 1-2 mm per day. They live in a symbiotic relationship with the billions of bacteria packed inside each of them<sup>68</sup>.
- Other worms
- Mussels

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<sup>59</sup> [www.pac.dfo-mpo.gc.ca/oceans/mpa/Endeavour.htm](http://www.pac.dfo-mpo.gc.ca/oceans/mpa/Endeavour.htm)

<sup>60</sup> RE, Pedro, “Deep-Sea Hydrothermal Vents ‘Oases of the Abyss’”, in BEURIER, J.P., KISS, A, MAHMOUDI, S. (Eds), *New Technologies and Law of the Marine Environment*, Kluwer Law International, London, 1999, pp. 67-74.

<sup>61</sup> SPLOS/91, Meeting of States Parties UNCLOS - 6 June 2002, parr. 82.

<sup>62</sup> [www.library.advanced.org/18828/data/fn\\_2](http://www.library.advanced.org/18828/data/fn_2)

<sup>63</sup> Glowka 1999, p. 78.

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<sup>65</sup> European Council on Environmental Law, “Legal Problems Concerning Bio-Propecting for Genetic Resources Located in Marine Hydrothermal Vents beyond National Jurisdiction”, in BEURIER, J.P., KISS, A, MAHMOUDI, S. (Eds), *New Technologies and Law of the Marine Environment*, Kluwer Law International, London, 1999, pp. 230.

<sup>66</sup> GLOWKA, Lyle, “Beyond the Deepest of Ironies: Genetic Resources, Marine Scientific Research and International Seabed Area”, in BEURIER, J.P., KISS, A, MAHMOUDI, S. (Eds), *New Technologies and Law of the Marine Environment*, Kluwer Law International, London, 1999, pp. 75-93.

<sup>67</sup> 10 feet.

<sup>68</sup> [www.library.advanced.org/18828/data/fn-3.html](http://www.library.advanced.org/18828/data/fn-3.html)



- Giant white clams
- The blind Atlantic vent shrimp, discovered in 1985 in the Mid-Atlantic Ridge. Very tiny, they use their claws to scrape bacteria from chimneys and stuff them into their mouths<sup>69</sup>. They have somewhat “visual organs” which detect infrared radiation from the hot vents<sup>70</sup>
- Snails
- Crabs
- Fishes and octopuses

### ***B) Importance of this ecosystem***

Looking into the future, this ecosystem has been increasingly considered as a source of scientific discoveries and commercial benefits. Nevertheless, since the knowledge of the biodiversity of the seabed and of the hyperthermophiles is at an early stage, we simply do not know what other interesting organisms might exist and what potential uses and commercial value they might have<sup>71</sup>.

However, until now, the following are considered to be the main fields for their application:

- Scientists speculate that the bacteria may represent descendants of some of the earliest life forms to have inhabited the planet<sup>72</sup>,
- Regulation of temperature and chemical balance of the oceans,
- Medical applications: research carried out about the special hemoglobin developed by tube worms may lead to the production of artificial blood<sup>73</sup>
- Industrial: enzymes and bioactive compounds can be extracted from microbes living in the vents and can be used in a number of industrial processes. In fact, 7 or 8 enzymes currently marketed were developed from microbes found in hydrothermal vents<sup>74</sup>. The thermostable properties of the enzymes from the microbes (hyperthermophiles) -they exist and thrive at extremely high temperatures- are very useful for applications in waste treatment, food processing, oil well services, paper processing and ore processing in the mining industry (biomining). Their market

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<sup>69</sup> [www.library.advanced.org/18828/data/fn\\_2.html](http://www.library.advanced.org/18828/data/fn_2.html)

<sup>70</sup> cf. op cit., RONA, *op.cit.*, pp. 6-8.

<sup>71</sup> International Seabed Authority, *Marine Mineral Resources*, Brochure, September 2000; GLOWKA, 1999, p. 79 and BURKE, p. 233.

<sup>72</sup> MORELL, V, “Life’s Last Domain, 272”, *Science*, 1996, p. 1043, cit. by GLOWKA, L., *op cit.*, 1999 p. 79. Y Glowka pp. 89-90

<sup>73</sup> Cf. SPLOS/91, Meeting of States Parties UNCLOS - 6 June 2002, parr. 82.

<sup>74</sup> Cf. SPLOS/91, Meeting of States Parties UNCLOS - 6 June 2002, parr. 82.

value has been estimated between USD 600 million and USD 3 billion per year<sup>75</sup>. If patents have been taken out in relation to substances obtained from processing the biological resources of the vents, the access to such substances and to the benefits from their commercial exploitation by the international community as a whole is in fact being limited<sup>76</sup>.

### *C) Threats*

The hydrothermal vents are particularly sensitive owing to their high percentage of endemic species and the exceptional nature of many of the species found in them<sup>77</sup>. Research and exploitation of both living and non-living resources may disturb and endanger interrelated populations of rare species and organisms. The most important threats are:

- Intensive scientific research
- Bioprospecting: (exploration or) harvesting genetic resources for commercial purposes.
- Mining activities

There are other threats such as those derived from the methods of exploration or exploitation of other minerals, sea pollution, etc.

Taking into account the great quantity of species found up to the present in those ecosystems (approximately 500), 90 percent of which are found only in these environments, the destruction of these ecosystems would have an effective impact far beyond a specific vent.

The act of sampling might cause extinction of species having few individuals, whether done either for scientific purposes or for bioprospecting, where more than one sample is likely to be taken<sup>78</sup>. More coordinated cooperation is needed to limit repeated observations and their side effects to the deep sea ecosystem<sup>79</sup>.

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<sup>75</sup> GLOWKA 1999, p. 79 and BURKE, W.T., "State Practice, New Ocean Uses, and Ocean Governance under UNCLOS", in *Ocean Governance: Strategies and Approaches for the 21<sup>st</sup> Century*, Proceedings Twenty-eighth Annual Conference of The Law of the Sea Institute, MENSAH, Thomas A. (Ed), University of Hawaii, Honolulu, 1996, pp. 229-230. One thermophile taken from the geysers at Yellowstone Park in the United States is responsible for hundreds of millions of dollars in revenue for its part in the polymerase chain reaction (PCR) which is used in DNA research.

<sup>76</sup> European Council on Environmental Law, "Legal Problems Concerning Bio-Prospecting for Genetic Resources Located in Marine Hydrothermal Vents beyond National Jurisdiction", in BEURIER, J.P., KISS, A, MAHMOUDI, S. (Eds), *New Technologies and Law of the Marine Environment*, Kluwer Law International, London, 1999, pp. 230-231.

<sup>77</sup> ISBA/8/A/5, para. 50 y 51. See also European Council on Environmental Law, "Legal Problems Concerning Bio-Prospecting for Genetic Resources Located in Marine Hydrothermal Vents beyond National Jurisdiction", in BEURIER, J.P., KISS, A, MAHMOUDI, S. (Eds), *New Technologies and Law of the Marine Environment*, Kluwer Law International, London, 1999, pp. 231.

<sup>78</sup> ISBA/9/A/3, Report of the Secretary-General of the International Seabed Authority under article 166, paragraph 4, of the United Nations Convention on the Law of the Sea, para. 64. See also ISBA/9/A/3, para. 64; THIEL, Hjalmar, "Approaches to the Establishment of Protected Areas on the High Seas, in

#### ***D) Nature of the Hydrothermal Vents Ecosystem***

The higher trophic levels of the food chain of the hydrothermal vents ecosystem for example fish and octopuses- are undoubtedly resources of the high seas. They feed from -among others- the vent organisms, but they are able to swim and move to shallower and sunnier waters when needed. They share the vent ecosystem, but they are independent of it. Therefore, they are clearly resources of the high seas.

But the situation of other resources is very different. Specially if we refer to the bacteria that comes with the boiling and sulphidic water of the hydrothermal vents, and to the typical marine worms, the mussels, the clams and the shrimps that can't go far away from the warm mineral fluid which is their environment. Actually, they do not seem to be high seas resources.

They are either immobile on or under the seabed or are unable to move except in constant physical contact with the seabed or the subsoil. In fact, they simply cannot survive without such permanent physical contact, without the heat and sulphidic fluid of the hydrothermal vents.

In this sense, they are in the Area the equivalent of the sedentary species of the continental shelf, which -in areas under national jurisdiction- do not appertain to the exclusive economic zone but to the continental shelf<sup>80</sup>. Indeed, they are much more related to the seabed and subsoil than the sedentary species of the continental shelf, since while some of the latter may live the first stage of their living cycle in the water - the exploitation period being the defining moment of their sedentary nature- the species we are referring to can only live in a permanent symbiosis with the vent.

#### **3. Analogy with living resources of the continental shelf: sedentary species<sup>81</sup>**

Until 1953, the International Law Commission (ILC) only considered minerals as the resources of the continental shelf. Living resources, including sedentary species<sup>82</sup>

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KIRCHNER, Andree (Ed.), *International Marine Environmental Law*, Kluwer Law International, The Hague/New York/London, 2003, p. 172.

<sup>79</sup> GLOWKA, Lyle, "Putting marine scientific research on a sustainable footing at hydrothermal vents", in *Marine Policy* 27 (2003), p. 304. "A growing problem is the conflict between observational monitoring activities that depend upon vent sites remaining in an undisturbed state and those activities that involve manipulating or collecting biological or geological samples from a particular area" "Direct impacts include chimney removal, environmental manipulation, clearing fauna, faunal transplantation between sites, instrument placement and boring, observation, submersibles' thrust and light"

<sup>80</sup> Art. 77 (4) CONVEMAR.

<sup>81</sup> Bibliography: Australia's proposal: WHITEMAN, M.M., "Conference on the Law of the Sea: Convention on the Continental Shelf", *AJIL*, 1958, pp. 638 ss.

Difference between sedentary and other species: YOUNG, R., "Sedentary Fisheries and the Convention on the Continental Shelf", *AJIL*, 1961, p. 365; QUENEUDEC, J.P., "Les problèmes de l'exploitation des ressources biologiques de la mer", en "Droit de la Mer", Institut des Hautes études internationales, Pedone, Paris, 1976/77, p. 53, GUTTERIDGE, J.A.C. "The 1858 Geneva Convention on the Continental Shelf", en *British Yearbook of International Law*, 1959, pp. 117 ss, GOLDIE, L.F.E. "Sedentary fisheries and art. 2(4) of the Convention on the Continental Shelf", en *AJIL*, 1966, p. 89; MOUTON, "The Continental Shelf", *RCADI*, 1954, vol 85, p. 441; ODA "International Law of the resources of the Sea", *RCADI*, 1969, vol 127, p. 423; VALLEE, Charles, *Le plateau continental dans le droit positif actuel*". Pedone, Paris, 1971, p. 170

remained subject to a different regime<sup>83</sup>. That year, the ILC determined that sedentary species, as they are in constant contact to the seabed should not be excluded from the application of the regime of the continental shelf. Therefore, it changed the definition of the continental shelf resources from “mineral resources” to the broader term “natural resources”<sup>84</sup>.

The draft prepared by the ILC in 1956 established that “The Coastal State exercises sovereignty rights over the continental shelf as regards exploration and exploitation of its ‘natural resources’”. It was stated that “crustacean swimming species are not included in the abovementioned definition”<sup>85</sup>.

It is important to have in mind that, when sovereignty rights over living resources of the continental shelf were granted to Coastal States, sedentary species were subtracted from the high seas regime. In fact, at that stage of the evolution of the law of the sea, the continental shelf was far beyond the territorial waters and the rights of the coastal State over such maritime area did not affect the nature of the superjacent waters, generally high seas.

In the First United Nations Convention on the Law of the Sea, three main stances were adopted: those who sought to limit the resources of the continental shelf to mineral resources and leave living resources subject to the freedom of deep-sea fishing; those who sought that bottom fishes were also subject to the continental shelf regime and a conciliatory position to bring the other two parties closer<sup>86</sup>.

Finally article 2 (4) was left as follows: “The natural resources referred to (...) living organisms belonging to sedentary species, that is to say, organisms which, at the harvestable stage, either are immobile on or under the seabed or are unable to move except in constant physical contact with the seabed or the subsoil”<sup>87</sup>. Article 3

<sup>82</sup> At that moment, in the ILC translation into Spanish they were referred to as “especies fijas”.

<sup>83</sup> Cfr. CORRAL SUAREZ, Margarita, *La conservación de los recursos biológicos del mar en el derecho internacional vigente*, Universidad de Valladolid, Secretariado de Publicaciones, 1993, pp. 48-49.

<sup>84</sup> For example mussels, clams, oysters, sponges, algae, coral, seashells. A/CN.4/SER.A/1954/Add.1, Yearbook of the International Law Commission, 1954, Volume II, United Nations, New York, 1960, pp. 7-16. Cfr. CEPEDA ULLOA, Fernando, *La Convención de Ginebra sobre la Plataforma Continental*, Instituto Colombiano de Estudios Internacionales, Bogotá, 1963, pp. 62-63.

<sup>85</sup> A/CN.4/Ser.A/1956/Add.1, Yearbook of the Commission on International Law, 1956, Volumen II, United Nations, New York, 1957, pp.7-8.

<sup>86</sup> The first position was held by Japan, Denmark, Spain, Greece, Norway and Spain, and the second one by Mexico, Birmania, Korea and Mexico. The view harmonizing these two positions, that of Australia, Ceylon, India, Malaysia, Norway and the United Kingdom (A/Conf.13/C.4/1.36), proposed the following: “The natural resources to which these articles refer consist of mineral resources and other nonliving resources of the marine seabed and subsoil, together with living organisms belonging to sedentary species, i.e. to organisms which in the exploitation stage are either immobile in or below the marine seabed or are unable to move unless in constant physical contact with the seabed or subsoil; crustaceans or swimming species, however, are not included”.

<sup>87</sup> Convention on the Continental Shelf (1958), Article 2. The reference to crustaceans was finally deleted, because the explanation contingent on the distance they traveled was not convincing, and the issue as to whether crustaceans were sedentary species was left unresolved. There were different interpretations, ranging from those claiming that nothing had been specified because they were included to those who claimed the opposite. The issue of crustaceans as sedentary species was particularly important in the issue of lobster between Brazil and France and that of king crab between the US and Japan. See WINDLEY,

established that “the rights over the continental shelf do not affect the legal status of the superjacent waters as high seas.

This Article and its background were the origin of the UNCLOS regime for sedentary species<sup>88</sup>.

The coastal State has sovereign rights over the continental shelf, and those rights are exercised for the purpose of exploring and exploiting its natural resources. Those rights are “exclusive”, i.e. if the coastal State does not explore the continental shelf or exploit its natural resources, no one may undertake these activities without the express consent of the coastal State. The rights of the coastal State over the continental shelf do not depend on “occupation, effective or national, or on any express proclamation”.

Therefore, the duality of the legal regime for living resources, depending on whether they are in constant contact with the seabed or subsoil or whether they have the water column as their habitat, is a rule since the 1958 Convention.

Living resources that are in constant contact with the seabed in the continental shelf far beyond the 200 nautical miles are not considered subject to the high seas regime notwithstanding the fact that they are living resources; the maritime area in which they live determines the legal regime applicable to them.

Following this argument, it would not be logical to consider living resources that are in constant contact with the seabed in the Area subject to the high seas legal regime. Both the sedentary species of the continental shelf and the biodiversity of the Area are living resources in constant contact with the seabed, the ocean floor and the subsoil. Those which inhabit the Area have a greater dependency on the seabed and subsoil than those living in the continental shelf. The particular status of the Area will exert an influence on any regulatory framework dealing with biological communities associated with mineral resources in the Area<sup>89</sup>.

It must be mentioned that in UNCLOS, sedentary species of the continental shelf are specifically defined, and expressly assigned to it. This is not the case for sedentary species of the Area. Nevertheless, we do not feel that this omission could allow us to consider that such species are not legally part of the Area.

Could we consider that there exists a customary rule providing that living resources of the seabed and subsoil have a different regime than those resources which live in the superjacent waters or high seas, independently from the maritime space in question?

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D.W. “International practice regarding traditional fishing privileges of foreign fishermen in zones of extended maritime jurisdiction”, *AJIL*, 1969 p. 493

<sup>88</sup> UNCLOS, art. 77. Already in the 1973 Session of the Seabed Committee, there were several proposals containing provisions similar to article 2 of 1958 Convention. The proposal by Argentina stated that the rights of the coastal State would not depend on “occupation, effective or notional, or on any proclamation” and provided a definition of the natural resources of the continental shelf A/AC.138/SC.II/L37 and Corr.1, articles 15, 17, 18 and 19, reproduced in III SBC Report 1973, at 78, 80 (Argentina). Cited in NANDAN, S.-ROSENNE, S. *United Nations Convention on the Law of the Sea 1982 - A Commentary*, Volume II, Martinus Nijhoff Publishers, Dordrecht/Boston/London, 1993, pp.891-894.

<sup>89</sup> See Report of LODGE, Michael, 2004.

This has to be analyzed in light of two different systems regimes: continental shelf / exclusive economic zone (within coastal State jurisdiction), and continental shelf or the Area / high seas (far beyond the coastal State jurisdiction).

#### 4. Objects of an archaeological and historical nature

It is expressly established by article 149 that all objects of an archaeological and historical nature found in the Area shall be preserved or disposed of for the benefit of mankind as a whole. Particular regard has to be paid to the preferential rights of the State or country of origin, or the State of cultural origin, or the State of historical or archaeological origin.

It is important to stress that the objects of archaeological and historical nature are not mineral resources as defined in article 133. Nevertheless, they must be preserved or disposed of for the benefit of mankind as a whole and the original owner is the only one that has a preferential right. In this case, the geographical aspect -the rights inherent to the zone where located- clearly prevails over other aspects -the nature or ownership of the object itself. As one author said “the legal effectiveness of the legal status of the space in which activities are taking place”<sup>90</sup>.

The Convention does not establish what entity shall implement the principle that archaeological and historical objects must be preserved or disposed of for the benefit of mankind. The Regulations on Prospecting and Exploration for Polymetallic Nodules in the Area adopted by the Authority provide as an obligation of prospectors and a contractor to notify the Secretary-General of the Authority of any finding in the Area of such an object and its location and to take all reasonable measures to avoid disturbing it. The Secretary-General of the Authority is required to notify the Director General of UNESCO<sup>91</sup>.

## VI. MARINE SCIENTIFIC RESEARCH

Under UNCLOS, the requirements for marine scientific research are in accordance with the principles governing each maritime space. On the continental shelf or the exclusive economic zone, marine scientific research must be carried out in accordance with the regulations and authorization of the coastal State, and fulfilling certain conditions, such as allowing an observer on board; providing coastal State with information and samples obtained in the project research<sup>92</sup>.

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<sup>90</sup> SCOVAZZI, Tullio, “The Evolution of International Law of the Sea: New Issues, New Challenges”, *Recueil des Cours de l’Académie de Droit International*, Tome 286, 2000, p. 218.

<sup>91</sup> The Convention on the Protection of the Underwater Cultural Heritage was adopted on 2 November 2001. Cfr, NANDAN, S.N, LODGE, M.W., ROSENNE, S., *op.cit.*, Volume VI, pp. 231-232. Also: HAYYASHI, Moritaka, “archaeological and historical objects under the United Nations Convention on the Law of the Sea”, 20 *Marine Policy*, 291-296 (1996). STRATI, Anastasia, *The Protection of Underwater Cultural Heritage: an Emerging Objective of the Contemporary Law of the Sea*, at. 176-82 y GIORGI, María Cristina, “Underwater Archaeological and Historical Objects”, in DUPUY, R-J. and VIGNES, D. (Eds) *A Handbook on the New Law of the Sea*, 1991, pp. 564-65.

<sup>92</sup> Arts. 246-249.

All States and competent international organizations have the right to conduct marine scientific research in the Area, but such research shall be carried out exclusively for peaceful purposes and for the benefit of mankind as a whole<sup>93</sup>. This means that, unlike the situation in the high seas, marine scientific research in the Area cannot be carried out for the sole benefit of the researcher, which is another difference between the rule of common use of the high seas and the status of common heritage of mankind of the Area. Marine scientific research activities shall not constitute the legal basis for any claim to any part of the marine environment and its resources<sup>94</sup>.

Marine scientific research in the Area, according to the Convention, is not only limited to the effects of the exploring mechanisms of the mineral resources established in Part XI. It refers to all the geographic space<sup>95</sup>. Here we must again recall that the Area as well as the International Seabed Authority are defined in the First Part of the Convention, and that they are relevant to all the other Parts in which UNCLOS is divided, not being –unlike the reference to “minerals”- confined to Part XI.

The reference to “the benefit of mankind” leads straightforward to the publication and dissemination of research results, and to the exchange of samples among researchers. Research carried out with commercial purposes does not seem to constitute marine scientific research for the benefit of mankind as a whole.<sup>96</sup>

The Authority may carry out marine scientific research concerning the Area and its resources, directly or through contracts. It shall also promote and encourage the conduct of marine scientific research in the Area and coordinate and disseminate the results of such research and analysis when the information is available<sup>97</sup>. This is an essential faculty of the Authority, as the knowledge of the Area and its resources is crucial for the establishment of a comprehensive management framework for the activities in the Area<sup>98</sup>.

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<sup>93</sup> UNCLOS, art. 256 and Art. 143, 1). Negotiations have been changing since proposals providing that marine scientific research in the international area shall be conducted directly by the International Authority and the consideration of the seabed subsoil and superjacent waters together. Cf. NORDQUIST, ROSENNE, YANKOV (Eds.), *United Nations Convention on the Law of the Sea 1982 - A Commentary - Volume IV*, Martinus Nijhoff Publishers, pp.603-607.

<sup>94</sup> Article 241 and article 137.

<sup>95</sup> Until 1976, discussions on scientific marine research were on the idea that all the states had their rights and that surface waters merged as well as the Area. At the fourth session (1976), it was established that the research regarding the international seabed area shall be in conformity with the provisions of Part XI (at that time Part I), rather than of the Convention generally. In 1978 United States of America proposed to combine research in the water column beyond the exclusive economic zone and the Area, but it was rejected. Cf. NORDQUIST, ROSENNE, YANKOV, *op. cit.*, pp. 606-607.

<sup>96</sup> GLOWKA, 1999, p. 81-82.

<sup>97</sup> Art. 143, 2) y 3). Up to the moment, the Authority has implemented its responsibilities carrying out technical workshops. The principal problem is that the environmental studies have not been carried out or coordinated on a global regional level. The Authority should centralized environmental databases that would enable contractors and researches to exchange and share environmental data collected by other contractors or researchers and should convene workshops to allow scientists and technicians involved in environmental monitoring to share, compare and standardize data and processes for the evaluation of such data (ISBA/8/A/5, parr. 41)

<sup>98</sup> NANDAN, S.N, LODGE, M.W., ROSENNE, S., *United Nations Convention on the Law of the Sea 1982 - A Commentary*, Volume VI, Martinus Nijhoff Publishers, The Hague-London-New York, 2002, pp.162 ss.

The Authority has assumed a role as a forum for cooperation and coordination of marine scientific research in the Area and must continue to give more detailed consideration on how best to realize the ideals embodied in the Convention and the Agreement concerning the dissemination of the benefits of marine scientific research<sup>99</sup>.

## VII. ENVIRONMENTAL PROTECTION

The objective of protecting and preserving the marine environment and its living resources is expressly established all along UNCLOS starting with its Preamble.

In relation to the Area, the main provision is article 145, which derives from paragraph 11 of Resolution 2749 (XXV)<sup>100</sup>. At the beginning of the negotiations of this article, there was no agreement on who could implement the necessary rules to protect the marine environment. During the fourth session (1976), “the Authority was specified as the entity empowered to adopt rules, regulations and procedures in this regard”<sup>101</sup>.

Article 145 establishes the need to adopt measures to ensure an effective protection of the marine environment from harmful effects which may arise from activities in the Area. To this purpose, the Authority may establish rules, regulations and procedures for the prevention, reduction and control of pollution and other hazards to the marine environment, including the coastline and of interference with the ecological balance of the marine environment, among others. The regulations which the Authority must adopt are also those needed for “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”<sup>102</sup>.

Therefore, the protection and preservation of the communities associated to hydrothermal vents derives from article 145<sup>103</sup>.

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<sup>99</sup> Statement by Satya N. Nandan, Secretary-General of the International Seabed Authority in the Commemoration of the 20<sup>th</sup> Anniversary of the Opening for Signature of the 1982 United Nations Convention on the Law of the Sea, Fifty-seventh Session of the General Assembly United Nations, 9 December 2002 and ISBA/8/A/5, Report of the Secretary-General Secretary-General of the International Seabed Authority under article 166, paragraph 4, of the United Nations Convention on the Law of the Sea parr. 39.

<sup>100</sup> Resolution 2749 (XXV), paragraph 11, which established that with respect to activities in the Area, States shall take appropriate measures and cooperate in the adoption and implementation of international rules, standards and procedures for the prevention of pollution and contamination, and 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.

<sup>101</sup> Cfr. NANDAN, S.N, LODGE, M.W., ROSENNE, S., *op.cit.*, Volume VI, pp. 194-195.

<sup>102</sup> Article 145, b). Also cfr. NANDAN, S.N, LODGE, M.W., ROSENNE, S., *op.cit.*, Vol VI, p. 76: It should be noted, however, that article 145 (b) requires the Authority to adopt appropriate rules, regulations, and procedures for 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”. This clearly envisages that the Authority may take regulatory action, for the purposes of environmental protection, in respect of, for example, biological communities occurring in conjunction with deep sea hydrothermal vents.”

<sup>103</sup> ISA, *An Environmental Protection Regime for the International Area*, Brochure, December 2000.



The 1994 Agreement, in its Preamble, states “the importance of the Convention for the protection and preservation of the marine environment and of the growing concern for the global environment” and goes on to establish that between the entry into force of the Convention and the approval of the first work plan for exploitation, the Authority shall concentrate on the “Adoption of rules, regulations and procedures incorporating applicable standards for the protection and preservation of the marine environment”<sup>104</sup>.

Since its establishment in 1994, the Authority has kept environmental protection as one of its highest priorities, as evidenced by the comprehensive regime for monitoring and protecting the marine environment in the Area contained in the Regulations on Prospecting and Exploration for Polymetallic Nodules in the Area and by the adoption of the environmental guidelines by the Legal and Technical Commission of the Authority<sup>105</sup>. We must remember that nowadays, more than in 1982, the development of the international environmental law leads to the application of a precautionary approach to ocean management<sup>106</sup>.

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<sup>104</sup> 1994 Agreement, Annex, Section 1, para 5

<sup>105</sup> Cf. NANDAN, S.N, LODGE, M.W., ROSENNE, S., *United Nations Convention on the Law of the Sea 1982 - A Commentary*, Volume VI, Martinus Nijhoff Publishers, The Hague-London-New York, 2002, pp. 192-196. The Regulations on Prospecting and Exploration for Polymetallic Nodules in the Area (RPEN) contain extensive provisions on the protection and preservation of the marine environment that elaborate upon the provisions of article 145 and the 1994 Agreement and define more clearly the obligations of the Authority, sponsoring states, and contractors in relation to the protection of the marine environment. The Regulations give some indication as to the scope of the “necessary measures” referred to in the chapeau of article 145 by requiring the Authority to establish and keep under periodic review environmental rules, regulations and procedures to ensure effective protection for the marine environment from harmful effects that may arise from activities in the Area. Regulation 31 then refers back to article 145 by requiring each contractor “pursuant to article 145 of the Convention” to “take necessary measures to prevent, reduce and control pollution and other hazards to the marine environment arising from its activities in the Area as far as reasonably possible using the best technology available to it (31.3). At the same time, the Regulations require that “in order to ensure effective protection for the marine environment from harmful effects which may arise from activities in the Area, the Authority and sponsoring States shall apply a precautionary approach, as reflected in Principle 15 of the Rio Declaration, to such Activities”. The Legal and Technical Commission is to make recommendations to the Council on the implementation of this requirement (31.2=). The LTC may from time to time issue recommendations of a technical or administrative nature for the guidance of contractors to assist them in the implementation of the rules, regulations and procedures of the Authority (38). Individual contractors are required, as a condition of the contract, to gather environmental baseline data to establish environmental baselines against which to assess the likely effects of their plans of work for exploration on the marine environment. Contractors are to report to the Authority on the implementation of such programs and, prior to the commencement of testing of collecting systems and processing operations, are required to carry out a more detailed environmental impact assessment (31.4.5.7. Annex 4 Section 5). There is also a general obligation on all contractors, sponsoring States and other interested States and entities to cooperate with the Authority in the establishment and implementation of programs for monitoring and evaluating the impacts of deep seabed mining of the marine environment. Also ISA, *An Environmental Protection Regime for the International Area*, Brochure, December 2000.

<sup>106</sup> Statement by Satya N. Nandan, Secretary-General of the International Seabed Authority in the Commemoration of the 20<sup>th</sup> Anniversary of the Opening for Signature of the 1982 United Nations Convention on the Law of the Sea, Fifty-seventh Session of the General Assembly United Nations, 9 December 2002.

## VII. LEGAL FRAMEWORK

The main problem is the fact that UNCLOS does not contain specific provisions on the exploration and exploitation for commercial purposes of the biological communities associated to the vents or other living resources of the Area.

Despite the fact that these organisms are not mentioned in UNCLOS, such omission should not lead us to the conclusion that they will fall within the high seas legal regime and that, consequently, they are accessible to all States under the conditions laid down by UNCLOS to high seas freedoms.

On the contrary, these organisms are located in the Area, a maritime zone that differs from high seas in its legal status, in the management of its resources and also in the way in which marine scientific research and the protection of the environment are regulated. In addition to this, these resources don't have the characteristics of the living resources of the high seas; they are sedentary species.

On the other hand, does the fact that they are not explicitly mentioned in the Convention mean that they are unregulated? The answer needs to be clarified. They are not regulated but they are undoubtedly part of the Area.

We have to take into account three relevant factors, already mentioned in the title related to common heritage of mankind:

First, we cannot forget that the Area and its resources were declared common heritage of mankind in 1970 by Resolution 2749 (XXV) of the United Nations General Assembly. UNCLOS maintains this concept and affirms it for the whole zone and all its resources<sup>107</sup>. Nevertheless, only the minerals are considered resources for the purposes of Part XI, which sets up the international mechanism called for by Resolution 2749<sup>108</sup>.

In the second place, we cannot find, in the negotiations between the adoptions of Resolution 2749 (XXV) and of UNCLOS any attempt to assimilate the sedentary species of the seabed to the high seas regime. There were some references to the lack of knowledge about any species existing at a substantial depth. At the time of UNCLOS negotiations, all the arguments concentrated in mining activities as the economic value of the minerals of the deep seabed was the main interest.

Finally, and very importantly, it should be taken into account that in 1977, when the hydrothermal vents and their ecosystem were discovered, the definition of resources for the purposes of application of Part XI had already been adopted.

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<sup>107</sup> Art. 136.

<sup>108</sup> Cfr. NANDAN, S.N, LODGE, M.W., ROSENNE, S., *op.cit.*, p. 76: "The term "resources" as used in article 133 does not include living resources, including sedentary species and so-called genetic resources (This conclusion is based on a literal approach to the interpretation of the provision, applying the maxim *expressio unius est exclusio alterius*. If a contextual approach is taken, it may be noted that the preamble to the Convention cites the 1970 Declaration of Principles, which neither defined nor limited the "resources" to which it applied)".

## **IX. CONCLUSIONS**

We could summarize our conclusions as follows:

- The Area is a determined geographic zone, different from high seas.
- Their legal status is essentially different. In the high seas the six freedoms apply while the Area and its resources are the common heritage of mankind.
- The Area and its resources were declared common heritage of mankind in 1970 by Resolution 2749 (XXV) of the United Nations General Assembly. At that time, “Natural resources” were considered resources of the Area, without specifying if such term included only mineral resources or both living/non living resources, as there were no information on the resources of the seabed and subsoil at such depth.
- UNCLOS picks up the principle and establishes an intergovernmental organization which shall act on behalf mankind: the International Seabed Authority. The creation of this mechanism leading to the exploitation of some of the resources of the Area in a way which benefits mankind was established for the first time in Part XI.
- The Area and the Authority are defined in the General Part of UNCLOS. The powers and functions of the Authority are not limited to Part XI; they are both expressly conferred by UNCLOS and it also has “incidental powers”.
- In relation to the regime for the exploration and exploitation of the resources of the Area, such regime is only applicable to mineral resources.
- Nevertheless, the Area regime does not limit itself to mineral exploration and exploitation, the field is broader: cultural heritage, environmental protection, marine scientific research.
- The functions of the Authority include environmental protection and marine scientific research in the Area.
- The biological communities associated with the mineral resources are not expressly considered, since UNCLOS does not refer to them specifically. Nevertheless what clearly comes out from the negotiations is that these species never were considered as assimilated to the high seas’ regime.
- Clearly, most of the organisms that compose the ecosystem of the hydrothermal vents are not resources of the superjacent waters of the high seas. They are sedentary species, like the ones of the continental shelf.
- Article 145 contemplates their protection, since it gives powers to the Authority to protect and preserve the natural resources in the Area, and specially to prevent any damage to the marine flora and fauna which may arise from activities in the Area.
- All States and competent international organizations have the right to conduct marine scientific research in the Area, but such research shall be carried out

exclusively for the benefit of mankind as a whole. This marine scientific research has to take into account the rules and regulations established by the Authority in the Area.

- The Authority may carry out marine scientific research concerning the Area and its resources, directly or through contracts. It shall also promote and encourage the conduct of marine scientific research in the Area and coordinate and disseminate the results of such research and analysis when the information is available.

In relation to the competences conferred by the Convention to the Authority in relation to the seabed living resources, we could conclude that, since the rule referring, in a way, to the “sedentary species of the seabed” is art. 145 of UNCLOS, we must work on its implementation through adoption of appropriate rules and regulations by the Authority.

The provisions of UNCLOS related to environmental protection and marine scientific research in the Area, together with the express and implicit powers and functions of the Authority allows it to take an active role on the protection of these resources.

It must be taken into account that the last General Assembly Resolution on Oceans and the Law of The Sea reiterates the importance of the ongoing formulation by the Authority, pursuant to article 145 of the Convention, of rules, regulations and procedures to ensure the effective protection of the marine environment, the protection and conservation of the natural resources of the Area and the prevention of damage to its flora and fauna from harmful effects that may arise from activities in the Area.

But, these precautionary actions will not solve the main issue. It is not possible to conceive the protection of the “sedentary species of the Area”, apart from the activities related to the mineral resources in the same Area. If the legal status of the former, that is whether they are “free for all” or are part of the common heritage of mankind, is not clarified, many problems will arise in the management of both types of resources, such as:

- How should the Authority grant exclusive exploration licenses for minerals and make that compatible with research carried out at the same vents?
- How can free biological research be allowed if the marine scientific research in the Area must be carried out for the benefit of all mankind?
- How can the tensions that will naturally result from the above mentioned opposed interests be managed bearing in mind the main principle of peaceful use of the Area?

Notwithstanding this, it is advisable to work on the drafting of provisions aimed at preserving the basic concept of the common heritage of mankind of the Area and its resources through the fair and equitable utilization of its genetic resources. One of the presentations at the 20<sup>th</sup> Anniversary of UNCLOS, as well as some authors- suggested

that “An international regime to promote and safeguard the fair and equitable sharing of benefits arising from the utilization of genetic resources is to be negotiated”<sup>109</sup>.

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<sup>109</sup> GOETTSCHE-WANLI, Gabriele, “Legal instruments that support the implementation of the United Nations Convention on the Law of the Sea”, DOALOS/UNITAR, *Briefing on Developments in Ocean Affairs and the Law of the Sea 20 Years after the Conclusion of the United Nations Convention on the Law of the Sea*, September 2002, New York, [http://www.un.org/Depts/los/convention\\_agreements/convention\\_20years/briefingmaterial.htm](http://www.un.org/Depts/los/convention_agreements/convention_20years/briefingmaterial.htm).