An Overview of the Legal Regime Governing
Deep Seabed Mining and Bioprospecting in the Area

30 ECT LLM dissertation

LLM in Natural Resources Law and International Environmental Law

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“The international law of the deep sea bed has a complexity which readers could be forgiven for thinking is out of proportion to its current practical importance”

- Churchill & Lowe, The Law of the Sea, p.238.

Abstract

This dissertation seeks to give an overview of the current legal regime that governs deep seabed mining as well as bioprospecting in the Area. Deep seabed mining has been an important factor in the development of the Law of the Sea, especially at UNCLOS III. The legal regime covering deep seabed mining in the Area is representative of the initial excitement at the prospects of industrial scale mining. The regime is therefore rather substantial, yet it has not been utilized to the same extent as was expected at the time of its establishment. The commercial viability of mining ventures in the Area has, until now, been unrealistic, mainly due to exuberant initial costs, unfavourable markets and technological difficulties. With the revived commercial interest in last decade, as well as reinvigorated anthropogenic deep seabed activity, legal issues have arisen concerning the living resources of the seabed. The commercial potential in the exploration and exploitation of living and genetic resources is seemingly immense. There may be considerable commercial interest in the biochemical components of such resources, for example within the pharmaceutical industry. The location and symbiotic relationship between mineral resources and living resources in the Area, beyond national jurisdiction, raises the question whether the current legal regime covering deep seabed mining in Part XI of UNCLOS may be used equally with regard to living resources. To this extent the dissertation gives an overview of the legal status of living resources in the Area. It is the main conclusion of the dissertation that the provisions of Part XI of UNCLOS do not apply to bioprospecting and that at present there is no specific legal regime that covers the issues of bioprospecting in the Area. Currently, the provisions surrounding the freedom of the high seas, as seen in Part VII of UNCLOS, seem applicable to bioprospecting, though this remains controversial.

Preface

This is a LL.M thesis in Natural Resources Law and International Environmental Law at the Faculty of Law, University of Iceland. The thesis is submitted to the Faculty in partial fulfilment of the requirements for the LL.M degree, as stipulated in Art. 5 of the rules for the LL.M.-programme in Natural Resources Law and International Environmental Law at the Faculty of Law at the University of Iceland.

My interest in Law of the Sea began in earnest when I attended a lecture on the problem of piracy held by the Nordic Institute for Maritime Law at the Faculty of Law, University of Oslo, in the autumn of 2009. In the spring of 2010 I attended the course Law of the Sea, LÖG213F, at the Faculty of Law, University of Iceland, where I gained an immense appreciation for the subject. In the spring of 2010 I received a grant from the Icelandic Law of the Sea Institution to study that summer at the Rhodes Academy of Ocean Law and Policy in Greece. In the spring of 2011 I completed a postgraduate dissertation on the definition of piracy within UNCLOS. In 2013, while working as an in-house lawyer for the Environment Agency of Iceland, I gained a professional and academic interest in Natural Resources Law and Environmental Law, this later lead to me enrolling as an LLM student in Natural Resources Law and International Environmental Law, at the Faculty of Law, University of Iceland. This thesis is a prerequisite for graduation; as such I intend to use the opportunity to combine my interests in Law of the Sea, Natural Resources Law and Environmental Law.

I would like acknowledge and thank my supervisor, associate professor Pétur Dam Leifsson, for his patience, assistance and helpful advice, especially at the beginning of this project.

I would like to thank my employers, previously the Environment Agency of Iceland (UST) and currently the Environmental Board of Appeal (ÚUA), for allowing me to continue to pursue a rigorous academic programme while gainfully employed.

I would also like to thank my family and friends for their encouragement.

William Freyr Huntingdon-Williams

Lögberg, 1st of May 2015

CONTENT

An Overview of the Legal Regime Governing Deep Seabed Mining and Bioprospecting in the Area[•]

1 Introduction

1.1 The subject and purpose

The oceans have always been a subject of interest and attracted anthropogenic activity since the dawn of civilization.[1] However, if we remind ourselves of the fact that the oceans cover 2/3 (~3.6×10^{8} km^{2})[2] of the surface of our ´blue planet´ it is easy to understandable why the oceans retain their attraction. The legislation of human activity within oceanic areas is an important expression of the significance of the oceans and their potential value not only to industry and commerce but to the very essence and future of humanity and culture itself. As the human population seems to swell evermore, followed by a likewise strain on natural resources and added pressure on often untouched ecosystems, in an attempt to retain an economic standard of living, we see the oceans more and more as potential harvesting grounds for precious natural resources.

Such natural resources may possible become more valued as time goes by and our need and/or demand grow further beyond the capability of more conventional land based reserves. Once largely viewed as a convenient transport route for goods and people and/or fishing grounds, we now have the potential to research and exploit those areas rarely seen by human eyes – namely the sea bed or the ocean floor.

We have already mastered, to a great extent, the exploitation of carbon fossil fuel resources, a.k.a. hydrocarbon (gas) or petroleum (oil) deposits, found offshore below the sea bed at certain depths and continue to test our abilities in other virgin areas at even greater depths.[3] Within the national jurisdiction of certain states mining the sea bed for natural resources has become a relatively new economic venture, conducted both by private and public entities.[4]

The purpose of this dissertation is to investigate the legal regime/s involved around the process of retrieving natural mineral and metallic resources from the ocean floor by means of

[•] Disclaimer: This dissertation is intended to be a comprehensive consideration of the subject matter for academic purposes only. Please note that the work is not to be considered to constitute any legal advice.
[1] See: Abulafia, D: *The Great Sea: A Human History of the Mediterranean*.
[2] "NOAA – National Oceanic and Atmospheric Administration – Ocean". http://www.noaa.gov/ocean.html, Retr. 1 May 2015.
[3] See: Ong. M.D: "Joint Development of Common Offshore Oil and Gas Deposits: "Mere" State Practice or Customary International Law".
[4] The precious stone specialists company De Beers has begun mining diamonds from the seabed. The Nautilus Minerals Inc. Company intends to mine offshore within the national jurisdiction of Papua New Guinea and New Zealand.

mining. The dissertation aims to specifically investigate mining in areas beyond national jurisdiction, so called deep sea mining[5], with an emphasis on Part XI. of the United Nations Convention on the Law of the Sea (herein after UNCLOS)[6]. Having investigated and presented this part of the subject, by identifying the applicable legal regime for deep sea mining in general, the dissertation will then attempt to analyse and answer the question whether such a legal regime may be applicable to the mining of genetic resources within the same area, or:

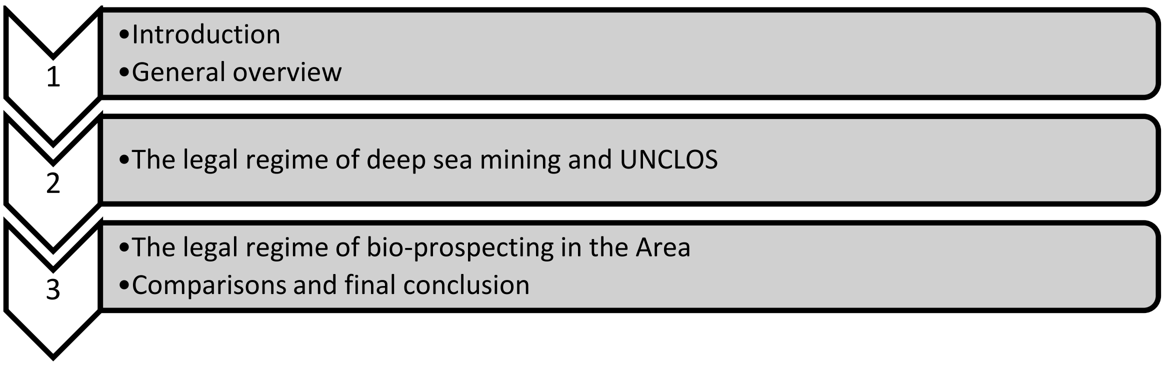
Q1.: What is the legal regime of deep seabed mining beyond national jurisdiction?

Q2.: Can the deep seabed mining of living resources (bio-prospecting) beyond national jurisdiction be conducted under the same legal regime as the more conventional deep seabed mining?

Q3.: Is there a need for a specific international legal regime for the deep seabed mining of living resources beyond national jurisdiction?

1.2 The structure

A short overview of the structure of the dissertation:



1.3 Methodology

There is a large range of possible approaches and methods in the researcher arsenal when conducting legal research as has been proposed. In this dissertation it is the intention to attempt to use diverse research approaches in an endeavour to tailor the methodology towards

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[5] This dissertation will avoid discussion matters directly concerning intellectual property rights in respect to genetic resources as well as scientific research, though these subjects may be touched upon in passing.

[6] *Hafréttarsamningur Sameinuðu Þjóðanna*, Utanríkisráðuneytið.

the research needs, so as to better answer the proposed questions and gain a more insightful riposte in each instance.

The very natures of this dissertation, as well as practical limitation, impede both the need and usefulness of empirical research. The very nature of legal research may often exclude the possibility of direct experimentation or, for example, interviewing. The presentation of the dissertation will therefore not involve an investigation conducted in an empirical fashion. Nor will it make any attempt to account for the direct epistemological value of the subject matter.

The greater part of the dissertations proposed investigation will revolve around research based on doctrinal, comparative, conceptual and theoretical methodological approaches.

A doctrinal study of subject matter seems to be the logical beginning in this instance. Inward-looking in nature, doctrinal or descriptive approaches provide a base for further study. The comparative nature of the research would focus on comparisons, for example drawn between the legal regime concerning deep sea mining and the potential reflection of that regime in the instance of genetic mining or bio-prospecting. The comparison may find itself empirical in the sense that texts might be drawn together in comparison to prove or disprove similarities. Conceptual issues will without a doubt rise in connection with the similar or differing concepts, as well as the direct meaning of any legal text concerning the subject matter. This may, in turn, revert to theoretical claims.

2 General background

2.1 The Challenger expedition

Sir Charles Wyville Thomson, a marine zoologist at University of Edinburgh and Merchiston Castle School, initiated, in an association with the Royal Society of London, what has since been known as the Challenger expedition, between 1872 and 1876. The expedition was so called due to the fact that the Royal Society of London had been presented with the ship HMS Challenger as a gift from the Royal Navy. The society later adapted and customized the vessel so that it could perform cutting edge scientific work (for the time) at sea, making it the very first oceanographic vessel. The expedition sailed from Portsmouth, England, on the 21st of December 1872.[7] The main focus of the expedition fixated on the deep sea and the

[7] Rice, A.L.: “The Challenger Expedition”. p. 27–48.

physical environment and chemical qualities of both the water column at great depth as well as the seafloor, or as the Royal Society of London claimed:

> To investigate the physical conditions of the deep sea in the great ocean basins (as far as the neighborhood of the Great Southern Ice Barrier) in regard to depth, temperature, circulation, specific :gravity and penetration of light.
>
> To determine the chemical composition of seawater at various depths from the surface to the bottom, the organic matter in solution and the particles in suspension.
>
> To ascertain the physical and chemical character of deep-sea deposits and the sources of these deposits.
>
> To investigate the distribution of organic life at different depths and on the deep seafloor.[8]

Prior to the Challenger expedition very little was in fact known about the deep sea, other than it was deep. Scientist had theorizing that below 500m the seas would be completely lifeless, as nothing living could survive under such high pressure, in such extreme darkness and at such low temperatures.[9]

It was in 1873 that the expedition uncovered, for the very first time in scientific history, the presence of naturally occurring polymetallic nodules (a.k.a. manganese nodules). The nodules presented themselves in scattered clusters often over vast areas and in considerable numbers, each nodule a spherical or globular object of around 5 to 20 cm across, mainly found at depths of around 3500 m and beyond continental shelves.[10] Some of the largest reserves found to date are in the deep seafloor of the Clarion-Clipperton fracture zone, situated in the northern part of the central Pacific Ocean.[11]

2.2 Mineral deposits

Among those contracting with the Authority to explore or exploit mineral resources within the Area their interests are at present focused on four specific variations of mineral deposits considered to have significant commercial value.

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[8] "HMS Challenger: Science". Birch Aquarium. URL: http://aquarium.ucsd.edu/Education/Learning_Resources/Challenger/vessel.php. Retr. 1 May 2015.

[9] "The history of ocean exploration". The Natural History Museum. URL: http://www.nhm.ac.uk/nature-online/science-of-natural-history/expeditions-collecting/hms-challenger-expedition/exploration-history/index.html, retrieved 9. April 2015.

[10] See: Cronan, D.S.: *Handbook of Marine Mineral Deposits*, p. 41.

[11] Churchill, R.R., Lowe, A.V.: *The Law of the sea*, p. 223.

2.2.1 The polymetallic nodules[12]

Also known as manganese nodules, the existence of these deposits has been scientifically known since their discovery by the Challenger expedition in the early 1870s.[13] Today, we know that these nodules are of considerable commercial value, particularly due to the fact that they are composed of high-grade metal ores in pure states. Presently, they are believed to occur in nature by a method of accretion, forming small nodule shaped objects ranging in size between molecular structures and the more common large dimensions between 5 and 20 cm in diameter. The metallic particles found in seawater as well as sediment pore water would need to accumulate over millions of years to form such nodules.

The metals themselves have an even greater history, as they are understood to have originated from the overflow of metals that occur with continental seismic movement, the dispensation of under ocean volcanic material, the introduction of hydrothermal chemicals to seawater and even from atmospheric sources. As of yet, the nodules have only been found on the seabed of the abyssal plain, either lying directly on the seafloor sediment or partially or entirely buried.

The polymetallic nodules are, as has been stated before[14], extremely rich in their composition of metallic particles with a wealth of different metals. These compositions include common commercial metals such as; manganese, iron, copper, nickel, cobalt, lead and zinc. In addition to this, there are rarer metals to be found in some deposits in smaller quantities, though nevertheless commercially valuable. These minerals include; molybdenum, lithium, titanium, barium as well as niobium. More common elements such as calcium, sodium, potassium, and of course hydrogen and oxygen are also found.[15]

The exact chemical composition may differ between locations and sights as well as size of the nodule itself and its characteristics. Those nodules of greatest economic significance are those specimens that contain a combination of; manganese (27-30%), nickel (1.25-1.5%), copper (1-1.4 %) and cobalt (0.2-0.25 %). However, commercial interest surrounds other combinations as well, such as iron, silicon and aluminium.[16]

The largest known deposits of these nodules are still in the Clarion Clipperton Zone in the central eastern Pacific, an area of the seabed at depths of between 3500 to 5500 m. A

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[12] "Towards the development of a regulatory framework for polymetallic Nodules exploitation in the Area. Tech Study: No 11", p. 13.
[13] See Chapter 2.1.
[14] Ibid.
[15] "Towards the development of a regulatory framework for polymetallic Nodules exploitation in the Area. Tech Study: No 11", p. 55.
[16] Churchill, R.R., Lowe, A.V.: *The Law of the sea*, p. 223.

recent study published 3 years ago of the Clarion Clipperton Zone estimates that the area has the potential to yield 62 billion tonnes of polymetallic nodules. This would suggest around 17.500 million tonnes of manganese and a further 761 million tonnes of nickel, 669 million tonnes of copper and 134 million tonnes of cobalt.[17] Such potential represents a significant increase of raw materials onto the current markets. Other areas have been identified within the Area of Part XI as possible candidates for containing polymetallic nodules; the main alternative area to the Clarion Clipperton Zone is currently in the basin of the Central Indian Ocean, though further study is required.[18]

To a greater extent most of the existing nodule deposits, both known and unknown, are expected to be of such low-grade composition, or situated in such problematic locations that any actual commercial exploitation may be very unlikely, or that current technology is simply unable to offer viable solutions for mining.[19] Even so, this does not mean that there is not a considerable amount of commercially viable and economically attractive deposits that contain high-grade nodule specimens to sufficiently self-sustain a vast industry of mineral and metallic mining with potentials for considerable payoffs. [20]

2.2.2 Polymetallic sulphides

Also known as Seafloor Massive Sulphides, these deposits are extremely abundant in common metals such copper, iron and zinc. However, unlike the nodules, the sulphides ay also contain high level of precious metals such as silver and gold. This makes the sulphides potentially very valuable, especially in light of current high prices for precious metals.[21] The deposits of sulphides are found in the challenging areas around the tectonic plate ridges, such as mid-ocean ridges, back-arc ridges and volcanically active seabed areas. With the high-rise of ocean ridges the sulphides are found in shallower water or at around 2.000 m depth. The deposits are considerably younger than the nodules, at only a few thousand years. The sulphides mainly originate from hydrothermal vents, commonly referred to as ´black smokers´ due to plumes often associated with such hydrothermal undersea vents. The vents depose water that originates from within the Earth´s internal crusts. Within this discharged water are the metal particles that form the polymetallic sulphides. Since the late 1970s we have known that these vents are central to a vast, diverse and interesting ecosystem. Up to

[17] Morgan, C.A.: "Geologocal Model of Polymetallic Nodule Deposits in the Clarion-Clipperton Zone". International Seabed Authority Briefing Paper 01/12 2012.
[18] "Policy Options Paper No. 5: Strengthening deep deabed mining regulation". Global Ocean Commission.
[19] Churchill, R.R., Lowe, A.V., The Law of the sea, p. 223.
[20] Ibid.
[21] The price of gold when written was $1.177 per ounce.

now, scientists have been able to identify life forms ranging between chemosynthetic bacteria[22] to crustaceans. With more than 500 species identified within these hydrothermal vent ecosystems it is important to note that only around 100 sites have been investigated thoroughly by scientific means. At the same time, the Authority has recorded in its database over 350 sites of hydrothermal vent sites with potential sulphide deposits. Current approximation places one such site, at least, every 100 km along the mid-oceanic ridge, in total 60.000 km in length.[23]

2.2.3 Ferromanganese crusts

On the edges and above seamounts at depths between 400 and 7.000 m, ferromanganese or cobalt crusts are formed. The cobalt is a mineral that forms crusts fixed on the substrate. These crusts are formed via a method of precipitation of minerals from the surrounding water onto the seabed.

The crusts contain high levels of iron, manganese, nickel, cobalt and copper. There may also be trace elements of rarer metals. There are a vast number of known and/or suspected seamounts. Commercially speaking, the seamounts higher than 1.000 m are of greatest interest and 100.000 of those have been documented, though it should be noted that most of them do not carry deposits worth exploiting at an industrial level. The Magellan seamounts of the Pacific Ocean are considered to contain the most prospective cobalt crusts known to date.

Like the hydrothermal vents, seamounts are particularly important elements in the sustained ecosystem that developed around them, mainly due to water currents, often formed around such mounts, which deliver the basic nutrients for the ecosystems food-web. Larger life forms, such as fish, corals, sponges etc., often make their habitats on the seamounts. The effect to the ecosystem of trawling the seabed on the seamounts is known, however there is little experience to the environmental impact of removing the crusts from the substrate.[24]

[22] Bacteria that are able to sustain life under extreme heat and pressure. Chemosynthetic bacteria consume the hydrogen sulphide for energy. Chemosynthetic bacteria form the ecosystems backbone and the basis for the food wed within it.

[23] See: Collins, P.,C.: “A Primer for the Environmental Impact Assessment of Mining the Seafloor Massive Sulphide Deposit”, p. 198, 209.

[24] See: Van Dover: “Environmental Management of Deep Sea Chemosynthetic Ecosystems: Justification of and for a Spatially-based Approach”.

2.3 The origins of commercial exploitation

In 1965, J. L. Mero published his book "The Mineral Resources of the Sea".[25] Even though Mero had been publishing papers on nodule deposits and their commercial potential since the mid-1950s and continued to do so for the next decades; it was his book that is often credited with the beginning of the enthusiasm towards commercially mining the seabed. Mero´s work has been referred to as; "paint[ing] a picture of an essentially limitless resource of more than 1 trillion metric tons of manganese nodules on the Pacific deep-sea floor that were growing at a rate faster than could possibly be exploited, a literally inexhaustible supply of metals such as Mn, Co, Ni, and Cu. This book literally launched a hundred ships (or rather a hundred research cruises)."[26] Mero himself states in his aforementioned book when discussing manganese nodules and crusts that; "[f]rom an economic standpoint, they are the most important sediment on the deep-sea ocean floor."[27] He then goes on to state that; "[f]rom an economic standpoint, because of technical considerations in the mining system, nodules are the most important of the forms of the sea-floor manganese-iron oxides."[28]

This literature sparked the speculative imagination of many business ventures, both by private entities as well as sovereign States. This era of investigation has been dated between 1972 and 1982, an entire decade of energetic and rather exuberant exploration. This seems to have been driven on by the generally accepted view of the time that global mineral deposits, at least at a land based level, were depleting rapidly and that future shortages would plague the economic security of the future.

The reality of this may be glimpsed by the numbers of vessels funded by some of the largest economic powers. Focusing on the Clarion-Clipperton fracture zones, the USA sent between 30 and 40 vessels, Germany sent 26 vessels, and France sent 42 vessels, while the Soviet Union dispatched over 100 vessels worldwide.[29] In 1978 a mining system, designed by a consortium of companies from variety of different countries[30], to mine deep-sea nodules, was successful in mining around 800 metric tons of nodules before being accidently lost over-board while still in its testing-phase.[31]

Between 1976 and 1978 the Lockheed/OMCO cooperative consortium seemed to have designed system for deep sea mining in which a mining system could be placed on the

[25] Mero, J.L.: *The Mineral Resources of the Sea.*
[26] Glasby, G.P.: "Lessons Learned from Deep-Sea Mining", p. 553.
[27] Mero, J.L.: *The Mineral Resources of the Sea*, p. 127.
[28] Mero, J.L.: *The Mineral Resources of the Sea*, p. 129.
[29] Glasby, G.P.: "Lessons Learned from Deep-Sea Mining", p. 553.
[30] Namely; USA, Germany, France and Britain.
[31] Glasby, G.P.: "Lessons Learned from Deep-Sea Mining", p. 552.

seafloor, down to 6000 m, and remotely controlled from a mother-ship. Most of the system was designed to be automated. What the public did not know at the time was that Lockheed/OMCO where working for the U.S. Central Intelligence Agency (CIA) and the function of their system was actually not mining but to act as a recovery system for a Soviet nuclear submarine that had sunk. Nevertheless, the general impression was that such mining operations were viable and profitable.[32] While in actuality fact, the truth was that between the 1972 and 1984 an estimated 650 million US dollars were invested with no actual return.

2.4 UNCLOS development and the common heritage of mankind

Economically valuable natural resources attract great interest and it is the law, or the legal regime, that forms the benchmark from which those resources, especially if outside of national jurisdictions, are distributed and managed.

Around 40 years ago, when the commercial viability of the mineral mining of the deep-sea bed was recognized, as discussed above, the international law that governed the sea and oceanic areas was not as firmly placed as it is today. In fact, it seems that soon after the revived interest in polymetallic nodules it became clear that the legal regime of the time would greatly favour a very small number of already developed States.[33]

The criterion concerning the outer limit of the continental shelf, as presented in the then Art. 1(a) of the Convention on the continental shelf, from 1958, meant that the ´exploitability´ of the continental shelf would favour State jurisdiction and a further push seaward well beyond the 200 m depth limit of Art. 1:

> For the purpose of these articles, the term "continental shelf" is used as referring (a) to the seabed and subsoil of the submarine areas adjacent to the coast but outside the area of the territorial sea, to a depth of 200 metres or, beyond that limit, to where the depth of the superjacent waters admits of the exploitation of the natural resources of the said areas; (b) to the seabed and subsoil of similar submarine areas adjacent to the coasts of islands.[34]

The access of certain developed States to technological development would effectively be such that it became easy to envision that the entirety of the sea-floor would eventually be divided up by those States that possessed the technological ability to exploit the continental shelf of its natural resources beyond the 200 m mark. This potential division meant that it would be the richer and more developed States that would, due to geographical

[32] Glasby, G.P.: "Lessons Learned from Deep-Sea Mining", p. 552.
[33] See: Churchill, R.R., Lowe, A.V.: *The Law of the sea*, p. 224. See also: Zacher, M.W, McConnell, J.G.: "Down to the sea with stakes: the evolving law of the sea and the future of the deep seabed regime", p. 92-93.
[34] Underlining inserted.

location and wealth, divide the ocean floor between them as delimitation would be based on the accepted principle of equidistance.[35]

However, it goes without saying that the continental shelf, as a concept, is limited to the specific geological structure of the shelf itself and to extend its reach beyond those natural borders would be erroneous. This meant that the those areas beyond the continental shelf, given the context of the 1958 Geneva Conventions, was beyond the reach of the legal regime of the time. Nevertheless, the concept of the freedom of the high seas and subjecting the ocean floor to a *res communis concept* seemed valid arguments at the time, provided that no regime was applicable. This would mean free access, but no possession of natural resources beyond national jurisdiction. Manganese nodules would not be subject to jurisdiction, ownership or prerogative entitlement until of course when in the possession of the mining entity or State. Yet, this would not help developing States nor change the fact that developed States would still be favoured under such a regime.[36] The International Law Commission had already noted in 1956 that it had not considered the problem of a legal regime for the exploration and exploitation of the seabed and subsoil of the high seas. In fact, at the time the Commission remarked that it did not see the need for specific regime other than the freedom of the high seas as; "[t]he construction of permanent installations for that purpose in sea areas where the depth exceeds 200 metres is at present impossible, and is likely to remain so for some considerable time."[37]

The *res communis* or high sea freedom concept seems to have been the preferred interpretation amongst the developed States, prior to UNCLOS III. In a known incident in 1974, Deep Sea Ventures Inc.[38], an American exploration and mining company, requested diplomatic protection from the US Department of State. It filed a notice of discovery in an area beyond national jurisdiction in the Clarion fracture zone of the Pacific. The government refused, stating that it would not protect or recognise such exclusive rights beyond it jurisdiction, noting furthermore that pending the outcome of UNCLOS III the site and mining might well fall within the freedom of the high seas in correlation to existing international law.[39] Though this was the general view held by major developed States, that the seabed

[35] Churchill and Lowe point out that the UK, having possessions in the Scottish isles and in the Falklands, would essentially possess most of the seabed in both the North and South Atlantic.
[36] Churchill, R.R., Lowe, A.V.: *The Law of the sea*, p. 225.
[37] *Yearbook of the International Law Commission*, 1956, p. 9.
[38] Previously: Newport News Shippbuilding and Drydock company.
[39] Churchill, R.R., Lowe, A.V.: *The Law of the sea*, p. 226. See also: *Manganese Nodules: Dimensions and Perspectives*, p. 86.

should remain under high seas freedoms or a sense of *res communis*, this was not commonly held among other States.

In a famous speech, delivered by Maltese ambassador and delegate to the United Nations, Dr. Avid Pardo, before the General Assembly on the 1st of November 1967, on the issue of the sea bed, resonated amongst the member States. In his speech, known as the; "(Declaration and Treaty) Examination of the question concerning the reservation exclusively for peaceful purposes of the sea-bed and ocean floor underlying the seas beyond the present limits of national jurisdiction, and the use of their resources in the interest of mankind"[40], Ambassador Pardo changed and effected the way in which the UNCLOS regime developed. He pleaded for regulated peace at sea, preventive measures against pollution and the protection of natural resources. The greatest contribution of his speech was the formative notion that the seabed should be part of the ´common heritage of mankind´, a revolutionary concept at the time that has since had considerable effect on UNCLOS and international law in general. The concept is currently stipulated in Art. 136 of UNCLOS.[41]

The enthusiasm that this speech received within the General Assembly and the subsequent incorporation of the common heritage principle in UNCLOS is evidence of the general desire amongst a majority of the member States to promote demilitarisation and encourage equitable distribution of natural resources as well as the prevention of colonialism below the oceans waves. Only a year after the speech a permanent ´Committee on the Peaceful Uses of the Sea-bed and Ocean Floor beyond the Limits of National Jurisdiction´ was established when the General Assembly adopted resolution 2467 a(XXIII) on the 21st of December 1968.[42] The Committee consisted of 42 member States. The Committee´s function and purpose was to investigate and analyse the legal principles and norms which might assist in the promotion of international co-operation, as well as the betterment of exploration and use of the seabed area. The Committee´s findings were to be presented to the General Assembly.[43]

Only a year later, in 1969, after having received a report from the Committee, the General Assembly adopted Resolution 2574, often referred to as the ´Moratorium Resolution´. The resolution noted that the entities were bound to refrain from all activities of exploitation of the area of the sea-bed and ocean floor, and the subsoil thereof. The

[40] "United Nations, General Assembly 22nd Session Official Records, First Committee 1515th Meeting". URL: http://www.un.org/depts/los/convention_agreements/texts/pardo_ga1967.pdf. Retr. 1 May 2015
[41] Guntrip, E.: "The Common Heritage of Mankind: An Adequate Regime for Managing the Deep Seabed?".
[42] "United Nations Convention on the Law of the Sea", *United Nations Audio-visual Library of International Law*, URL: http://legal.un.org/avl/pdf/ha/uncls/uncls_ph_e.pdf, p. 1. Retr. 1 May 2015.
[43] Ibid.

Resolution went further to proclaim that no claim to any part of that area or its resources should be recognised.[44] This resolution essentially put a ban on all exploitation and/or recognition of rights to any and all natural resources on the sea bed area. Many have seen this as victory by the developing States over the developed States. In the Max Planck Yearbook of United Nations Law from 1999 it is stated that; "[…]the 1969 ´Moratorium´ resolution, developing States went further and claimed that deep seabed mining was unlawful under customary international law and could only take place pursuant to the international regime to be set forth in a future Convention".[45] This struggle between developing and developed states is evident in the fact that the resolution was passed with 62 vote, against 28 votes, with an extra 28 abstaining from the vote, a slim margin.[46] What followed were claims by a number developing States[47] that the resolution was universally binding as customary international law, as noted above, while the developed States denied any such claim.[48]

Regardless, only a year later, in 1970, the General Assembly adopted the "Declaration of Principles Governing the Sea-Bed and the Ocean Floor, and the Subsoil Thereof, beyond the Limits of National Jurisdiction".[49] In its 15 paragraphs ´exploitation´ was effectively declared unlawful. Reasserting the statement made in the ´Moratorium´ resolution the year before. The first 4 paragraphs especially seem to reaffirm the previous resolution:

> 1) The sea-bed and ocean floor, and the subsoil thereof, beyond the limits of national jurisdiction (hereinafter referred to as the area), as well as the resources of the area, are the common heritage of mankind.
> 2) The area shall not be subject to appropriation by any means by States or persons, natural or juridical, and no State shall claim or exercise sovereignty or sovereign rights over any part thereof.
> 3) No State or person, natural or juridical, shall claim, exercise or acquire rights with respect to the area or its resources incompatible with the international regime to be established and the principles of this Declaration.
> 4) All activities regarding the exploration and exploitation of the resources of the area and other related activities shall be governed by the international regime to be established. […][50]

In its text, the declaration refers to the "the international regime to be established"[51] and that it shall govern the activities within the area. This of course was the 1982 UNCLOS, which was ´established´ when it came into force in 1994.

[44] Churchill, R.R., Lowe, A.V.: *The Law of the sea*, p. 227.
[45] Frowein, J.A., Wolfrum, R.: *Max Planck Yearbook of United Nations Law 1999, Vol. 3*, p. 188.
[46] Churchill, R.R., Lowe, A.V.: *The Law of the sea*, p. 227.
[47] The claim was strongly upheld by Islamic States.
[48] Churchill, R.R., Lowe, A.V.: *The Law of the sea*, p. 227.
[49] UN Doc. A/RES/25/2749.
[50] UN Doc. A/RES/25/2749.

Churchill and Lowe note that "[t]hroughout the proceedings of the Sea Bed Committee and, from 1973 onwards, of Committee I of UNCLOS III, to which the sea-bed question was allocated, the divergence between the views of developed and developing States was evident."[52] In fact, the faction of developing States that had supported the adoption of two previous resolutions in 1968 and 1969, followed by the Declaration of Principles in 1970, was referred to as ´Group of 77´[53], a clique of developing States within the United Nations; they regarded the resolutions and declaration as binding international law.

Prior to the sea-bed question being allocated to Committee I of UNCLOS III, as stated above, ´Group of 77´ had attempted to create a seabed authority with vast powers and mining capabilities of its own, an international consortium of sort for the benefit of mankind.[54] Differing from ´Group 77´, developed States desired nothing more than a registration board/authority for national claims. Other States, especially landlocked and disadvantaged States, due to geographical location, required insurances that the distribution would be equitable and that any share of profits should be equally distributed.[55] Committee I of UNCLOS III was therefore tasked with the difficult job of attempting to consolidate as much of the political and legal issues States had concerning a completely speculative enterprise, a vision for a future not yet realised.

The provision in Part XI of UNCLOS as well as those in Annex III, show just how complex the legal regime had to be in order to pass the scrutiny of member States. The very functioning of the Authority in this part of UNCLOS with management powers concerning both access and recovery of resources is reminiscent of the ´Group 77´concept. However, the Committee has clearly looked to satisfy the interests of the developed States, by making the world demand of nickel as the standard benchmark for the amount of metals allowed for recovery. This limitation may have been made in order to safeguard land-based productions, yet nickel was mainly produced by developed States.[56] Contractors where to be taxed, in accordance with the concept of the ´common heritage of mankind´, and the Authority itself was to take part in exploitation via a mechanism and operations base, the Enterprise. Each contractor would propose two sites, the Authority would award the contractor one of the sites

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[51] See para. 3, 4, 5, 9 and 11.
[52] Churchill, R.R., Lowe, A.V.: *The Law of the sea*, p. 228.
[53] See: The homepage of Group77. URL: http://www.g77.org/, Retr. 1 May 2015.
[54] Churchill, R.R., Lowe, A.V.: *The Law of the sea*, p. 228
[55] Vasciannie, S.C.: *Land-Locked and Geographically Disadvantaged States in the International Law of the Sea*, ch. 5-6.
[56] See UNCLOS Art. 151(4).

while reserving the second for itself, rather suggestive of the ´Group 77´ radical ideas of a consortium based worldwide mining enterprise.[57]

Churchill and Lowe note that; "[t]he Convention thus envisaged a ´parallel system´, in which both the Enterprise and individual States and mining ventures would have exploited the sea bed side-by-side. The Authority would have had the power to compel the transfer to it on fair commercial terms (set, if necessary, by commercial arbitration) of mining technology that it could not obtain on the open market, in order to engage in sea-bed mining."[58]

3 Preparatory investment protection and pioneer investors

3.1 In general

Prior to the presentation of the final text of UNCLOS III, there was concern among some member States about the seeming absence of any legal protection for preparatory investment in the field of deep seabed mining; such investments had been considerable and nearly entirely banked by developed States, since the late 1960s. The acceptance of the Convention was therefore problematic on behalf of the developed States. Especially in light of the fact that; if accepted the Convention alone would not guarantee any specific or exclusive rights to mining operations or remunerate any investment output, on which the entire venture of deep seabed mining had been developed and at the time was based on.[59] The concept proposed and later accepted was that of ´pioneer investors´. By 1982 these ´pioneer investors´ had invested so much that they were recognised specially. Originating from developed States, they comprised of the following ventures:[60]

France - Association Française pour l´étude et la recherche des nodules (AFERNOD)
Japan – Deep Ocean Resources Development Company (DORD)
United States, United Kingdom, Canada, Japan – Kennecott Consortium
United States, Belgium, Italy - Ocean Mining Associates (OMA)
United States, Canada, Federal Rep. of Germany, Japan – Ocean Management Inc. (OMI)
United States, Netherlands - Ocean Minerals Company

[57] See below, p. 47-48.
[58] Churchill, R.R., Lowe, A.V.: *The Law of the sea*, p. 229.
[59] Churchill, R.R., Lowe, A.V.: *The Law of the sea*, p. 230.
[60] Treves, T.: "Deep Sea-Bed Mining: The Practice of the Pioneer Investors", p. 331.

In what can best be described as a grand effort, a final compromised was reached in the UNCLOS III spring session of 1982. The compromise was made in order to safeguard and secure the acceptance of UNCLOS III among the developed States as a whole, but mainly the members of the ´pioneer investors´.

The compromise meant that when the Final Act of UNCLOS III was presented, two Resolutions, I and II, on preparatory investment protection[61] accompanied the final version.[62] These resolutions respectively established two major components. Firstly, Resolution I established the Preparatory Commission (also known as; PrepCom) that comprised of delegates from every State that signed the Convention. Resolution I also instructed the newly established PrepCom to work towards establishing the International Sea Bed Authority as well as preparation work for its functioning, analysing economic issues and creating procedural rules for its governance. It was however Resolution II that most favoured the ´pioneer investors´. Resolution set out to provide for the interests of the 'pioneer investors" and protect the investments already made by those States. Interestingly enough, the concept of ´pioneer investor´ was also safeguarded and defined in para 1(a) of Resolution II.[63]

In explaining and justifying the preparatory investment protection arrangement the formal initiators described just as important, due to the fact that:

> [i]t is a demonstrable reality that six consortia and one State have been investing funds in the development of sea-bed mining technology, equipment and expertise. The programme of their research and development has arrived at a point when they must invest substantial amounts of fund in site-specific activities. The industrialized countries representing these consortia having been demanding that the Conference and the Convention of the Law of the Sea should recognize these preparatory investments. We feel that this is a legitimate request provide that the preparatory investments of these pioneers will be brought within the framework of the Convention and provide that the interim arrangement is transitory in character.[64]

3.2 The pioneers and Resolution II

Oddly, but perhaps in the nature of pioneer investors, the very nature of Resolution II allowed for the first stages of seabed operations to be carried out by members of the pioneer investors under the Conventions regime , regardless of the fact that that same regime was not in effect until the actual entry into force of the Convention. It also allowed those that had pioneer investor status to register and hence secure recognition at an international level of mining

[61] Also known as; ´Pioneer Investment Scheme´.
[62] Churchill, R.R., Lowe, A.V.: *The Law of the sea*, p. 230.
[63] Treves, T.: "Deep Sea-Bed Mining: The Practice of the Pioneer Investors", p. 331.
[64] Words given by Mr. Koh and Mr. Engo, who made the original draft version in 1982. See: Brown, E.D.: *Sea-bed Energy and Minerals: Sea-bed Mining,* p. 189.

sites. Such recognition allowed for actual as well as quasi exclusive rights to the registered mining sites. This, regardless of whether or not the Convention entered into force, would always have been beneficial for the pioneer investor.[65] The protection provided by Resolution II was later extended to other beneficiaries that were not formal original ´pioneer investors´, as both India and USSR formally joined the group *ex post facto*, represented respectively by the Indian venture of the Department of Ocean Development and the Soviet operated Yuzhmorgeologiya.[66]

Churchill and Lowe seem harshly critical of both Resolution I and II, but especially Resolution II, stating; that the resolutions amounted to; "…an almost complete rewriting of the Convention's rules on sea-bed mining in their favour."[67] The scholars later note in a footnote that; "[t]he full complexity of the system can only be fully appreciated by reading through the provisions of Part XI, Annexes III and IV, and the Resolutions. No sketch can do its baroque architecture justice".[68] Nevertheless, others are not so absolute in their judgment. Brown, for example, seems to be more careful in crediting the resolutions with such a dreary verdict, stating instead; "[o]n the other hand, one must beware of giving the impression that the Convention regime was practically superseded by the PIP scheme. […], enterprises operating under the integrated Convention-PIP regime were in fact bound by the essential features of Part XI of the Convention."[69]

However, the history of Resolution II shows that this idea of favouritism within the resolution is questionable. Yes, the text was very complex, but not always to the benefit of the pioneer. It is true that preferential treatment was provided in the resolution, but at considerable costs. There was an initial fee of $250.000, followed by annual fee of $1.000.000 and then add on the levy post production. Furthermore the pioneer was to maintain any on-site invest and was obliged to partake in the transfer of new technology it had developed. In fact the UK and USA were so unhappy with the final text of the Resolutions and the Part XI provisions, mainly due to the transfer of technology obligation that they rejected it, though many other developed States accepted.[70]

[65] Brown, E.D.: *Sea-bed Energy and Minerals: Sea-bed Mining*, p. 189-190.
[66] Brown, E.D.: *Sea-bed Energy and Minerals: Sea-bed Mining*, p. 189.
[67] Churchill, R.R., Lowe, A.V.: *The Law of the sea*, p. 230.
[68] Churchill, R.R., Lowe, A.V.: *The Law of the sea*, p. 231, footnote 25.
[69] Brown, E.D.: *Sea-bed Energy and Minerals: Sea-bed Mining*, p. 190.
[70] Churchill, R.R., Lowe, A.V.: *The Law of the sea*, p. 233.

3.3 The Reciprocating State Regime

3.3.1 In general

In the interval from creation until the Convention was able to attract enough interested States to ratify it and hence force its entry into force, there existed a rather vast and economically uncomfortable legal vacuum for those that had invested large sums in the industries surrounding deep seabed mining.

Faced with waiting for the Convention to enter into force and in need to act with legal impunity a number of developed States acted to create a provisional legal regime that might function until such a date when mining operation might be able to fall under the Convention.

Of course, there were also political reasons behind some of the parties interested in a provisional regime – especially amongst those that had been less than impressed with the context of the Part XI (hence unlikely to ratify the Convention anyways), yet needed a procedural system for mining operations to take place in what was unmistakably outside of national jurisdiction. [71]

3.3.2 The Regime

To call the regime in its heyday ´reciprocating´ may seem a bit excessive, especially when one considers the fact that for the most parts it would seem that the United States took the initiative and other participating developed States followed suit. In 1980 the USA passed its ´Deep Sea Minerals Resource Act´.[72] In the ´Congressional Findings and the Declaration of Purpose´ that accompanied the act it is stated that:

> it is the legal opinion of the United States that exploration for and commercial recovery of hard mineral resources of the deep seabed are freedoms of the high seas subject to a duty of reasonable regard to the interests of other states in their exercise of those and other freedoms recognized by general principles of international law;
> pending a Law of the Sea Treaty, and in the absence of agreement among states on applicable principles of international law, the uncertainty among potential investors as to the future legal regime is likely to discourage or prevent the investments necessary to develop deep seabed mining technology
> […]
> legislation is required to establish an interim legal regime under which technology can be developed and the exploration and recovery of the hard mineral resources of the deep seabed can take place until such time as a Law of the Sea Treaty enters into force with respect to the United States.[73]

[71] Churchill, R.R., Lowe, A.V.: *The Law of the sea*, p. 232.
[72] "Congressional Findings and the Declaration of Purpose´ 30 U.S. Code § 1401". URL: https://www.law.cornell.edu/uscode/text/30/chapter-26. Retr. 1 May 2015.
[73] Ibid.

Other developed States, namely France, United Kingdom, Federal Rep. of Germany Japan and even the USSR all adopted national legislation equivalent to the ´Deep Sea Minerals Resource Act´. [74]

There was no treaty or convention to speak of originally. Yet, on the 2nd of September 1982 the United States, United Kingdom, France and the Federal Rep. of Germany signed the ´Agreement Concerning Interim Arrangements Relating to Polymetallic Nodules of the Deep Sea Bed´ in Washington DC.[75] This agreement did not deal with the actual legal procedures of mining nor did it enforce any measures on its member accept that they should consult each other[76] in order to avoid conflict concerning application registration of sites for mining licences:

> The object of the present Agreement is to facilitate the identification and resolution of conflicts which may arise from the filing and processing of applications for authorizations made by Pre-Enactment Explorers (PEEs) on or before March 12, 1982 under legislation in respect of deep sea bed operations enacted by any of the Parties.[77]

All actual matters of procedure and substantive legal matters were entirely within the scope of national legislation. There were of course basic similarities between these national laws that theoretically made the ´regime´ work. An operation license from a sponsoring State, to which the mining entity might belong, or another ´reciprocating´ State, was a general requirement. It followed that such licenced entities were prohibited from interfering or over-lapping with other licence-holders. Behaviour and conduct were generally not centrally regulated and subject only to national legislation.[78]

There were major differences were between the Reciprocating State Regime and the regime envisioned by the Convention and Part XI. Firstly, there was no site-banking, in which the licensee would need to provide a second site to be kept for developing States or the Enterprise of the International Sea Bed Authority. Secondly, the levy the licensee was due to pay was often much lower than the Convention and Part XI intended it to be, general only half. Thirdly, and perhaps most importantly for many of the developed States like the United States, the regime did not request that States shared new technology. There were also other variations, for example; the regime did not consider any dispute settlement procedure, other

[74] See: Collins, H.M.: “Deep Seabed Hard Mineral Resources Act—Matrix for United States Deep Seabed Mining”, p. 571-580.
[75] “Environmental Treaties and Resource Indicators (ENTRI)”. URL: http://sedac.ciesin.org/entri/texts/acrc/PolyNod.txt.html. Retr. 5 may 2015.
[76] Para 4.
[77] Para 1.
[78] Nevertheless, customary international law would have played a role as well.

than conflict resolution by voluntary procedures[79] and there were likewise no production controls or anti-monopoly provisions. [80]

3.4 Overlapping, provisional understanding and the Midnight Agreement

As the regime did not possess a centralised body or treaty disputes arose concerning overlapping claims to sites in areas of heightened interest. The system of conflict resolution in Part II of the Agreement, as stated before, meant that licensees had to rely on voluntary procedures which meant heightened disputes between parties to a conflict. All the States that fell under the pioneer investor status, except for the Soviet Union, attempted to reconcile their differences in regard to dispute settlements over site claims with a memorandum of understanding (full name; The Draft Memorandum of Understanding on the Settlement of Conflicting Claims with Respect to Seabed Areas),[81] the memorandum aimed at creating general procedural provisions that might aid in the dispute settlements, while still adhering to State prerogative and voluntary procedures. However:

> Efforts to adopt the [memorandum of understanding] evaporated in 1983 due to disagreements and nonparticipation by several key States. The Soviet Union, for example, after early involvement in the [memorandum of understanding] process, declined to participate further.[82]

Only a year later, on the 3rd of August 1984, the same members signed the Provisional Understanding Regarding Deep Seabed Matters. It further emphasised the importance of non-conflict over site claims, by presenting provisions aimed at excluding the possibility of conflicting site claims as well stipulating a framework aimed at harmonisation of national legislation in the matter of deep seabed mining.[83] However, this ´understanding´ seems to have had political motivations, especially in the United States with respect to ideologies concerning international law. Not everyone considered the Provisional Understanding to have been a success:[84]

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[79] Para 9.
[80] Brown, E.D.: *Sea-bed Energy and Minerals: Sea-bed Mining*, p. 276
[81] "The Draft Memorandum of Understanding on the Settlement of Conflicting Claims with Respect to Seabed Areas, 31st of March 1983". URL: http://iea.uoregon.edu/pages/MarineMammals/engine/research/0-2626-2633htm_1.htm. Retr. 1 May 2015.
[82] Broadus, J.M., Hoagaland, P.; "Conflict Resolution in the Assignment of Area Entitlements for Seabed Mining", p. ,547.
[83] Churchill, R.R., Lowe, A.V.: *The Law of the sea*, p. 233
[84] See: Brown, E.D.: "Neither necessary nor prudent": the regime of seabed mining and its impact on the universality of the UN Convention on the Law of the Sea", p. 81-107.

> By signing the Provisional Understanding, the United States sacrificed the advantageous mining opportunities and global stability offered by the Convention in exchange for the Provisional Understanding´s ideological purity. Notwithstanding its ostensive compatibility with the free market ideals, the Provisional Understanding is a far less favourable to long term U.S. interests in deep seabed mining than a universally recognized regime such as that established by the Convention.[85]

An agreement between the Soviet Union and the rest of the reciprocating States was signed three years late on the 14th of August 1987. The agreement was named the 'Midnight Agreement´ and was intended to remove any overlapping claims between the Soviet Union and other reciprocating States.

3.5 Prohibited unilateral mining

Regardless of the Provisional Understanding, which stated that the agreement was without prejudice to, or intended to affect, the positions and/or obligations of reciprocating States in respect of the Convention,[86] it is clear that the parties to the agreement considered their regime to be an expression of sovereign State rights and as such legitimate under the principle of high seas freedoms. Within this system the award and recognition of site claims and subsequent exploitation and protection of exclusive rights was insured. But outside of this small band of reciprocating States the truth was entirely different. They could not, for example, claim any legal protection or create exclusive mining rights.[87] Even claims of ´reasonable regard´, under customary international law, were hard to uphold towards States not party to the reciprocating States regime, as long as action were not entirely ´unreasonable´. Particularly, with the onset of Authority, third party States had as good of a right as any of the Reciprocating States to any and all possible sites, very much in line with the principles of unregulated high seas fishing.[88]

On the other hand, this was not in line with the general understanding of those member States of the United Nations that formed the Group 77, that had previously compelled the Declaration of Principles Governing the Sea-Bed (Res. 2749 (XXV)) and other resolutions through the General Assembly. The principles and provisions of these resolutions were to be considered as customary international law, as such the deep seabed was not be

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[85] Molitor, S.J.: "The Provisional Understanding Regarding Deep Seabed Matters: An Ill-Conceived Regime for U.S. Deep Seabed Mining,", p. 224-225.
[86] Para 15.
[87] Churchill, R.R., Lowe, A.V.: *The Law of the sea*, p. 234.
[88] Churchill, R.R., Lowe, A.V.: *The Law of the sea*, p. 234. See also: Burke, W.T.: "Unregulated High Seas Fishing and Ocean Governance", p. 235-271. See also generally: Stokke, O.S.: *Governing High Seas Fisheries: The Interplay of Global and Regional Regimes.*

considered to fall within the spectrum of the high seas regime[89] and it followed that under the provisions of the Declaration of Principles the exploitation and/or creation of exclusive rights to either mine sites or actual product was to be prohibited.[90] Furthermore, as the high seas regime did not govern the seabed area, the principle of high seas freedom could not apply, expressly as the principle of the common heritage of mankind was to govern the sea-bed and ocean floor, and the subsoil thereof, beyond the limits of national jurisdiction, according to the Declaration of Principles.[91] Irrespectively of the quasi-legal effect of General Assembly resolutions, whether customary or otherwise, the PrepCom[92] generally agreed with Group 77 concerning the legitimacy of Reciprocating States Regime.[93] In its assessment of the Reciprocating States Regime the PrepCom seems to condemn its very nature, stating that non-Convetion based licenses went entirely against Art. 137 of the Convention. [94] This criticism of the Reciprocating States Regime went to the very nature of the intended universal nature of the Convention. A resolution from the PrepCom on the 30th of August 1985 declared that:

> a) the only regime for the exploration and exploitation of the Area and its resources is that established by the United Nations Convention on the Law of the Sea and related resolutions adopted by the Third United Nations Conference on the Law of the Sea
> b) Any claim, agreement or action regarding the Area and its resources undertaken outside of the Preparatory Commission which is incompatible with the United Nations Convention on the Law of the Sea and its related resolution s hall not be recognised.[95]

As stated before the Reciprocating States had fervently objected. Unable to conceive that international law, as it stood without an enforced Convention, could outlaw unilateral deep seabed mining, the Reciprocating States viewed such a proclamation as contradicting what they considered basic high seas freedoms. They could therefore not be legally bound by such prohibitions.[96] The counter argument presented by Group 77 was that this was *jus cogen*. The universality of the law was such, according to Group 77, that individual or even groups of States were unable to decline to adhere to the law and opt out.[97] This did not end

[89] The 1958 Convention on the High Seas and customary international law.
[90] See para 2 to 4 of the Declaration of Principles.
[91] See para 1 of the Declaration of Principles.
[92] See Dupuy, R.J., Vignes, D.: *A handbook on the new law of the sea 1*, p. 673.
[93] Churchill, R.R., Lowe, A.V.: *The Law of the sea*, p. 234.
[94] Churchill, R.R., Lowe, A.V.: *The Law of the sea*, p. 234.
[95] *NILOS International Organizations and the Law of the Sea: Documentary Yearbook. Vol. 1,* p. 462.
[96] Churchill, R.R., Lowe, A.V.: *The Law of the sea*, p. 235.
[97] Churchill, R.R., Lowe, A.V.: *The Law of the sea*, p. 235.

the argument and Group 77 went as far as suggesting referring he matter to the International Court of Justice. Alas, the matter of unilateral mining was never referred to the Court:

> The outcome of such a reference would have been unpredictable, and much would have depended upon the exact questions posed. Asked if the unilateral legislation was consistent with the various declarations on the deep sea bed, the Court would probably have had to say, no. But asked if those declarations bound, in law, the reciprocating States not to enact and operate such legislation the Court would probably have again to have said, no.[98]

3.6 PrepCom and the 1994 Implementation Agreement

3.6.1 In general

With the aforementioned disputes in full swing the PrepCom began to initiate its implementation of the LOSC regime on deep seabed mining in March of 1983. The Convention had been adopted a year earlier in 1982 and now the PrepCom, along with a large assembly of developing States, made great efforts in convincing the Reciprocating States of the importance and worth of a universal convention within the framework of the PrepCom.[99]

The theme of universality and the universal nature of the Convention seemed paramount in the first years of the PrepCom work. The PrepCom tried to show its dedication to universality in various ways in an attempt to entice the Reciprocating States. A wide consensus technique was adopted in the decision making process of the PrepCom. This meant that participant rights were given in full to those who only had observer status, in spite of the fact that observers were not entitled to such rights according to Resolution I.[100] The PrepCom went exceptionally far in their accommodating manner towards the developed States and "demonstrated its abiding commitment to universality" when it devised a complex system through which it registered pioneer investors in accordance with Resolution II:

> By accommodating the interests of all potential pioneer investor, including the multinational consortia of the industrialized countries licenced under the reciprocating State regime, the PrepCom proved that the task of the registration could be responsibly carried out and fulfilled to the satisfaction of all parties concerned, including the non-signatory States to the Convention.[101]

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[98] Churchill, R.R., Lowe, A.V.: *The Law of the sea*, p. 235.
[99] Payoyo, P.B.: *Cries of the Sea: World Inequality, Sustainable Development and the Common Heritage of Humanity*, p. 426.
[100] Ibid.
[101] Payoyo, P.B.: *Cries of the Sea: World Inequality, Sustainable Development and the Common Heritage of Humanity*, p. 426-427. See also: Nandan, S., "The United Nations Convention on the Law of the Sea: Resolving the Problem of Part XI".

3.6.2 Arusha Understanding

This effort towards accepting registrations from Reciprocating States was not entirely without a struggle. When France, Japan and the Soviet Union, all ´pioneer investors´, applied to register mining sites in the Pacific, four large consortiums representing Belgium, Canada, Federal Rep. of Germany, Italy, Japan, United Kingdom and United States, all ´pioneer investors as well, applied for registration of same site. The PrepCom chairman at the time[102] invited the parties to a meeting in Arusha, Tanzania. The meeting was held in February 1986 and intended to reach an agreement concerning overlapping sites in the Clarion-Clipperton Zone of the Pacific[103]. The meeting concluded with a number of understandings on procedural matters concerning the Clarion-Clipperton Zone. Named the Arusha Understanding, it equally distributed and divided the sites between France, Japan, Soviet Union and the Enterprise.[104]

Problems arose later as the applicants were unable to indicate a second site for the Authority´s site-banking mechanism, an obligation all applicants faced, as the second site had to be of equal commercial value and the distribution of sites between the France, Japan, Soviet Union and the Enterprise were closely knit.[105] Naturally, the applicants sought compromises from the PrepCom, due to the aforementioned situation. This lead to the adoption of a second understanding, finalized at the summer session of the PreCom in New York between the 11th of August and the 5th of September of 1986, called the ´Understanding on New Procedures and Mechanism´, also known as the New York Understanding.[106]

3.6.3 New York Understanding.

The New York Understanding was a “more developed ´package of understanding´ built upon the Arusha Understanding”.[107] The New York Understanding made considerable adjustments and amendments to the then existing seabed mining regime.[108]

The prerequisite of an investment worth $30 million was necessary to be considered a ´pioneer investor´. The consortium had been given a deadline until the 1st of January 1983 to prove such an investment and the developing countries likewise had been given a deadline

[102] Mr. Joseph Warioba.
[103] Wang, J.C.F: *Handbook on Ocean Politics & Law*, p. 210
[104] Wang, J.C.F: *Handbook on Ocean Politics & Law*, p. 210
[105] Churchill, R.R., Lowe, A.V.: *The Law of the sea*, p. 236.
[106] Wang, J.C.F: *Handbook on Ocean Politics & Law*, p. 210
[107] Brown, E.D.: *Sea-bed Energy and Minerals: Sea-bed Mining*, p. 221.
[108] Tronchetti, F.: *The Exploitation of Natural Resources of the Moon and Other Celestial Bodies: A Proposal for a Legal Regime*, p. 112. See also: Churchill, R.R., Lowe, A.V.: *The Law of the sea*, p. 236.

until the 1st of January 1985 to make an equivalent investment. The New York Understanding extended the deadline for the developing States until the entry into force of the Convention,[109] a significant benefit.

The problem concerning the nomination of two mining sites, one intended for site-banking, the other for the applicant, were changed and modified to better suit the interests of the pioneer investors. The pioneer investors were allowed to "specify a part of the sea bed ´that shall form part of the total area to be allocated to it´"[110] On one hand, France and the Soviet Union, and on the other hand Japan and the Soviet Union agreed to share overlapping sites in the Clarion-Clipperton Zone of the Pacific, resolving their overlapping problems, as well as promising early relinquishments of prescribed areas.[111] By accepting the early relinquishments of areas the PrepCom was departing from Resolution II, para 3, as applicant would no longer be able to comply with para 3, that stated that "each application shall cover a total area…sufficiently large and sufficiently estimated commercial value to allow two mining operations", allowing the PrepCom to decide which part was to be allocated to the site-banking system of the Authority for the use of the Enterprise and/or developing States:[112]

> The Understanding provided a way round this problem by permitting the applicant State to voluntarily relinquish portions of the application area simultaneously with their registration as pioneer investors[113]

This was in turn a departure from para 1(e) of Resolution II, that saw the relinquishing of half the applicants area over eight years.[114]

The authors of the New York Understanding were aware of their departure from the norm and in what seems like an apology for inconsistency towards the Convention itself and Resolution II, they state in the Understanding that:

> a) the procedures and mechanisms outlined in the Understanding had been devised to overcome practical difficulties in the implementation of Resolution II and to facilitate the registration of the first group of applicants as soon as possible; and

[109] Churchill, R.R., Lowe, A.V.: *The Law of the sea*, p. 236.
[110] Tronchetti, F.: *The Exploitation of Natural Resources of the Moon and Other Celestial Bodies: A Proposal for a Legal Regime*, p. 112. See also: Churchill, R.R., Lowe, A.V.: *The Law of the sea*, p. 236.
[111] Para 13(1) and (2) and 9 of the New Your Understanding. See: Brown, E.D.: *Sea-bed Energy and Minerals: Sea-bed Mining*, p. 221.
[112] Brown, E.D.: *Sea-bed Energy and Minerals: Sea-bed Mining*, p. 221.
[113] New Your Understanding para 9 and 19(d). See: Brown, E.D.: *Sea-bed Energy and Minerals: Sea-bed Mining*, p. 221.
[114] Para 1(e) of Resolution II.

b)´These procedures and mechanisms shall not be construed as setting a precedent for the implementation of the regime for seabed mining under the Convention, nor do they purport to alter or amend the regime in any way…[115]

3.7 Expectations and implementation

The accommodation, special treatment and obliging of the Reciprocating States and commercial interest in general had raised hopes and expectations that the pioneer investors, especially the Federal Rep. of Germany, United Kingdom and United States, would be more inclined to accede and accept the Convention and therefore universal agreement on seabed mining, but alas, all for nought.

As luck would have it, a sharp decline in the value on world metal markets in the 1980s averted what might have been a confrontational face-to-face struggle between the LOSC regime and the Reciprocal States Regime, had deep seabed mining gone ahead. This meant that any such mining operations quickly became commercially unappealing. This, coupled with the sudden decline of Communist governments in Eastern Europe and subsequent failure of socialistic economic theory, gave heighten credence to free-market approached within deep seabed mining.[116] In fact, 1989 was an exceptionally important year concerning the seabed discussions. In that same year the United States and the Soviet Union declared the Cold-War to be over and marked change was felt in discussions at an international level between developed and developing States. At the 7th session of PrepCom in 1989, the spokesperson for the Group77 gave a speech in the group invited renewed dialogue in a tone not before heard:[117]

> Any delegation, or group of delegations, be they currently involved in the work of PrepCom or not, whether signatories or non-signatories to [the LOSC], are welcome to open dialogue with [Group77] … without any preconditions, other than … a positive approach to serious and meaningful talks.[118]

This was not the same confrontational tone previously heard from the Group77. In fact the Zambian delegate on behalf of Group77 went further, declaring the Group77 "was always willing to co-operate with all interest groups to negotiate what turned out to be a compromise document – the Convention." However, this willingness had "for some unexplained reasons…not been fully appreciated". Furthermore, on the subject of the

[115] New Your Understanding para 16 and 18.
[116] Churchill, R.R., Lowe, A.V.: *The Law of the sea*, p. 237.
[117] Ranganathan, S.: *Strategically Created Treaty Conflicts and the Politics of International Law*, p. 188-189.
[118] Statement by Zambia on behalf of the Group77 (1st of September 1989) 15 Law of the Sea Bulletin, May 1990. P. 54-57.

Authority, it was declared that Group77 had never wanted a "large bureaucratic organization…Nothing could be further from the truth".[119] This statement was enthusiastically received by other States as well as by those having been part of Reciprocating States.[120]

This new tone of co-operation and removal of political barriers between economic powers seems to have lifted a veil. By then States that had not been able to accept Part XI were willing, even enthusiastic, about accepting its provisions as well as the rest of the 1982 Convention. With raised hopes for a universal regime for the oceans[121] and the number of ratifications of the Convention on the rise, some started to worry about the cost of running and operating a large international institution, like the Authority and its Enterprise, when the Convention would finally enter into force. The larger economies, United States, United Kingdom and Germany had yet to ratify the Convention and the poorer States would by all likelihood have a hard time financing the Authority by themselves. By 1990, under the control of the UN Secretary General[122], an informal negation began on the matter of implementation.[123]

Three years later, in August of 1993, a draft called the ´Boat Paper´ was being widely circulated amongst groups representing both developing and developed States. This draft, or consultation paper, formed the backbone and structure of the debate between States. [124] The Secretary General, reported that the negations resulted in:

> a draft "Agreement relating to the Implementation of Part XI of the United Nations Convention on the Law of the Sea of 10 December 1982; and
> a draft resolution by which the UN General Assembly would adopt the Agreement and urge states to adhere to it and the Convention[125]

On the 28th of July 1994 the Agreement Relating to the Implementation of Part XI of the United Nations Convention on the Law of the Sea of 10 December 1982, was adopted.

[119] Statement by Zambia on behalf of the Group77 (1st of September 1989) 15 Law of the Sea Bulletin, May 1990, p. 55.
[120] Ranganathan, S.: *Strategically Created Treaty Conflicts and the Politics of International Law*, p. 189. See also: 15 Law of the Sea Bulletin, May 1990. P. 58-62.
[121] Churchill, R.R., Lowe, A.V.: *The Law of the sea*, p. 237.
[122] Mr. Javier Pérez de Cuéllar.
[123] Churchill, R.R., Lowe, A.V.: *The Law of the sea*, p. 237.
[124] *"Agreement relating to the implementation of Part XI of the United Nations Convention on the Law of the Sea of 10 December 1982 Overview, 21 July 2010" URL: http://www.un.org/depts/los/convention_agreements/convention_overview_part_xi.htm*, Retr. 1 May 2015.
[125] See: Oxman, B.H.: "Law of the Sea Forum: The 1994 Agreement on Implementation of the Seabed Provisions of the Convention on the Law of the Sea", p. 687-696 See also: UN Doc. A/48/950 (1994).

The Implementation Agreement received a strong vote with 121 votes against none and 7 absenting.[126]

The Agreement consists of 10 articles concerning procedural aspects. Most importantly, concerning the function of the Agreement was Art. 2, that states that both the Agreement as well as Part XI shall be interpreted and applied as a single instrument. In spite of this, when and if inconsistencies or conflicts arise between the either documents, it is the Agreement and its provisions that are to prevail over Part XI. In the Agreement´s annex matters that were considered difficult or notably problematic in the consultation phase are listed and dealt with. These problematic areas are for example questions concerning the cost of operations and how that expenditure is to be divided between Member States as well as managerial and institutional arrangements, such as in which way decision are to be made and carried out by the Authority.[127]

The main aim of the Agreement was to respond to two major concerns. Firstly, it aimed at satisfying the complaints and opposition many developed States had towards Part XI. Secondly, its aim was to arrange for the immediate and quick integration of those States that would enter into the Agreement with their ratification of the Convention.[128] One of the main methods used in achieving these goals was to introduce an evolutionary approach to the implementation of Part XI.[129] It also introduced a cost effective principle, whereby in order to minimize costs, all bodies to be established under the Convention and the Agreement are to be cost-effective. This principle also applies to procedural matters, such as the frequency, duration and scheduling of meetings.[130]

The very nature and structure of the Agreement and its aims represent "a very imaginative solution to a difficult problem, which demonstrates the flexibility of international law at its best."[131]

[126] Colombia, Nicaragua, Panama, Peru, the Russian Federation. Thailand and Venezuela abstained.

[127] [127] *"Agreement relating to the implementation of Part XI of the United Nations Convention on the Law of the Sea of 10 December 1982 Overview, 21 July 2010" URL: http://www.un.org/depts/los/convention_agreements/convention_overview_part_xi.htm*, Retr. 1 May 2015.

[128] Churchill, R.R., Lowe, A.V.: *The Law of the sea*, p. 238.

[129] Annex, Section 1, para 3: The arrangement the functioning of the bodies within of the new Authority are based on an "evolutionary approach".

[130] Annex, Section 1, para 2.

[131] Churchill, R.R., Lowe, A.V.: *The Law of the sea*, p. 238.

4 UNCLOS and deep seabed mining

4.1 In general

The United Nations Convention on the Law of the Sea (UNCLOS or LOSC) entered into force on the 16th of November 1994. This was a year after the prerequisite of a 60 State ratification had been achieved.[132] The Convention itself had been concluded twelve years earlier, in 1982. It had replaced four previous treatises from 1958 on various subjects on the Law of the Sea.[133] Today, in 2015, a 166 countries and the European Union are members to the Convention, making it without a doubt the preeminent treaty on the Law of the Sea.[134]

4.2 The Area in general

As the preeminent treaty the Part XI of UNCLOS regulates and governs all activities in the Area. This includes exploration and exploitation. [135] The Area is defined in Art. 1 of UNCLOS as meaning; the “sea-bed and ocean floor and subsoil thereof, beyond the limits of national jurisdiction”.[136]

The Area is believed to cover around 60% of the entire sea bed.[137] The Area together with its resources as defined in Art. 133 are to be considered as comprising of the common heritage of mankind.[138] The abovementioned resources are intended to be interpreted as meaning “all solid, liquid or gaseous mineral resources *in situ* in the Area at or beneath the seabed, including polymetallic nodules”[139], and when these resources are retrieved from the Area they are referred to as "minerals"[140]. Some scholar state that this is equates to all other resources, namely living natural resources and non-mineral natural resources, being subject to the principles of the high seas freedom.[141]

By constituting the common heritage of mankind, the exploration and exploitation by unilateral action, whether by a State or private entity, of the Area, as defined, and its resources, as defined, is prohibited. Such actions can only be conducted with legality under

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132 Guyana was the last nation to ratify the Convention prior to it entering into force.
133 Namely; the Convention on the Territorial Sea and Contiguous Zone, entry into force: 10 September 1964. The Convention on the Continental Shelf, entry into force: 10 June 1964. The Convention on the High Seas, entry into force: 30 September 1962 and the Convention on Fishing and Conservation of Living Resources of the High Seas, entry into force: 20 March 1966.
134 Schram, G.G.: *Hafréttur,* p. 19.
135 UNCLOS Art. 134(2).
136 UNCLOS Art 1(1)(1).
137 Churchill, R.R., Lowe, A.V.: *The Law of the sea*, p. 239.
138 Churchill, R.R., Lowe, A.V.: *The Law of the sea*, p. 239
139 UNCLOS Art. 133(a).
140 UNCLOS Art. 133(b).
141 This will be discussed later in the dissertation. See: Churchill, R.R., Lowe, A.V.: *The Law of the sea*, p. 239, footnote 49.

the auspices of the Authority and in under the regime set up by the provisions of the Convention.[142]

As stated by Art. 136:

> The Area and its resources are the common heritage of mankind.[143]

As stated by Art. 137, concerning the legal status of the Area and its resources:

> 1. No State shall claim or exercise sovereignty or sovereign rights over any part of the Area or its resources, nor shall any State or natural or juridical person appropriate any part thereof. No such claim or exercise of sovereignty or sovereign rights nor such appropriation shall be recognized.
> 2. All rights in the resources of the Area are vested in mankind as a whole, on whose behalf the Authority shall act. These resources are not subject to alienation. The minerals recovered from the Area, however, may only be alienated in accordance with this Part and the rules, regulations and procedures of the Authority.
> 3. No State or natural or juridical person shall claim, acquire or exercise rights with respect to the minerals recovered from the Area except in accordance with this Part. Otherwise, no such claim, acquisition or exercise of such rights shall be recognized.[144]

As stated in Art. 137(2), as seen above; the Authority acts on behalf of mankind as a whole. This may seem a bit imperious. Nonetheless, the reality is such that this high-minded purpose does bear actual political as well as legal weight in the justification and realization of the aims of Part XI. This principled stance is nowhere as evident as in the provisions of Art. 140. There, activities conducted within the Area, be it by the Authority via the Enterprise or any other commercial venture, as specifically provided for, “ are to be carried out for the benefit of mankind as a whole“[145]. The article goes further, explaining that this is “irrespective of the geographical location of States, whether coastal or land-locked, and taking into particular consideration the interests and needs of developing States and of peoples who have not attained full independence or other self-governing status recognized by the United Nations in accordance with General Assembly resolution 1514 (XV) and other relevant General Assembly resolutions.”[146] This is interesting as it provides for an expansive interpretation of the universality of the Convention, as the role of its sub-body is not only for all, but also for those not yet recognised. Bearing in mind the Authority´s role of working on

[142] UNCLOS Art. 136 and 137.
[143] UNCLOS Art. 136.
[144] UNCLOS Art. 137.
[145] UNCLOS Art. 140(1).
[146] UNCLOS Art. 140(1).

the behalf of mankind, it is charged, in Art. 140(2), to provide for the equitable sharing of financial and other economic benefits derived from activities in the Area.[147]

This is essentially all summed up in Art. 155(2). The provisions of Art. 155 lay done a scheme in which the legal regime may be reviewed anew by a special Review Conference that shall convene fifteen years from the 1st of January of the year "in which the earliest commercial production commences under an approved plan of work."[148] Even so, such a conference is pound to take the following into consideration that goes to the core of the Area:

> The Review Conference shall ensure the maintenance of the principle of the common heritage of mankind, the international regime designed to ensure equitable exploitation of the resources of the Area for the benefit of all countries, especially the developing States, and an Authority to organize, conduct and control activities in the Area. It shall also ensure the maintenance of the principles laid down in this Part with regard to the exclusion of claims or exercise of sovereignty over any part of the Area, the rights of States and their general conduct in relation to the Area, and their participation in activities in the Area in conformity with this Convention, the prevention of monopolization of activities in the Area, the use of the Area exclusively for peaceful purposes, economic aspects of activities in the Area, marine scientific research, transfer of technology, protection of the marine environment, protection of human life, rights of coastal States, the legal status of the waters superjacent to the Area and that of the air space above those waters and accommodation between activities in the Area and other activities in the marine environment.[149]

4.3 Seabed excluded from Part XI and the Area

The above mentioned Area is an extremely important conceptual definition as it provides for the geographical location of the legal regime´s jurisdiction and defines under which regime, international law or national law, a certain mineral resource may or may not fall under. National jurisdiction of the seabed, that is to say; that lies outside of Part IX, [150] forms a jurisdictional limit that extends sea-wards, or as defined by UNCLOS:

> The continental shelf of a coastal State comprises the seabed and subsoil of the submarine areas that extend beyond its territorial sea throughout the natural prolongation of its land territory to the outer edge of the continental margin, or to a distance of 200 nautical miles from the baselines from which the breadth of the territorial sea is measured where the outer edge of the continental margin does not extend up to that distance.[151]

[147] UNCLOS Art. 140(2). Note that this is to be done in accordance with Art. 160(2)(f). Hence; upon the recommendation of the Council and taking into particular consideration the interests and needs of developing States and peoples who have not attained full independence or other self-governing status.
[148] UNCLOS Art. 155(1).
[149] UNCLOS Art, 155(2).
[150] Churchill, R.R., Lowe, A.V.: *The Law of the sea*, p. 239.
[151] UNCLOS Art. 76(1).

Within the continental shelf, as defined above, the coastal State hence has the right to exercise sovereign rights over its shelf itself for the purpose of exploring it and exploiting its natural resources.[152] This forms an exclusive right, meaning no other entity may undertake these activities without the express consent of the coastal State, regardless if the coastal State does or does not explore its continental shelf or exploit its natural resources.[153] These natural resources, as mentioned, denote mineral resources and other non-living resources of the seabed and subsoil as well as living organisms, that is; sedentary species.[154] In the context of living organisms this is a notably different arrangement than within Part XI.[155]

4.4 The International Sea Bed Authority in general

The International Sea Bed Authority[156] can best be described as an autonomous international/intergovernmental organization. It is currently based with its headquarters in Kingston, Jamaica[157], while also possessing an office of a Permanent Observer for the Authority to the UN in New York, United States. The Authority received permanent observer status to the UN in October 1994.[158]

Having been established by the 1982 United Nations Convention on the Law of the Sea and the 1994 Agreement relating to the Implementation of Part XI of the United Nations Convention on the Law of the Sea, the Authority held its first meeting in Kingston on the 16th of November 1994[159], between 1982 and its inaugural meeting in 1994 over ten preparatory meetings had taken place.[160] As UNCLOS Art. 156(2) states; all States Parties are *ipso facto* members of the Authority. Hence, as of January 2015, members of the Authority number 166 sovereign States as well as the European Union.

The Authority describes itself as:

> The Authority is the organization through which States Parties to the Convention shall, in accordance with the regime for the seabed and ocean floor and subsoil thereof beyond the limits of national jurisdiction (the Area) established in Part XI and the Agreement organize

[152] UNCLOS Art. 77(1).
[153] UNCLOS Art. 77(2) and (3).
[154] UNCLOS Art. 77(4).
[155] See: Chapter 8.
[156] In French: Autorité internationale des fonds marins, in Spanish: Autoridad Internacional de los Fondos Marinos
[157] UNCLOS Art. 156(4).
[158] UN Doc. A/51/PV.49, p. 22.
[159] Also the day the Convention came into force.
[160] UN Doc. A/RES/48/28, p. 4.

> and control activities in the Area, particularly with a view to administering the resources of the Area.[161]

Therefore, it cannot be said that the Authority governs all activities within the Area, as there are other anthropogenic activities and a number of different uses for the seabed, ocean floor and subsoil beyond national jurisdiction that do not adhere to the governance of the Authority or to Part XI. Such activities include, but are not limited to, the instalment of pipelines, the laying of cables and scientific research.[162] These activities are wholly separate to the exploration or exploitation of the seabed resources and may therefore be carried out without direct permission of the Authority, or any submission to the Authority´s internal procedures and regulations.[163] This goes to the very question whether bio-prospecting and genetic resources may fall within the scope of the deep seabed mining regime and the jurisdiction of the Authority, a matter later discussed in this dissertation.

According the provisions of Convention, as seen in Part XI, there are three principal organs of the Authority; an Assembly, a Council and a Secretariat.[164] In addition to prescribed organs within the Authority, there is a mining operator, namely the Enterprise, which according to Art. 158(2) of the Convention shall perform specific functions referred to in article 170(1), which involve carrying out direct mining activities within the Area.

4.4.1 The Assembly

As stated above all States Parties are *ipso facto* members of the Authority and as such members to the Assembly. Each member has one representative in the Assembly, who may be accompanied by alternates and advisers. Each member carries with him the power of one vote equal to other members.[165] As the Assembly consists of representatives of each member it assumes the responsibilities of a "supreme organ with the power to establish general policies, consists of"[166] all Authority members. Currently Mr. Antonio Francisco Da Costa e Silva Neto (Brazil) is the President of the Assembly, with the representatives of Nigeria (African States), China (Asia-Pacific States), France (Western European and Other States) and the Russian Federation (Eastern European States) acting as Vice-Presidents. According to the Authority the Assembly has the following powers:

[161] See: URL: https://www.isa.org.jm/authority. Retr. 1 May 2015.
[162] UNCLOS Art. 112, 143, 256.
[163] Churchill, R.R., Lowe, A.V.: *The Law of the sea*, p. 240.
[164] UNCLOS Art. 158(1).
[165] UNCLOS Art. 156(29), 159(1), 159(6).
[166] See: URL: https://www.isa.org.jm/authority/assembly. Retr. 1 May 2015.

> It elects the members of the Council and other bodies, as well as the Secretary-General, who heads the Secretariat;
> It sets the two-year budgets of the Authority as well as the rates by which members contribute towards the budget, based on the assessment scale established by the United Nations for that body's activities;
> Following adoption by the Council, it approves the rules, regulations and procedures that the Authority may establish from time to time, governing prospecting, exploration and exploitation in the Area. The Assembly took its first such action in 2000 by approving Regulations on Prospecting and Exploration for Polymetallic Nodules in the Area, as drawn up by the Council;
> It examines reports from other bodies, notably the annual report by the Secretary-General on the work of the Authority. This periodic examination gives members the opportunity to comment and make proposals on any aspect of the Authority's work.[167]

The entirety of the powers and functions of the Assembly are primarily listed in the provisions of Art. 160 of the Convention. If the provision is read without context, especially the latter part of Art 160(1), stating that the Assembly:

> […]shall be considered the supreme organ of the Authority to which the other principal organs shall be accountable as specifically provided for in this Convention. The Assembly shall have the power to establish general policies in conformity with the relevant provisions of this Convention on any question or matter within the competence of the Authority[168]

One might be forgiven to conclude that the Assembly, with its assumingly broad mandate and wide reaching powers, could be considered autonomous in most matters. Nonetheless, with the introduction of the 1994 Implementation Agreement, the power of the Assembly to act independently was largely diminished in favour of an increase in the abilities and power of the Council.[169]

4.4.2 The Council[170]

The nature of the Council´s responsibilities is that of implementation of the Convention within the framework and context of Part XI. The tasks that fall under the Council are extensive and refer to a vast portion of the executive branch of the Authority, or as it state itself:

> As "the executive organ of the Authority", the Council establishes specific policies in conformity with the Convention and the general policies set by the Assembly. It supervises

[167] See: URL: https://www.isa.org.jm/authority/assembly. Retr. 1 May 2015.
[168] UNCLOS Art 160(1).
[169] Churchill, R.R., Lowe, A.V.: *The Law of the sea*, p. 240.
[170] The current president of the Council is Mr. Tommo Monthe (Cameroon).

> and coordinates implementation of the elaborate regime established by the Convention to promote and regulate exploration for and exploitation of deep-sea minerals by States, corporations and other entities.[171]

Art. 162 of the Convention, who's provisions have been modified by the 1994 Implementation Agreement, Annex, Sec. 7., makes note of the functions of the Council in detail. These include, but are not limited to:

- The supervision and coordination of implementing the provisions of Part XI on all questions and matters within the competence of the Authority and invite the attention of the Assembly to cases of non-compliance.
- Propose a list of candidates for the election of the Secretary-General and recommend candidates for the election of the members of the Governing Board of the Enterprise and the Director-General of the Enterprise.
- To establish subsidiary organs necessary for the exercise of its functions according to Part XI.
- To enter into agreements with the United Nations or other international organizations.
- To consider reports of the Enterprise, issue directives to the Enterprise; approve plans of work both in accordance with Annex III, Art. 6 and by the Enterprise.
- To exercise control over activities in the Area in accordance with article 153(4) and the rules, regulations and procedures of the Authority.
- To take, upon the recommendation of the Economic Planning Commission, necessary and appropriate measures in accordance with article 150(h), to provide protection from the adverse economic effects specified therein.
- To issue emergency orders, this includes orders for the suspension or adjustment of operations. To prevent serious harm to the marine environment arising out of activities in the Area. To disapprove areas for exploitation by contractors or the Enterprise in cases where substantial evidence indicates the risk of serious harm to the marine environment.
- Financial management and arrangements; establish appropriate mechanisms for directing and supervising a staff of inspectors who shall inspect activities in the Area.[172]

[171] See: "Fact Sheet: The International Seabed Authority Structure and Functioning".
[172] UNCLOS Art. 162.

There are 36 Council members. As membership is limited, unlike the Assembly, the body of the Council is intended, broadly speaking, to represent the different interest groups concerned with deep seabed mining operations as well as to get an equitable representation based on the geographical locations of members.[173] Within the 1994 Implementation Agreement, Sec. 3, para 15, it is stated that:

> The Council shall consist of 36 members of the Authority elected by the Assembly in the following order:
> (a) Four members from among those States Parties which, during the last five years for which statistics are available, have either consumed more than 2 per cent in value terms of total world consumption or have had net imports of more than 2 per cent in value terms of total world imports of the commodities produced from the categories of minerals to be derived from the Area, provided that the four members shall include one State from the Eastern European region having the largest economy in that region in terms of gross domestic product and the State, on the date of entry into force of the Convention, having the largest economy in terms of gross domestic product, if such States wish to be represented in this group;
> (b) Four members from among the eight States Parties which have made the largest investments in preparation for and in the conduct of activities in the Area, either directly or through their nationals;
> (c) Four members from among States Parties which, on the basis of production in areas under their jurisdiction, are major net exporters of the categories of minerals to be derived from the Area, including at least two developing States whose exports of such minerals have a substantial bearing upon their economies;
> (d) Six members from among developing States Parties, representing special interests. The special interests to be represented shall include those of States with large populations, States which are land-locked or geographically disadvantaged, island States, States which are major importers of the categories of minerals to be derived from the Area, States which are potential producers of such minerals and least developed States;
> (e) Eighteen members elected according to the principle of ensuring an equitable geographical distribution of seats in the Council as a whole, provided that each geographical region shall have at least one member elected under this subparagraph. For this purpose, the geographical regions shall be Africa, Asia, Eastern Europe, Latin America and the Caribbean and Western Europe and Others.[174]

The combination of representation of landlocked States, States that are geographically disadvantaged as well as coastal States within the Council itself is great importance. It is the aim of the Convention as well as the 1994 Implementation Agreement to ensure that representation within the Council is “reasonably proportionate to the representation in the Assembly; and that each of the listed groups of States is to be represented on the Council by the members nominated by that group.”[175]

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[173] Churchill, R.R., Lowe, A.V.: *The Law of the sea*, p. 241.
[174] 1994 Implementation Agreement, Sec. 3, para 15.
[175] Churchill, R.R., Lowe, A.V.: *The Law of the sea*, p. 242. See also: UNCLOS Art 161(2) and 1994 Implementation Agreement, Sec. 3, para 10.

4.4.3 The Secretariat[176]

The responsibilities of the Secretariat of the Authority revolve around administrating the work of the Authority. The Secretary-General is the chief administrative officer of the Authority, and acts in that capacity before the Assembly, the Council and any subsidiary organ, and performs other administrative functions as are entrusted to him by these organs.[177]

The Secretary-General also works extensively in matters of consultation and cooperation with international and non-governmental organizations. To this extent, on matters within the competence of the Authority, the Secretary-General shall make suitable arrangements for consultation and cooperation with those international and non-governmental organizations recognized by the Economic and Social Council of the United Nations (herein after: ECOSOC).[178] The effect, of such consultation and cooperation, between the Authority and such outside organizations, will allow the organization concerned to designate representatives to attend meetings of the organs of the Authority as observers in accordance with the rules of procedure of these organs.[179]

Other functions of the Secretariat include, but are not limited to;

> Preparing and submitting draft texts, reports and other documents, analysis, research findings, policy suggestions and recommendations, etc.;
> Providing secretariat services to the Assembly, the Council, the Legal and Technical Commission and the Finance Committee; providing information and advice to the bureau of those organs and bodies and to delegations; and assisting in planning the work of the sessions, in the conduct of the proceedings and in drafting reports;
> Providing meeting services (including interpretation, translation, document reproduction services and press releases);
> Producing publications, information bulletins and analytical studies;
> Organizing and servicing expert group meetings, seminars and workshops;
> Disseminating information on the activities and decisions of the Authority;
> Programme planning and allocating resources for the effective, economic and efficient performance of the services and functions of the Secretariat[180]

The Secretariat is currently structured into four units, who´s functions are specifically designed for the needs of the Secretariat itself as well as the Authority as a whole. These units are; The Office of the Secretary-General[181], The Office of Resources and Environmental

[176] The current Secretary-General is Mr. Nii Allotey Odunton (Ghana).
[177] UNCLOS Art. 166(3).
[178] UNCLOS Art. 169(1).
[179] UNCLOS Art. 169(2).
[180] See: URL: https://www.isa.org.jm/secretariat. Retr. 1 May 2015.
[181] "The Office of the Secretary-General (OSG) supervises and co-ordinates the work of the Secretariat in the implementation of policies, external relations, protocol matters, liaison and representation of the Authority." URL: https://www.isa.org.jm/authority/office-secretary-general. Retr. 1 May 2015.

Monitoring[182], The Office of Legal Affairs[183], The Office of Administration and Management.[184]

4.4.4 The Legal and Technical Commission[185]

The Legal and Technical Commission might be described as being a mainly professional body within the Authority. It provides the Authority with services that require specific knowhow and professional qualifications.

The role of the Legal and Technical Commission is mainly twofold. Firstly, supervise, if requested by the Council, the activities within the Area, make professional recommendations to the Council on a number of matter of important issues such as; protection of the marine environment, to disapprove areas for exploitation by contractors or the Enterprise, recommending to the Council to issue emergency orders, recommend to the Council that proceedings be instituted on behalf of the Authority before the Seabed Disputes Chamber, make recommendations to the Council regarding inspectors who shall inspect activities in the Area to uphold the provisions of this Part, the rules, regulations and procedures of the Authority, and the terms and conditions of any contract with the Authority

[182] "The Office of Resources and Environment Monitoring (OREM) is the economic arm of the Authority's Secretariat providing scientific and technical inputs in the preparation of rules, regulations and procedures for the conduct of activities in the Area. The OREM is also responsible for the development and maintenance of information technology facilities to support needs of the Authority and the central data repository resources of the international seabed area and endeavours to promote and encourage the conduct of marine scientific research in the Area, producing and distributing publications on the work of the Authority and monitoring trends and developments of deep seabed mining activities relating to the prospecting and exploration of the Area including areas reserved for the Authority." See: URL: https://www.isa.org.jm/authority/office-resources-and-environmental-monitoring. Retr. 1 May 2015.

[183] "The Office of Legal Affairs (OLA) provides legal advice relating to the substantive work of the Authority as well as secretariat services to the organs of the Authority, including preparation of official documentation and liaison with Department of Conference Services of the United Nations. In addition, OLA provides general legal services to the Secretary-General Secretariat of the Authority. One of the primary responsibilities of OLA is to work with the eight contractors for exploration for polymetallic nodules to ensure that contractual obligations are met and that necessary reports are submitted in a timely manner to the Legal and Technical Commission." See: URL: https://www.isa.org.jm/authority/office-legal-affairs. Retr. 1 May 2015.

[184] "The Office of Administration and Management (OAM) provides general administrative and management support to the Secretariat. Its functions include financial management and control, preparation of proposed budgets, assessment of contributions of member States, recruitment of staff and contractors, procurement of goods and services, personnel management and security." See: URL: https://www.isa.org.jm/authority/office-administration-and-management. Retr. 1 May 2015.

[185] In the original text of the 1982 Convention there are provisions provided for the establishment of a second commission, the Economic Planning Commission, see UNCLOS Art. 163, 164. Originally the idea was that this commission would advise the Council on economic matters – Especially concerning, prices and supply and demand trends concerning raw materials on the market, in connection to seabed mining and minerals available and obtained in the Area. The notion was that on the recommendations of such a commission the Council might better compensate those States adversely effected by products mind from the seabed and introduced on to the market. Currently, instead of compensation the term ´economic assistance´ has been preferred, see: UNCLOS Art. 164(2)(d) and the 1994 Implementation Agreement Sec.7., According to the Implementation Agreement, Sec. 1, para 4., any functions of the Economic Planning Commission needed are to carried out by the Legal and Technical Commission.

are being complied with.[186] Secondly, the Legal and Technical Commission shall outline and draw up drafts for the rules and regulations of the Authority.[187]

The Legal and Technical Commission may generally be composed of 15 members that have been elected by the Council from among the nominated candidates selected by member States. The members of the Legal and Technical Commission must possess "appropriate qualifications that are relevant to exploration for and exploitation and processing of mineral resources, oceanology, protection of the marine environment, or economic or legal matters relating to ocean mining and related fields of expertise."[188]

This includes qualifications in a wide variety of professions, for example; economists, mineral resources specialists, oceanographers, engineers, scientists and lawyers. It is the duty of the member States to nominate candidates of "the highest standards of competence and integrity with qualifications in relevant fields so as to ensure the effective exercise of the functions of the Commissions."[189]

It is role of the Council to ensure that the elected member of the Commission reflect all appropriate qualifications. However, the Council may also look to due account and the need for equitable geographical distribution as well as the representation of special interests in its election process.[190] As stated above, the Legal and Technical Commission is composed of 15 members, nevertheless, the Council may, "if necessary and having due regard to economy and efficiency"[191] decide to increase the number of members. In fact in its inaugural election in 1996 22 members were voted in,[192] in fact, currently, the Legal and Technical Commission is composed of 24 members.[193]

Since its establishment the Legal and Technical Commission has drafted and instigated two very important regulatory texts, that is to say; the Regulations on Prospecting and Exploration for Polymetallic Nodules in the Area[194] and the Regulations on Prospecting and Exploration for Polymetallic Sulphides and Cobalt-Rich Ferromanganese Crusts in the Area.[195]

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[186] UNCLOS Art. 165.
[187] Churchill, R.R., Lowe, A.V.: *The Law of the sea*, p. 243.
[188] UNCLOS Art. 165(1)þ
[189] UNCLOS Art. 163(3).
[190] UNCLOS Art. 163(4).
[191] UNCLOS Art. 163(2).
[192] Churchill, R.R., Lowe, A.V.: *The Law of the sea*, p. 243.
[193] See: URL: https://www.isa.org.jm/authority/legal-and-technical-commission. Retr. 1 May 2015.
[194] See: URL: http://www.isa.org.jm/files/documents/EN/Regs/PN-en.pdf. Retr. 1 May 2015.
[195] "Fact Sheet, Cobalt Rich Crusts, March 2008". URL: http://www.isa.org.jm/files/documents/EN/Brochures/ENG9.pdf. Retr. 1 May 2015.

4.4.5 The Finance Committee[196]

Unlike the other main organs of the Authority the Finance Committee is not to be found in the 1982 Convention. In fact, the Finance Committee is a later in amendment to the function and role of the Authority and only appears in the 1994 Implementation Agreement, Annex, Sec. 9. In the first paragraphs of Annex, Sec. 9 it is stated that the Finance Committee is to be composed of 15 members, likely corresponding to the number of members given by the Convention that comprises the Legal and Technical Commission. Similarly to the Legal and Technical Commission the members of the Finance Committee are to have appropriate qualifications relevant to financial matters. States Parties shall nominate candidates of the highest standards of competence and integrity.[197]

Unlike the Legal and Technical Commission, the members of the Finance Committee are elected by the Assembly. However, likewise, due account is to be taken of the need for equitable geographical distribution and the representation of special interests.[198]

According to Annex, Sec. 9, para 7, the role of the Financial Committee is to make recommendation to both the Assembly and the Council on issues concerning financial rules, regulations and procedures, as well as financial management and internal financial administration, this includes all financial matters and administrative budgets. Importantly the Financial Committee also recommends on matters concerning the financial obligations of member States due to implementation of this Agreement and Part XI,[199] as well as the equitable sharing of economic benefits that stem from seabed mining in the Area.[200] Both the Assembly and the Council must take the recommendations of the Financial Committee into consideration in their decision making.[201]

4.4.6 The Enterprise

In many ways the Enterprise represents a major compromise in the policies and ideals of member States to the 1984 Convention. At the time of the negations and discussions on UNCLOS III there were two factions, as has been pointed out before. On one hand there were the free-market thinking, developed States and on the other hand the developing States slightly more inclined towards socialist ideology. The developed States wished for the

[196] See: URL: https://www.isa.org.jm/authority/finance-committee. Retr. 1 May 2015.
[197] Annex, Sec. 9 para 1.
[198] Annex, Sec. 9 para 3.
[199] Annex, Sec. 9, para 7.
[200] Churchill, R.R., Lowe, A.V.: *The Law of the sea*, p. 244.
[201] Annex, Sec. 9, para 7.

economic freedom and right to conduct industrial mining of the seabed in a liberal fashion, while the developed States, mainly represented by Group77, sought a future in which all seabed mining was conducted by an international body for the sole benefit of mankind, in which the economic benefits were equitable, shared. What broke the stalemate at UNCLOS III was the introduction of a compromising parallel system in which both private State-sponsored entities as well as an international enterprise would communally mine seabed resources, ´splitting the difference´. The system is believed to have been originally envisioned and suggested by the then United States Secretary of State, Henry Kissinger, and the matter was negotiated by Elliot Richardson, the United States Ambassador to UNCLOS III.[202]

This debate, both then and know, hits at the core of the common heritage principle that is so inherent to the seabed exploitation. The dispute over how and who is to exploit, becomes evident if one recalls that even though the parallel system became accepted rather quickly at UNCLOS III and transcribed in Art. 153 – where it stated that activities in the Area shall be carried out by the Enterprise, and „in association with the Authority by States Parties, or state enterprises or natural or juridical persons which possess the nationality of States Parties or are effectively controlled by them or their nationals, when sponsored by such States, or any group of the foregoing which meets the requirements provided in this Part and in Annex III“[203] – the matter continued to cause concern amongst the member States. What most concerned the member States were matters that concerned the operational and practical detail of the proposed Enterprise, such as financing and the sharing of technology.[204]

The Enterprise was established by Art. 170 of the Convention. There the Enterprise is intended to directly carry out activities in the Area, pursuant to article 153, paragraph 2(a), as well as the transporting, processing and marketing of minerals recovered from the Area.[205] The functions of the Enterprise were significantly altered and amended with the introduction of the 1994 Implementation Agreement. Many of the developed States considered the Enterprise to be an impractical entity and disliked the concept of carry large financial burdens due to its initial operations.[206] The 1994 Implementation Agreement places the Enterprise under the control of the Secretariat of the Authority, who appoints an interim Director-General to oversee the performance of the functions of the Enterprise under the supervision

[202] Wang, J.C.F: *Handbook on Ocean Politics & Law*, p. 246. See also: Lodge, M.: "The Deep Seabed", p. 234.
[203] UNCLOS Art. 153(2)(a) and (b). See also: Lodge, M.: "The Deep Seabed", p. 234.
[204] Lodge, M.: "The Deep Seabed", p. 234.
[205] UNCLOS Art. 170(1).
[206] Lodge, M.: "The Deep Seabed", p. 235.

of the Secretariat.[207] This has to-date nearly crippled the Enterprise as an independently functioning organ of the Authority. This has essentially meant that the Enterprise is a non-functioning organ, on stand-by until further notice. The 1994 Implementation Agreement does this by placing certain limitations and conditions for the Enterprise prior to it being allowed to operate independently.

Firstly, the Enterprise must conduct its initial deep seabed mining operations through joint ventures[208] and removes any State obligation to fund mine sites of the Enterprise, as is provided for in Annex IV, article 11, paragraph 3, of the Convention. Furthermore, States are under no obligation to finance any operations of the Enterprise, even if under a joint-venture arrangement.[209] This means there is no financial base for the Enterprise to begin.

Secondly, the Enterprise may only begin operations if having prior obtained permission from the Council. The Council can only give such permission if an application is submitted that contains the approval of a plan of work for exploitation for an entity other than the Enterprise, or if an application is submitted for a joint-venture operation with the Enterprise and is based on sound commercial principles.[210] Only then may the Council issue a directive, referencing Art. 170(2) of the Convention, that provides for independent functioning.

Until the two abovementioned conditions are met, the functions of the Enterprise are entirely limited to bare minimal operations. This includes monitoring and reviewing trends and developments relating to deep seabed mining activities, including regular analysis of world metal market conditions and prices, as well as analysing and monitoring marine scientific research.[211]

As recently as 2013 there was renewed hope for an independent Enterprise. At its 19th session in 2013, the Council put forward an application in the form of a ´Proposal for a joint venture operation with the Enterprise.´[212] The application was from the Canadian enterprise Nautilus Minerals Inc. (Nautilus), “a company incorporated in Canada, to enter into negotiations to form a joint venture with the Enterprise for the purpose of developing eight of the reserved area blocks in the Clarion-Clipperton Zone.“[213] The Council decided against the applications on the grounds that the Enterprise was not ready to conduct such operations and

[207] 1994 Implementation Agreement, Annex Sec. 2, para 1.
[208] 1994 Implementation Agreement, Annex Sec. 2, para 2.
[209] 1994 Implementation Agreement, Annex Sec. 2, para 3.
[210] 1994 Implementation Agreement, Annex Sec. 2, para 2.
[211] 1994 Implementation Agreement, Annex Sec. 2, para 1.
[212] ISBA/19/C/4.
[213] ISBA/19/C/4, para 1.

that further investigation was needed into the financial, legal and technological abilities of the Enterprise and its implications for the Authority.[214]

4.5 Deep seabed mining and settlement of disputes[215]

4.5.1 In general[216]

Within the context of the 1984 Convention the importance of dispute settlement seems at the very core of amicable international relations in the matter of seabed mining, especially if one recalls the conflicts that arose at UNCLOS III between different interests and political ideologies of the State parties.[217] Those provisions that make up the dispute settlement regime in cases of activities in the Area can be very complex and difficult, especially because parties to such disputes are not only States, but also the Authority, the Enterprise, contractors. In such cases it is not only the provisions of the 1984 Convention and associated texts, such as the 1994 Implementation Agreement, that need to be considered, but also regulations composed by the Authority as well as contractual agreement conditions.[218]

In general, the dispute settlement regime within UNCLOS is to be found specifically in Part XV of the Convention. The dispute settlement regime may be considered to emphasis three distinct features.[219]

Firstly, Part XV places great emphasis on the obligation of State parties to settle disputes concerning the Convention in a peaceful manner, in accordance with Art. 2(3) of the Charter o the United Nations and by means indicated in Art. 33(1) of the same Carter.[220] The State parties to a dispute are free to choose by which means they wish to settle their disputes, nothing in Part XV impairs their right to such an agreement.[221]

Secondly, in those instances when parties to a dispute are unable to agree on a procedure of dispute settlement[222] or when such procedures have not been able to settle the dispute, either party is entitled to apply compulsory procedures entailing binding decisions. In Art. 286 it is stated that; "where no settlement has been reached by recourse to section 1," the

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[214] ISBA/19/C/6 See also: Lodge, M.: "The Deep Seabed", p. 235.

[215] Collier, J., Lowe, V: *The Settlement of Disputes in International Law*, p. 84-86 and 89. See also: Sohn, L.B, Noyes, J.E: *Cases and Materials on the Law of the Sea* (2nd ed), p. 802. See also: Schram, G.G.: *Hafréttur*, p. 284.

[216] See in general: *Settlement of Disputes, General and Final Provisions: Articles 279 to 320, Annexes V, VI, VII, VIII and IX, and Final Act, Annex I, Resolutions I, III and IV*, (ed.) Rosenne, S., Sohn, L.B.

[217] See chapter 3.

[218] Churchill, R.R, Lowe, A.V.: *The Law of the Sea*, p. 458-459.

[219] Leifsson, P.D.: "Yfirlit um lausn deilumála á sviði hafréttar samkvæmt Hafréttarsáttmála Sameinuðu þjóðanna", p. 348.

[220] UNCLOS Art. 279.

[221] UNCLOS Art. 280.

[222] UNCLOS Art. 281 and 283.

dispute shall be "submitted at the request of any party to the dispute to the court or tribunal having jurisdiction".[223]

Thirdly, it is important to note that Part XV places imitations and exceptions to the above mentioned provisions where parties are free to choose the procedure of dispute settlement and are able to force opposite parties to compulsory procedures. In section 3 of Part XV a number of specific disputes, such as the interpretation and application of provisions concerning protection and preservation of the marine environment of provisions concerning marine scientific resources, are given specific procedural rules. Importantly for this dissertation, this extends to deep seabed mining in the Area.

4.5.2 Dispute settlement concerning matters covered by Part XI[224]

In general, "[u]nder the Law of the Sea Convention, legal disputes relating to seabed matters covered by part XI are to be handled by a Seabed Disputes Chamber established by the International Tribunal for the Law of the Sea. Only the Council may institute proceedings before the Chamber on behalf of the Authority in cases of non-compliance."[225]

4.5.3. International Tribunal for the Law of the Sea

The Tribunal is established via Annex VI of the 1984 Convention. It functions in accordance with provisions of the 1984 Convention and the Annex VI, there it is stipulated that any reference of a dispute to the Tribunal it to be regulated by provisions in Part XI and Part XV.[226]

Having a term of 9 years[227] the 21 judges of the Tribunal are to be elected from a pool of candidates that enjoy the highest reputation and recognised as being experts in the field of law of the sea.[228] As is with most matters within UNCLOS, and emphasis is placed on equitable geographical distribution as well as the fact that judges should represent the principle legal systems of the world.[229] The Tribunals jurisdiction is to encompass any disputes and any application submitted to it according to the 1984 Convention as well as all

[223] See Part XV, Sec. 2. and Art. 286.
[224] Leifsson, P.D.: "Yfirlit um lausn deilumála á sviði hafréttar samkvæmt Hafréttarsáttmála Sameinuðu þjóðanna", p. 370-372.
[225] "Fact Sheet: The International Seabed Authority Structure and Functioning", p. 4.
[226] Annex VI, Art 1(1) and (3).
[227] Annex VI, Art. 5.
[228] Annex VI, Art. 2(1).
[229] Annex VI, Art. 2(2).

matters that are submitted based on other agreements that confer jurisdiction to the Tribunal.[230]

4.5.4 The Sea-Bed Disputes Chamber

Annex VI provides for the establishment of a Sea-Bed Disputes Chamber in Art. 14. As well as stating provisions for the Chamber in Annex VI, Sec. 4. Nonetheless, matter of jurisdiction of the Chamber, its function and powers are provided for in Part XI, Sec. 5.[231]

The Chamber is established as and composited by an 11 member body within the Tribunal that forms a specialist Chamber in the matters requiring judicial settlement of disputes concerning activities in the deep seabed mining. The judges within the Chamber are selected by a majority of the elected members of the Tribunal from amongst themselves.[232] A minimal quorum of 7 members is required to constitute the Chambers at each given time.[233] A President is selected from among the members to the Chamber.[234]

Alongside the general Chamber, Annex VI provides for the establishment of an *ad-hoc* chamber. This chamber is supposed to be formed by 3 members of the general Chamber and solely dealing with disputes submitted by any party in accordance to Art. 188(1)(b).[235] This means that parties to a dispute are given an option to tailor their chamber to the case at hand.

Nonetheless, if the parties are unable to agree on the composition of the *ad-hoc* chamber or fail to fail to make appointments, the President of the Chamber will appoint members to the *ad-hoc* chamber *ex-officio.*[236]

The decisions of the Chamber are to be enforced at a national level as if a judgment or order iven by the highest court of the State party in question.[237]

Part XV mentions that any dispute which falls under Part XI, Sec. 5., is to be "settled in accordance with procedures provided for" by Part XV.[238] In light of State sponsored

[230] Annex VI, Art 21.
[231] Annex, VI, Art. 14.
[232] Annex, VI, Art. 35(1) and (2).
[233] Annex, VI, Art. 35(7).
[234] Annex, VI, Art. 35(4).
[235] Annex, VI, Art. 36.
[236] Annex, VI, Art. 36(2).
[237] Annex, VI, Art. 39.
[238] UNCLOS Art. 285.

contractor participation in deep seabed mining it is also stated that if “any entity other than a State Party is a party to such a dispute” Part XV, Sec. 1., applies mutatis mutandis.[239]

4.5.5 Jurisdiction of the Sea-Bed Disputes Chamber according to Part XI, Section 5

Article 187 attempts to systematically note those disputes, with respect to activities in the Area, that fall within the jurisdiction of the Chamber. There it is stated that the Chamber shall have jurisdiction over disputes in the following categories:

> a) disputes between States Parties concerning the interpretation or application of this Part and the Annexes relating thereto;
> b) disputes between State Party and the Authority concerning:
>> i) acts or omissions of the Authority or of a State Party alleged to be in violation of this Part or the Annexes relating thereto or of rules, regulations and procedures of the Authority adopted n accordance therewith; or
>> ii) acts of the Authority alleged to be in excess of jurisdiction or a misuse of power;
>
> c) disputes between parties to a contract, being States Parties, the Authority or the Enterprise, state enterprises and natural or judicial persons referred to in article 153, paragraph 2(b), concerning:
>> i) the interpretation or application of a relevant contract or a plan of work; or
>> ii) acts or omissions of a party to the contract relating to activities in the Area and directed t the other party or directly affecting its legitimate interests;
>
> d) disputes between the Authority and a prospective contractor who has been sponsored by a State as provided in article 153, paragraph 2(b), and has duly fulfilled the conditions referred to in Annex III, article 4, paragraph 6, and article 13, paragraph2, concerning the refusal of a contract or a legal issue arising in the negotiation of the contract;
> e) disputes between the Authority and a State Party, a state enterprise or a natural or juridical person sponsored by a State Party as provided for in article 153, paragraph 2(b), where it is alleged that the Authority has incurred liability as provided in Annex III, article 22;
> f) any other disputes for which the jurisdiction of the Chamber is specifically provided in this Convention.[240]

Interestingly, Art 189 limits the jurisdiction of the Chamber with regards to decisions of the Authority. The article states that the Chamber is not intended to have any jurisdiction over the use by the Authority of its discretionary powers in accordance with Part XI. The Chamber shall likewise never substitute its discretion for that of the Authority.

This essentially means that the Chamber is not allowed to assert itself on matters concerning whether any rules, regulations and procedures of the Authority are in conformity with the Convention, nor invalid any such measures. Ultimately this means that the Authority is merely allowed jurisdiction over the application of any rules, regulations and procedures in individual cases that may be in conflict with contractual obligations, State part obligations,

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[239] Leifsson, P.D.: “Yfirlit um lausn deilumála á sviði hafréttar samkvæmt Hafréttarsáttmála Sameinuðu þjóðanna”, p. 371.
[240] UNCLOS Art. 187.

matters of excessive jurisdiction or misuse of power, matters of liability and remedies.[241] It would seem that such a provision is set in order to temper any possible judicial power which might move, intentionally or unintentionally, towards gaining significant control over the independent Authority.[242]

4.5.6 Advisory opinions

Regardless of the Chambers jurisdictional limitation, as mentioned above, the Chamber is nevertheless granted wide-reaching jurisdiction when it comes to providing advisory opinions. The Chamber may give such opinions only at the request of either the Assembly or the Council on virtually all and any legal questions arising within their scope.[243]

Until recently the Chamber had never actual been in session nor used any of its complex structures. No application had ever been submitted, nor any procedures instigated by the Authority or its organs.[244] To date no procedures have yet to be given with regard to Art. 187, though the Chamber has recently given a single advisory opinion, subject to Art. 191.

On the 1st of February 2011 the Chamber gave its very first Advisory Opinion, namely; on Responsibilities and Obligations of States sponsoring persons and entities with respect to activities in the Area.[245] The submitted questions attain to:

> a) the legal responsibilities and obligations of States Parties to the Convention with respect to the sponsorship of activities in the Area in accordance with the Convention, in particular Part XI, and the 1994 Agreement,
>
> b) the extent of liability of a State Party for any failure to comply with the provisions of the Convention, in particular Part XI, and the 1994 Agreement, by an entity whom it has sponsored under Article 153, paragraph 2 (b), of the Convention and
>
> c) the necessary and appropriate measures that a sponsoring State must take in order to fulfil its responsibility under the Convention, in particular Article 139 and Annex III, and the 1994 Agreement.[246]

The Chamber noted in its reply that:

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[241] UNCLOS Art. 189.
[242] See: Merill, J.G: *International Dispute Settlement*, p. 202.
[243] UNCLOS Art. 191.
[244] Leifsson, P.D.: "Yfirlit um lausn deilumála á sviði hafréttar samkvæmt Hafréttarsáttmála Sameinuðu þjóðanna", p. 372.
[245] Case 17. Responsibilities and obligations of States sponsoring persons and entities with respect to activities in the Area. Residing: President Tullio Treves; Judges Marotta Rangel, Nelson, Chandrasekhara Rao, Wolfrum, Yanai, Kateka, Hoffmann, Gao, Bouguetaia, Golitsyn.
[246] ITLOS/Press 161. 1 February 2011.

a) The obligation to ensure compliance by sponsored contractors with the terms of the contract and the obligations set out in the Convention and related instruments. This is an obligation of "due diligence". The sponsoring State is bound to make best possible efforts to secure compliance by the sponsored contractors.

b) Direct obligations with which sponsoring States must comply independently of their obligation to ensure a certain conduct on the part of the sponsored contractors. Compliance with these obligations may also be seen as a relevant factor in meeting the "due diligence" obligation of the sponsoring State.

c) The Convention requires the sponsoring State to adopt, within its legal system, laws and regulations and to take administrative measures that have two distinct functions, namely, to ensure compliance by the contractor with its obligations and to exempt the sponsoring State from liability. The scope and extent of these laws and regulations and administrative measures depends on the legal system of the sponsoring State. Laws and regulations and administrative measures should be in force at all times that a contract with the Authority is in force. The existence of such laws and regulations, and administrative measures is not a condition for concluding the contract with the Authority; it is, however, a necessary requirement for carrying out the obligation of due diligence of the sponsoring State and for seeking exemption from liability.[247]

5 Regulations and recommendations

5.1 In general[248]

As the Assembly is the "supreme organ"[249] of the Authority, it falls within its competence to formally adopt rules governing sea-bed mining, this is includes specific technical requirements and standards.[250] Here, this chapter is intended to give a slight overview over those regulations that the Assembly has approved, as well as well as looking into recommendations on technical matters and even matters concerning administrative issues.

All of these regulations and recommendations have been adopted and implemented as general rules, regulations and procedures of the Authority.

Currently there are three sets of regulations that have been formally adopted by the Assembly on behalf of the Authority. All of these regulations relate directly and exclusively to the prospecting and exploration of mineral resources in the Area, all of which have been recently amended. These are as stated below:

The Regulations on Prospecting and Exploration for Polymetallic Nodules in the Area (approved on 13 July 2000 and amended on 25 July 2013).[251]

The Regulations on Prospecting and Exploration for Polymetallic Sulphides in the Area (approved on 7 May 2010 and amended on 25 July 2013).[252]

[247] ITLOS/Press 161. 1 February 2011.
[248] *Consolidated Regulations and Recommendations on Prospecting and Exploration*, p. 6.
[249] "Fact Sheet: The International Seabed Authority Structure and Functioning"
[250] Churchill, R.R., Lowe, A.V.: *The Law of the sea*, p. 240.
[251] ISBA/6/A/18; ISBA/19/A/9 and ISBA/19/A/12.

The Regulations on Prospecting and Exploration for Cobalt-rich Ferromanganese Crusts in the Area (approved on 27 July 2012 and amended on 25 July 2013).[253]

The abovementioned regulations represent the conclusive legislative element of the legal regime within the Area, as stipulated in Part XI and Annexes III and IV of the 1982 Convention and the 1994 Implementation Agreement of Part XI.[254] The flexibility of being able to operate a regulatory mechanism in order to implement the regime, as described, is of great importance in such an international environment.

The regulations allow for legal matters that concern specific interests and differing situations to be address, allocated and referred to (within the context of the 1984 Convention) by contractual means. This means that contractors conducting activities in the Area by licence of the Authority may be bound by special regulatory force.

Likewise, as with the regulations and their adoption by the Assembly, it falls within the competence of the Legal and Technical Commission of the Authority to issue detailed guidelines, or recommendations, that are intended to be of practical guidance to contractors in the Area. These recommendations aim at assisting the contractors in their implementation and application of the rules, regulations and procedures stipulated to them by the Authority:

Recommendations for the guidance of contractors for the reporting of actual and direct exploration expenditures as required by annex 4, section 10, of the Regulations on Prospecting and Exploration for Polymetallic Nodules in the Area.[255]

Recommendations for the guidance of contractors for the assessment of the possible environmental impacts arising from exploration for marine minerals in the Area.[256]

Recommendations for the guidance of contractors and sponsoring States relating to training programmes under plans of work for exploration.[257]

5.2 Regulations

The preambles of the regulations are alike, as they all state that in accordance with the Convention, "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

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[252] ISBA/16/A/12/Rev.1 and ISBA/19/A/12.
[253] ISBA/18/A/11 and ISBA/19/A/12.
[254] *Consolidated Regulations and Recommendations on Prospecting and Exploration*, p. 6. See also: UN Doc. A/RES/48/263, Annex.
[255] ISBA/15/LTC/7.
[256] ISBA/19/LTC/8.
[257] ISBA/19/LTC/14.

and exploitation of which shall be carried out for the benefit of mankind as a whole, on whose behalf the International Seabed Authority acts."[258]

These preambles are important as the objectives of these regulations are aimed at providing regulatory frameworks for prospecting and exploration of Polymetallic Nodules, Polymetallic Sulphides and Cobalt-rich Ferromanganese Crusts. These natural resources represent the purpose of the activities of those entities intent on using resources that are classified as part of the common heritage of mankind for commercial reasons, therefore it is important to state forthright of what is the nature of these resources and who should benefit from their exploitation.

5.2.1 Themes and emphasis within the regulations

The structures of the regulations are simple in the sense that they are an overview of certain themes important to the exploration and exploitation of minerals in the Area. Practical limitation hampers the full discloser of every element of the regulations. However, blow is an overview of their main subjects:

1) Introduction – Use of terms and scope of the regulation. Special notice that the regulation does not affect freedom of scientific research[259] or the freedom of the high seas[260]. Notice of possible supplements to the regulation.[261]

2) Prospecting - Dealing with the issues of prospecting stating that such activities should be conducted in accordance with the Convention and the regulations. Furthermore, emphasis is placed on the fact that both Prospectors and the Authority should apply a precautionary approach, as is stated in principle 15 of the Rio Declaration on Environment. There is also an obligation that no undertaking should begin if substantial evidence indicates that there is risk of serious harm to the marine environment. Exploration and prospecting confers no property rights or any other such rights with respect to resources. However, the prospectors are allowed to recover a reasonable quantity of minerals, being the quantity necessary for testing and not for commercial use.[262]

3) Notification of prospecting - A proposed prospector shall notify the Authority of its intention to engage in prospecting.[263]

4) Protection and preservation of the marine environment during prospecting - Obliging each prospector to take measures to prevent, reduce and control pollution and other hazards to the marine environment arising from prospecting and apply a precautionary approach and best environmental practices.[264]

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[258] ISBA/19/C/17.
[259] UNCLOS Art. 87, 143, 256.
[260] UNCLOS Art. 87
[261] Reg. 1.
[262] Reg. 2.
[263] Reg. 3.
[264] Reg. 5.

5) Administrative paper work – The production of an annual report from the prospector. The issue of confidentiality of data and information from prospecting contained in the annual report are specially addressed. In case of new developments or discoveries there is an obligation to immediately notify the Secretary-General in writing, such as the discovery o objects of an archaeological or historical nature.[265]

6) Applications for approval of plans of work for exploration in the form of contracts - Only the Enterprise, on its own behalf or in a joint arrangement, or States parties, State enterprises or natural or juridical persons which possess the nationality of States or are effectively controlled by them or their nationals may apply to the Authority for approval of plans of work for exploration. The regulations refer to the content of such an application, the sponsorship of States, as well as issues concerning financial and technological capabilities of the applicant as well as an obligation to disclose previous undertakings. The regulations also note the process in which developing States or entities sponsored or controlled by them may apply submit a plan of work for exploration with respect to a reserved area.[266]

7) Data and information to be submitted for approval of the plan of work for exploration[267]

8) Fee for applications - The fee for processing an application for approval of a plan of work for exploration is 500,000 United States dollars.[268]

9) Processing of applications – The Secretary-General gives the applicant a receipt and acknowledges the safe custody of the applications. The application is then subject to the consideration of the Legal and Technical Commission. In light of the Commission's findings the application is given to the Council for consideration and approval of plans of work for exploration.[269]

10) Contracts – Following the approval of the Council a contract according to the regulations is drawn up to further control and legalise the activities of the prospective contractor. The contracts are intended to deal with;

    a. The rights of the contractor, stating that the contractor is to have exclusive right to explore an area covered by a plan of work for exploration in respect of certain minerals.
    b. The Authority is obliged to ensure that other entities do not operate on the same site in such a way that might hinder or interfere with the contractors operations; this of course is only applicable when other contractors are operating on the same site exploring other resources (minerals).
    c. The size of the area allocated to the contractor must be stated, shall not exceed 150.000 km2. The contractor´s obligation to relinquish portions of the area allocated to it after a given half-time.
    d. The duration of contracts – plan of work for explorations is generally intended to be valid for a period of 15 years.
    e. The obligation of the contractor to provide training, pursuant to Art. 15 of Annex III of the Convention. This refers to the obligation to include a practical training programme, intended to train both the personnel of the Authority as well as personnel representing developing States. Such programmes are to be designed and concluded by the contractor in cooperation with the Authority and the sponsoring State or States.

[265] Reg. 6-7.
[266] Reg. 9-16.
[267] Reg. 17-20.
[268] Reg. 21.
[269] Reg. 22-24.

Such training programmes aim to export know-how concerning the technical conduct of exploration. Training programmes may be subject to revision and change, according to agreements between parties.[270]

11) Periodic review of the implementation of the plan of work for exploration – Following a contract is a periodical review and evaluation of the plan of work by the Authority. A number of issues may arise over the general 15 years. For example: issues of sponsorship termination are very relevant to the status of the contractor. The contractor is required to have sponsorship throughout the period of the contract. Any termination of such sponsorship on behalf of the State, must be shall promptly notify by writing to the Secretary-General. The former sponsor must also inform of the reasons for terminating its sponsorship. The contractor then has the opportunity to obtain a new sponsor. Failing to obtain a new State sponsor within the required time period signifies a breach of contract on behalf of the contractor and hence the termination of it.[271]

12) Responsibility and liability - Both the contractor as well as the Authority retain legal contractual responsibility and liability. Such responsibilities and liabilities are to be in accordance with the Convention. When the exploration phase of the contract has been completed, the contractor retains his responsibility for any possible damages that may arise later, due to wrongful acts in the conduct of its explorative procedures; emphasis being placed on damages to the marine environment.[272]

13) Protection and preservation of the marine environment – This includes, for example:

    a) The establishment and monitoring of environmental baselines and monitoring. All contracts must require the contractor to gather data to establish environmental baselines. Such baselines are to be decided on by taking into account relevant recommendations published by the Legal and Technical Commission.
    b) The immediate observance of emergency orders.[273]

14) Confidentiality of data and information – In light of the commercial nature of the operations there must be procedures to ensure confidentiality of data and information that are premature or important for industrial reasons. It falls to the Secretary-General to be responsible for maintaining this confidentiality. The Secretary-General may not, except with the written consent of the contractor, release or disclose any data or any information pertaining to the operation to persons or entities outside of the Authority.[274]

15) Recommendations for the guidance of contractors – It is the role of the Legal and Technical Commission to issue recommendations concerning matters of a technical and/or administrative character. These recommendations are intended for the guidance of contractors. These recommendations aim at assisting the contractors in their implementation and application of the rules, regulations and procedures stipulated by the Authority.[275]

16) Settlement of disputes - The disputes that concern the interpretation or application of the regulations are to be resolved in accordance with Part XI, section 5, of the Convention. The regulations echo Art. 39 of the Annex VI, Sec. 4., stating that any decision rendered by the

[270] Reg. 25-29.
[271] Reg. 30-31.
[272] Reg. 32.
[273] Reg. 33-35.
[274] Reg. 38-39.
[275] Reg. 41.

Chamber[276] is to be enforceable in the territory of the State party to the Convention concerned.[277]

17) Resources other than those natural resources contracted - If a prospector or contractor finds resources in the Area other than the specific resource sought – example: finding polymetallic nodules at a sulphate site – any "prospecting and exploration for and exploitation of such resources shall be subject to the rules, regulations and procedures of the Authority relating to such resources in accordance with the Convention and the Agreement. The prospector or contractor shall notify the Authority of its find."[278]

5.2.2 Annexes

Each of the regulations carries a number of annexes. These annexes contain contractual formats and checklists that applicants and contractors may use if interested in exploration within the Area. Below is a list of these practical annexes, as found accompanying the Regulations:

Annex I - Notification of intention to engage in prospecting

Annex II - Application for approval of a plan of work for exploration to obtain a contract

Annex III – Standard contract for exploration

Annex IV - Standard clauses for exploration contract

5.2.3 Amendment

All three of the current regulations concerning the mining of the deep seabed were amended on 25th of July 2013 by a single decision of the Assembly of the International Seabed Authority.[279]

This amendment concerned the introduction of overhead charges for the administration and supervision of exploration contracts. The Assembly decided to amend the regulations on the basis of the recommendation of the Finance Committee.[280] The Assembly took into account Annex, Sec. 8 og the Implementation Agreement of Part XI as well as the decision adopted by the Council on 26 July 2012 relating to the status of fees paid for the processing of applications for approval of plans of work for exploration and related matters.[281]

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[276] "[…]a court or tribunal having jurisdiction under the Convention relating to the rights and obligations of the Authority and of the contractor[…]", see: Brown, E.D.: *Sea-bed Energy and Minerals: Sea-bed Mining*, p. 148.
[277] Reg. 42.
[278] Reg. 43.
[279] ISBA/19/A/12.
[280] ISBA/19/A/7-ISBA/19/C/11.
[281] ISBA/19/C/16.

Effectively, the amendments to the regulations institute a fixed overhead charge of $ 47.000, to be payable annually by each "contractor in respect of each of its contracts with the Authority to cover the costs of the administration and supervision of the contract and of reviewing its annual report provided in accordance with the contract"[282]. The amendment also amends the standard clauses for exploration contracts,[283] as seen in the annexes, to accommodate the overhead charge of $ 47.000.[284]

5.3 Recommendations

As abovementioned, it is the Legal and Technical Commission of the Authority that publishes recommendations intended as practical guidance to contractors. At the time of writing, there have been three recommendations made by the Commission on three specific matters. The recommendations are in directly linked to the regulations.

The first of these recommendations is the 2009 recommendations for the reporting of actual and direct exploration expenditures as required by annex 4, section 10, of the Regulations on Prospecting and Exploration for Polymetallic Nodules in the Area.[285] The recommendation concerns the financial accountancy of the contractor, stipulating and recommending how the accountancy should be conducted and the preferred presentation of financial information. It also pertains to the meaning of "actual and direct exploration expenditure", as referred to in the Regulation. As well as the certification of financial statements by a duly qualified firm of public accountants, , or, where the contractor is a State or a state enterprise, by the sponsoring State, as required by the standard clauses of the exploration contracts.[286]

The second recommendation is from 2013 and contains guidance for contractors as to the assessment of the possible environmental impacts arising from exploration for marine minerals in the Area.[287] The reason for the recommendations was the assumed need for guidelines to direct and "describe the procedures to be followed by contractors in the formation of baseline data, and the monitoring to be performed during and after any activities in the exploration area with potential to cause serious harm to the environment". [288] The Commission notes in its recommendation that the purpose of the baseline data is:

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[282] ISBA/19/A/12.
[283] By the addition of sections 10.5 and 10.6.
[284] ISBA/19/A/12. See: Annex.
[285] ISBA/15/LTC/7.
[286] ISBA/15/LTC/7, p. 4.
[287] ISBA/19/LTC/8.
[288] ISBA/19/LTC/8, p. 3.

(a) To define the biological, chemical, geological and physical components to be measured and the procedures to be followed by contractors to ensure effective protection for the marine environment from harmful effects which may arise from the contractors' activities in the Area;
(b) To facilitate reporting by contractors;
(c) To provide guidance to potential contractors in preparing a plan of work for exploration for marine minerals in conformity with the provisions of the Convention, the 1994 Agreement relating to the implementation of Part XI of the United Nations Convention on the Law of the Sea and the relevant Regulations of the Authority.[289]

The recommendation likewise describes the environmental impact assessment, its importance, scientific requirements and activities that require such assessments prior to the activity being carried out. This includes the obligation of the contractor to observe and collect data.[290]

The third and final recommendation is also from 2013 and is intended to give guidance to contractors and sponsoring States relating to the obligatory training programme, under plans of work for exploration.[291] There are four components that the recommendations cover, all of which are attain to the design and implementation of training programmes.[292] These components are:

(a) The process of reviewing and approving the proposed training programmes submitted by applicants for plans of work for exploration;
(b) The content of the training programmes, including participation by sponsoring States;
(c) The process of allocating training applicants to training opportunities;
(d) Procedures for reporting on training activities.[293]

In the introduction to the recommendation, the Commission states that:

The fundamental importance of international technical and scientific cooperation with regard to activities in the Area, including training of personnel of the Enterprise and nationals of developing States, is recognized in articles 144 and 148 of the United Nations Convention on the Law of the Sea as read with section 5 of the annex to the Agreement relating to the implementation of Part XI of the Convention.[294]

[289] ISBA/19/LTC/8, p. 3.
[290] ISBA/19/LTC/8, p. 6.
[291] ISBA/19/LTC/14.
[292] ISBA/19/LTC/14, p. 1.
[293] ISBA/19/LTC/14, p. 1.
[294] ISBA/19/LTC/14, p. 1.

6 The prevention of marine pollution from mining in Area

6.1 In general

The history of marine pollution in general is a dismal reminder of the often short mindedness and ignorant fashion in which human endeavours are frequently carried out. Prior to the late 1960s there seems to have been no great concern or obvious interest in legal action or legislation in order to prevent marine pollution in any specific way.

A series of unfortunate and serious incidences have been needed to awaken both governments as well as the general public to the potential devastating impact of anthropogenic activities in and on the oceans. A series of accidental events concerning a number of oil tankers, namely the Torrey Canyon spill in 1967, the Amoco Cadiz spill in 1978, Exxon Valdez spill in 1989 and the Sea Empress spill in 1996,[295] are examples of high-profile oil spills in which the ships ran ground spilling vast amounts of crude oil and other contaminates directly into the delicate ecosystems surrounding oceanic and coastal areas. Coupled with the devastating leaks and blow outs of oil wells, such as the North Sea incident of Ekofisk in 1977 and the Mexico-bay incident of Ixtoc I in 1979, followed by the scientific discovery of DDT pesticide in fish stocks, shell fish and seabirds, these occurrences have for the past forty years reminded those in government and power of the importance of preventing marine pollution[296], however and perhaps more importantly, it has reminded the general public of the threat our human activities have on such delicate ecosystems. The public opinion, in return, reminds commercial operators of their responsibilities.[297]

Deep sea mining is most certainly not exempt from the matters of marine pollution; in fact, the question of marine pollution seems particularly potent when considering the nature and location of such operations.

6.2 Sea bed mining and pollution

As with all mining operations, the very nature of such activity means the displacement of various natural resources that previously would not have been disrupted in such a manner. The dislocation of solid natural material, in the instance of sea bed mining; often minerals and/or metallic resources, as well as the possible introduction of foreign waste material and

[295] See: Ornitz, B.E., Champ, M.A.: *Oil Spills First Principle: Prevention and Best Response*. Elsevies. Oxford 2002.
[296] Churchill, R.R., Lowe, A.V.: *The Law of the Sea*, p. 328
[297] An example of public opinion in such matters is the Deepwater Horizon oil spill. See: King, R.O.: *Deepwater Horizon Oil Spill Disaster: Risk, Recovery, and Insurance Implication*. Diane Publishing. USA 2010.

or exposure to chemicals or mineral compounds otherwise settled, is a potential source for environmental hazard ad pollution.[298]

For the sea bed ecosystem the main threats of pollution arrive from mining operations and waste disposal. Already, waste disposal aimed at the sea bed involves the disposal of radioactive waste, pollution from offshore structures, munitions, sludge and dredge spoils. In recent years there have been serious plans considering the introduction of vast amounts of carbon dioxide gases to the sea bed in order to mitigate against an increase in greenhouse gases and achieve proposed standards. Possible negative impact of mining on the sea bed includes the removal or unsettling of benthic substrate and the effect of mechanical stress on soft bottom communities and life forms, the occurrence of sediment plumes and introduction or release of toxic material and or foreign organic material.[299]

In the 3rd edition of their book, ´The Law of the Sea´ in 1999, Churchill and Lowe note that "some pollution may result from the mining of manganese nodules in the international-sea-bed area, but until commercial production begins it is difficult to assess what the impact of this will be", later they note in a following footnote; "the International Sea Bed Authority is in the course of assembling baseline data in order to monitor the environmental impact of sea-bed mining, and is trying to predict what impact will be."[300]

The Authority adopted the Regulations on Prospecting and Exploration for Polymetallic Nodules in the Area in 2000, a year after the above mentioned comment.[301] The regulation helped create a comprehensive procedural and regulatory framework for the protection of the Area. The regulations bind both prospective and current contractors that intend or have contracted with the Authority in order to explore or exploit polymetallic nodules.

The Legal and Technical Committee has since then, on the basis of work done by the Sanya Workshop in 1998 and the Standardization Workshop in 2001, made recommendations that assist contractors in their environmental impact assessments concerning such nodule exploration. These recommendations are now standard procedure within the Authority.[302] These recommendations form the bases of the baseline parameters used to assess environmental impact on the Area. In the Legal and Technical Committee´s

[298] Ahnert, A., Borowski, C.: "Environmental risk assessment of anthropogenic activity in the deep sea", p. 299-315.
[299] Ahnert, A., Borowski, C.: "Environmental risk assessment of anthropogenic activity in the deep sea", p. 299.
[300] Churchill, R.R., Lowe, A.V.: *The Law of the Sea*, p. 330.
[301] See: "Fact Sheet: Protection of the Seabed Environment".
[302] Ibid.

recommendations the following checklist is intend for seabed explorers to form the baseline parameters:

- Physical oceanographic data, including current, temperature and turbidity (suspended sediment) data, on the seafloor and in the water column where mining discharge are contemplated.
- Chemical oceanographic data on the water column.
- Sediment properties from prospective mine sites, including soil mechanics that will determine how mining is likely to redistribute the sediment.
- Biological communities at and above the seabed, including samples from the differing topography, sediment types and nodule distribution patterns in which the organisms live, with records of any trace metals in dominant species. Animals of all sizes down to the microscopic are to be covered, including fauna living in, on and around nodules, demersal scavengers, pelagic organisms and sightings of marine mammals, as well as temporal variations.
- Bioturbation, as animals mix sediment by moving about.
- The flow of solid materials rom the upper waters to the deep sea.[303]

The Authority itself claims that when dealing with environmental protection in the matter of mining polymetallic nodules it tends to looks towards three specific aspects.

Firstly, it wishes to find out which exploration activities will have actual environmental impact and how much that impact will have on the environment.

Secondly, the Authority hopes to formulate a baseline in order to measure the state of the environment prior to activity and how changes in the environment could or should be monitored.

Finally, the Authority has sought to discover which type of research is needed to follow the natural and anthropogenic effects.[304] Due to the novelty of mining commercially in the Area, emphasis seems to be placed more on the effects of exploration than exploitation, as the former is a more present subject matter.

6.3 Pollution prevention

In general we must first look to UNCLOS Art. 145 when we devise what legal regime governs pollution prevention from mining in the international sea bed area. The article, suitably named; protection of the marine environment[305], directs and provides that the International Seabed Authority shall adopt appropriate rules, regulations and procedures for inter alia the prevention of pollution from mining in the international sea bed area, the article

[303] Ibid.
[304] Ibid.
[305] See UNCLOS Art. 145.

particularly notes such activities as; "drilling, dredging, excavation, disposal of waste, construction and operation or maintenance of installations, pipelines and other devices related to such activities."[306]

Churchill and Lowe seem to correctly deduce, in their aforementioned book, that within the context and framework of the International Seabed Authority and in light of the fact that the wording of Art. 145 of LOSC, namely the section stating "rules, regulations and procedures", relates directly to the rules, regulations and procedures in relation to prospecting, exploration and exploitation in the Area, with reference to Art. 17 of Annex III and paragraph 5(k) of Section 1 of the Annex to the 1994 Implementation Agreement of Part XI of LOSC, implying that it is within the role of the Legal and Technical Commission of the International Seabed Authority to produce such preventive legal measures.[307] Even so, such legislation needs be made with consideration of formal adoption by the Council and Assembly, with reference to LOSC Art. 160(2)(f), 162(2)(o), 165(2)(e), as well as consideration of the work of PrepCom.[308]

Previously, such general rules, regulations and procedures on pollution prevention from mining in the international sea bed area comprised of the "Draft Regulations on Prospecting and Exploration of Polymetallic Nodules in the International Seabed Area", which had been prepared by the Legal and Technical Commission in 1998.[309]

Furthermore, Art. 209 of LOSC concerning pollution from activities in the Area, notes that States shall adopt laws and regulations in order to prevent marine pollution within the Area, a legal instrument no less effective than International Sea Bed Authority legislation.[310]

6.4 Legal enforcement of pollution prevention in the Area

There are a number of provisions within LOSC that in one way or the other emphasise who and how the enforcement of pollution regulations in the Area should be upheld. The primary starting point in the examination of such provisions is Art. 215 of LOSC, termed "Enforcement with respect to pollution from activities in the Area". The article states that any enforcement of regulations to "prevent, reduce and control pollution" from activities in the Area should be in accordance to provisions of Part XI as well as governed by that specific

[306] See UNCLOS Art. 145.
[307] Churchill, R.R., Lowe, A.V.: *The Law of the Sea*, p. 378.
[308] Section 1, paragraph 16, 1994 Implementation Agreement.
[309] ISBA/3/LTC/WP.1 and ISBA/10/WP.1.
[310] UNCLOS Art. 209. See also: Churchill, R.R., Lowe, A.V.: *The Law of the Sea*, p. 378.

Part. Unfortunately, Part XI does not contain or state any provisions concerning enforcement at all.

However, if we direct our attention to the articles 138 and 139 of LOSC, there seems to be a possibility to deduce issues of enforcement from matters of compliance and liability for damages. Churchill and Lowe state that; "Article 139 of the Law of the Sea Convention suggests that in respect of activities by companies, whether private or State-owned, enforcement will be by the State whose nationality the company bears; and in respect of activities by the Enterprise enforcement will be by the Enterprise and the Authority. It should be noted, however, that even in respect of non-Enterprise operations the Authority appears to have residual enforcement powers."[311]

This is also in accordance to the wording of provisions in Art. 153, concerning the system of exploration and exploitation in the Area. In Art. 153(4) it is maintained that it is the Authority´s obligation to "exercise such control over activities in the Areas as is necessary for the purpose of securing compliance with the relevant provisions […]".[312] This would seemingly include preventive measures against pollution.

Moreover, when considering with the enforcement of pollution regulations in the Area in the context of LOSC, we must also look to the powers and function of the Council of the Authority, the details of which are listed comprehensively in Art. 162 of LOSC. Within the powers and function of the Council, in regard to deep sea mining, we must direct our attention specifically to 162(2)(l), 162(2)(w), 162(2)(x) and 162(2)(z). These articles note that the Council may; "exercise control over activities in the Area in accordance with article 153, paragraph 4, and the rules, regulations and procedures of the Authority"[313], "issue emergency orders, which may include order for the suspension or adjustment of operations, to prevent serious harm to the marine environment arising out of activities in the Area"[314], "disapprove areas for exploitation by contractors or the Enterprise in cases where substantial evidence indicates the risk of serious harm to the marine environment"[315] and "establish appropriate mechanisms for directing and supervising a staff of inspectors who shall inspect activities in the Area to determine whether this Part, the rules, regulations and procedures of the Authority, and the terms and conditions of any contract with the Authority are being

[311] Churchill, R.R., Lowe, A.V.: *The Law of the Sea*, p. 378.
[312] UNCLOS Art. 153.
[313] UNCLOS Art. 162(2)(l).
[314] UNCLOS Art. 162(2)(w).
[315] UNCLOS Art. 162(2)(x).

complied with."[316] Furthermore, the Council may with reference to Art. 165(2)(c) request that the Legal and Technical Commission supervise activities in the Area where appropriate.[317] Concerning the Council´s ability to disapprove areas for exploitation on ground of potential harm to the environment, it should be mentioned within an application to the Authority for approval of a plan of work, an environmental impact assessment must accompany any such applications in accordance of para. 7 of Section 1 of the 1994 Agreement.[318]

Annex III, or Basic Conditions of Prospecting, Exploration and Exploitation, contains specific articles and provision that are framed in such a way that they aid the enforcement and safeguard compliance with the Authority´s conditions and regulations concerning preventing pollution due to activities in the Area. Art. 2(1)(b) of Annex III stipulates that prospecting shall only be conducted after a satisfactory written undertaking has been received by the Authority that clearly states that the proposed prospector intends to comply with UNCLOS as well as the Authority´s relevant rules, regulations and procedures concerning, amongst others, the protection of the marine environment, and that the Authority may verify the prospector´s subsequent compliancy.[319] The prospector may only operate exploration or exploitation activities within the Area on the bases of a contract between the prospector entity and the Authority. Within such a contract the conditions concerning pollution prevention would be fully obligatory and enforced to the full extent of the Authority´s powers.[320]

7 Bioprospecting

7.1 In general

Historically, we have virtually only been able to comprehend the potentials of oceanic resources and benefits based our usage and exploitation of the actual water column itself. Nevertheless, in our most recent history, as has been described before, we have realized the potential of mineral resources on the ocean floor, via seabed mining, both within and beyond national jurisdiction, and we have taken important steps towards regulating its exploration and exploitation through a specialised international legal regime, which has been covered in the above chapters.

In the past 30 years or so anthropogenic activities aimed at exploration of the oceans and especially of the ocean floor has quickly developed. This burst of activity goes hand-in-

[316] UNCLOS Art. 162(2)(z).
[317] UNCLOS Art. 165(2)(c).
[318] See paragraph 7 of Section 1 of the 1994 Agreement.
[319] Art. 2(1)(b) of Annex III.
[320] Art 3 and 4 of Annex III.

hand with the rapid technological improvements and advancements made in the past decades. What has followed is an accumulation of scientific data and knowledge of previously unseen and unknown seabed areas.[321]

Since our first scientific exploration of the ocean floor and our consequential discovery of commercially viable polymetallic nodules on the abyssal plain, we have also discovered industrial grade manganese crusts and sulphide deposits. The bi-product of these discoveries has been unearthing the possibilities of commercial bio-prospecting in areas beyond national jurisdiction, namely the Area. This represents a new and modern usage of the oceans in a way unthinkable only a few decades ago and made possible only due to technological developments and new scientific understanding of the natural world.

Bioprospecting of the seabed, like current mineral seabed mining, is aimed at detecting commercially viable natural resources. In this instance the focus is on living and genetic[322] compounds found in or on the seabed. What attract both scientific as well as commercial interests are the extraordinary chemical, biological and physiological characteristics and compositions of those living organisms that not only survive but thrive in the extreme environment on and around the seabed.[323] This environment would generally speaking be considered hazardous to life, such as; extreme external pressures, extreme cold or even extreme heat, an environment void of any source of sunlight and seriously lacking in other resources thought vital and necessary to sustain biological life.[324]

The nature and abilities of those life forms found living in the Area represent potential genetic resources that may be of tremendous commercial value and of use in a number of industrial applications that serves the ever-growing human consumption and demand. Ranging from everything from the cosmetic industry, to the food industry, to the pharmaceutical industries, there are a number of interesting ways to apply the living resources of the Area:[325]

> The discovery of hyperthermophilic Bacteria and Archaea, which are adapted to the extreme conditions at hydrothermal vents, opens new ways for biotechnology. The ability of their enzymes to work under high temperatures and high/low pH values, makes them interesting for molecular biology to food and chemical processing, pharmaceutical production, and toxic

[321] Arico, S, Salpin, C.: *UNU-IAS Report, Bioprospecting of Genetic Resources in the Deep Seabed: Scientific, Legal and Policy Aspects*, p. 8.
[322] The terms ´living´ and ´genetic' are to be used inter-changeably in this dissertation.
[323] An example of such life forms would be extremophiles.
[324] Arico, S, Salpin, C.: *UNU-IAS Report, Bioprospecting of Genetic Resources in the Deep Seabed: Scientific, Legal and Policy Aspects*, p. 8.
[325] Arico, S, Salpin, C.: *UNU-IAS Report, Bioprospecting of Genetic Resources in the Deep Seabed: Scientific, Legal and Policy Aspects*, p. 8.

> waste reduction. Well-known is the production of DNA-parts for the Polymerase Chain Reaction (PCR).[326]

It is very easy to hypothesise and envision a future where the exploitation of living resources becomes a commercial force, with capabilities to seriously affect our existence, especially if such resources have pharmaceutical applications. It is equally easy to predict that the current technology will develop at an exponential rate if such resources are in fact commercially valuable. If this actually happens, one might expect an enthusiastic increase in scientific knowledge and research that will further our current knowledge of oceanic ecosystems in general. This knowledge is needed so that we may better understand how to conserve our natural resources as well as exploit them in such a manner that it may be sustainable, or at least as sustainable as possible. These views are not only held by futurists, but also by international bodies and national governments:

> At the start of the 21t century, the industrial world stands on the edge of a new revolution The industries of the future will tap increasingly into the materials and processes in plants, animals and microorganisms. They will draw on the chemicals and genetic material of the world´s biological resources to provide new feedstocks and modes of manufacture.[327]

> [t]he topic [i.e. the issue of access to the genetic resources of the deep seabed] touches not only on the protection and preservation of the marine environment, including that of the international seabed area, but also on such matters as the operation of the consent regime for marine scientific research, (…), the duties of conservation and management of the living resources of the high seas, the sustainable development of the living resources of the high seas and the sustainable development of living marine resources generally. The specific issue of access points to the need for rational and orderly development of activities relating to the utilization of genetic resources derived from the deep seabed area beyond the limits of national jurisdiction.[328]

Presently, there are considerable fears of a looming gold-rush, of sorts, in which the exploration and exploitation of potentially valuable living resources beyond national jurisdiction becomes a free-for-all industrial and technological race with unknown consequences, both geo-politically as well as legally. At present, there seem to be a serious legal vacuum concerning bio-prospecting in the Area. Even though one might detect a patchwork of separate legal provisions that are applicable, the lack of a specific and

[326] Korn, H., Friedrich, S., Feit, U.: *Deep Sea Genetic Resources in the Context of the Convention on Biological Diversity and the United Nations Convention on the Law of the Sea*, p. 24.
[327] “Bioprospecting: Discoveries Changing the Future”, p. 6.
[328] UN Doc. A/51/645. See also: UNEP/CBD/SBSTTA/8/INF/3/Rev.1.

international legal regime on the matter of bio-prospecting may prove to be a fundamental issue in the coming years and decades. [329]

7.2 Biodiversity and living resources in the Area[330]

7.2.1 Hydrothermal vents

On active mid-ocean ridges, fracture zones, seamounts, back-arc basins and subduction zones, there are areas of high temperature geothermal/volcanic release vents. In short, these are vents that are formed due to the pressure of internal hydrothermal from within the Earth´s core.

Releasing hot hydro fluids as well as an abundance of other natural material, for example minerals, the vents themselves as well as their surrounding area become a heaven in an otherwise hazardous seabed. This expulsion of heat and materials attracts a profusion of different life forms. These populations are powered by the biochemical process of chemosynthesis. Chemosynthetic life is considerably rare in nature and the discovery of these vent-based populations on the seabed was considered a major scientific discovery. These particular creatures have evolved to exploit chemicals in an extreme environment, lending to the belief that their exact chemical composition and biological function may be of great commercial interest:[331]

> The main characteristic of hydrothermal species is their tolerance to extreme conditions and their very peculiar physiology. These organisms mostly belong to the domain Archaea – an evolutionary branch that is separate from those of Bacteria and Eukarya. Archaea's adaptation mechanisms to extreme toxicity, pressure, temperature and pH values make them particularly attractive to industry and the pharmaceutical sector.[332]

There are a number of threats to these vents and issues over their exploration and exploitation. Those anthropogenic actions most affecting known hydrothermal vents are in fact the marine scientific research that is conducted on and around the vent systems themselves. With a limited number of known hydrothermal vents, both within national jurisdiction and beyond, the considerable sampling and human instrument usage in these areas have already been documented as having adverse effect on the ecosystem and ecology.

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[329] "Bioprospecting for Marine Genetic Recources in Areas Beyond National Jurisdiction, An Update on International Regulatory Developments in the UN". *Beveridge & Diamond P.C. Client Alert.*

[330] See in general: Fedder, B.: *Marine Genetic Resources, Access and Benefit Sharing: Legal and Biological Perspectives*.

[331] UNEP/CBD/SBSTTA/8/INF/3/Rev.1, p. 34, para 3.

[332] Arico, S, Salpin, C.: *UNU-IAS Report, Bioprospecting of Genetic Resources in the Deep Seabed: Scientific, Legal and Policy Aspects*, p. 10

With the onset of future investigations these activities may need to be mitigated.[333] Bioprospecting hydrothermal vents will require large amounts of biological material in order to make such ventures economically feasible, most likely to the determent of the ecology. Technical developments in areas such as molecular biology and synthetic biochemistry may lessen the need for large quantities.[334]

7.2.2 Seamounts

Seamounts are actual submerged mountains, formed in the very same manner as land based mountains via volcanic eruptions or tectonic plate movements. They are an interesting feature in the ocean forming often steep or even vertical lifts from the deep seabed. Their physical characteristics mean that they are able to develop a distinct ecosystem and ecology on their surfaces. With little sediment they are believed to carry hydrothermal vents as well as mineral crusts. Estimations range the number of seamounts to be around 30.000 in the Pacific Ocean and around 800 in the Atlantic Ocean.[335] Due to their prominence on the seafloor they may act as a magnet on a vast amount of biological life, especially as their structures allow for oceanic-currents from top to bottom supplying nutrients. This may make the seamounts a biological epicenter for living resources. Seamounts are known to attract large schools of fish and their upper-parts closer the shallower levels of the water column are recoded to have corals and a magnitude of different life forms; sponges, invertebrates etc.:[336]

> One study conducted in six seamounts along the Norfolk Ridge and four seamounts belonging to the Lord Howe Rise, both located between New Zealand and Australia, demonstrated that an increased sampling effort revealed an increase in species richness. This indicates that the number of seamount species yet-to-be discovered is much larger than that already discovered.[337]

For reasons of bioprosepecting and or mineral mining, seamounts offer a vast opportunity, with a richness in living resources as well as the potential for manganese crusts. Nonetheless, trawler fishing has had serious negative effect on known seamounts in the past decades. Heavily fished seamounts have seen drastic drops in biomass and biodiversity.[338]

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[333] UNEP/CBD/SBSTTA/8/INF/3/Rev.1, p. 34, para 4.
[334] UNEP/CBD/SBSTTA/8/INF/3/Rev.1, p. 34, para 5.
[335] UNEP/CBD/SBSTTA/8/INF/3/Rev.1, p. 35, para 8.
[336] UNEP/CBD/SBSTTA/8/INF/3/Rev.1, p. 35, para 9.
[337] Arico, S, Salpin, C.: *UNU-IAS Report, Bioprospecting of Genetic Resources in the Deep Seabed: Scientific, Legal and Policy Aspects*, p. 11.
[338] UNEP/CBD/SBSTTA/8/INF/3/Rev.1, p. 35, para 10 and 11.

7.2.3 Deep sea coral reefs

A common feature in nearly all oceans of the world deep sea coral reefs occur at depths between only a few meters to thousands of meters in depth. As with all coral reef, deep sea coral reefs form calcium carbonate crusts that form the basis of a coral colony:[339]

> Deep-sea cold-water corals can be found in small isolated colonies as well as in ancient reefs, sometimes as massive carbonate mounds up to 300 m high […]These structures consist of a cap of living coral on top of a framework of dead skeletons. These structures provide habitats for other species that form the communities of the ecosystems[340]

Trawling has been a decisive factor in the destruction of such reef areas. The North-East Atlantic Ocean has been specifically documented as an example of large scale coral has been destroyed. It is believed that these deep sea coral deep may be vital in the development of biotechnology as well as yielding biological and chemical products for industrial usage, such as substances that may be used as a more environmentally friendly alternative to current raw material, such as heavy metals. Carbonate reefs are associated with the formation of hydrocarbon compounds and as such are explored and exploited for their potential petroleum deposits.[341]

7.2.4 Cold seeps and pockmarks

Cold seeps and pockmarks are similar in nature to hydrothermal vents. They differ however in the fact that they only discharge fluids at relatively low temperatures. The seepage occurs in the bubbling of gas as well as microscopic and/or hydrocarbon leakage, while its fluids are hydrocarbon, hydrothermal and/or volcanic in origin. There is also the possibility that the seepage is nothing more than ground water that has found its way out under the seabed. The seeps and pockmarks support a wide variety of life forms, though they are mainly chemosynthetic in nature. The fauna is not very diverse, but it is extremely specific to its location and rarely found elsewhere, or endemic.[342] The endemism of life around seeps and pockmarks means that its ecology is of great biotechnological interest. The singular natural development around these specific areas means that the genetic information found there, in life forms such as bacteria and fauna, is unique:

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[339] UNEP/CBD/SBSTTA/8/INF/3/Rev.1, p. 35, para 16-20.
[340] *Valuing the Deep: Marine Genetic Resources in Areas Beyond National Jurisdiction,* p. 48-49.
[341] UNEP/CBD/SBSTTA/8/INF/3/Rev.1, p. 35, para 16-20.
[342] UNEP/CBD/SBSTTA/8/INF/3/Rev.1, p. 37, para 24.

Similar to the bacteria at vent sites, seeps may contain novel genes useful to the biotechnology industry, e.g. the bioremediation of oil pollution. Furthermore, seepages are of interest to the petroleum industry and patents already exist for the harvest of seepage minerals on the seabed. Thus, potential and actual threats to these exceptional ecosystems come from benthic trawling or destructive scientific research.[343]

7.2.5 Benthic ecology

Ecologically speaking, the region that encompasses the seabed and includes the sediment and sub-sedimentary layers is called the benthic zone. Living organisms that exist within this ecological zone are called benthos. Benthic organisms[344] are commonly divided by;

Size:

a) Macrobenthos - Organisms that are larger than 1 mm. Example: polychaete worms, bivalves, echinoderms, sea anemones, corals, sponges, sea squirts, turbellarians and crustaceans.[345]
b) Meiobenthos - Organisms that are smaller than 1 mm but larger than 0.1 mm. Examples: nematodes, foraminiferans, water bears, gastrotriches and smaller crustaceans such as copepods and ostracodes.[346]
c) Microbenthos - Organisms that are smaller than 0.1 mm in size. Examples: bacteria, diatoms, ciliates, amoeba, flagellates.[347]

Type:

a) Zoobenthos - Actual animals[348]
b) Phytobenthos - Plants belonging to the benthos, like seaweed (benthic diatoms and macroalgae)[349]

Location:

a) Endobenthos – Benthos that are buried, or burrow in the seabed. Commonly found in the oxygen rich top layer.[350]

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343 Korn, H., Friedrich, S., Feit, U.: *Deep Sea Genetic Resources in the Context of the Convention on Biological Diversity and the United Nations Convention on the Law of the Sea,* p. 19. See also: Hovland, M., Judd, A.G: *Seabed Pockmarks and Seepages. Impact on Geology, Biology and the Marine Environment, p.* 293.

344 Paddy R: “Deep-sea creatures - Sea-floor life”. Te Ara - the Encyclopedia of New Zealand. URL: http://www.TeAra.govt.nz/en/deep-sea-creatures/page-4. Retr. 1 May 2015. See also: Yip, M., Madl, P.: “Benthos” University of Salzburg. URL: http://biophysics.sbg.ac.at/rovigno/rovigno2.htm. Retr. 1 May 2015.

345 Mulligan C.N, Fukue M., Sato Y: *Sediments Contamination and Sustainable Remediation*, p. 30.

346 See: Giere, O: *Meiobenthology. The microscopic motile fauna of aquatic sediments (2nd ed).*

347 Fumas, M.J.: "In situ growth rates of marine phytoplankton: approaches to measurement, community and species growth rates", p. 1117–1151.

348 Bonsdorff, E., Laine, A.O., Hannien, J., Vuorinen, I., Norkko, A.: “Zoobenthos of the outher archipelago waters (N.Baltic Sea) – the importance of local conditions for spatial distribution patterns”.p. 135-145.

349 Steele, J.H., Thorpe, S.A., Turekian, K.K.: *Elements of Physical Oceanography: A derivative of the Encyclopedia of Ocean Sciences,* p. 140.

350 Barrows, E.M: *Animal Behavior Desk Reference: A Dictionary of Animal Behavior, Ecology, and Evolution (3rd ed.)***,** p. 107.

b) Epibenthos - Benthos that live on top of the seabed. Organisms like sea cucumbers or a sea snails fall within this category.[351]
c) Hyperbenthos – Benthos organism that live above the seabed, in the water column, but in such connection to the ecosystem of the seabed that they are considered part of the ecology.[352]

Benthos organisms often live in close proximity to each other and form a distinct as well as diverse ecosystem, regardless whether they are permanently attached to the seabed or mobile. The biological ecology of benthic zones is subject to benthic boundary layer, which is the layer of water directly above the seabed. The characteristics of the boundary layer is based on the friction or pressure between it and the sedimentary material that form the seabed, such as; sand, rocks, corals or mud.[353]

8 UNCLOS and bioprospecting

8.1 The legal status of living resources in UNCLOS

Neither of the terms ´genetic resources´ or ´marine biological diversity´ are to be found within the UNCLOS. Nonetheless, in the very beginning of the Convention, as it is stated in the Preamble, the States parties recognize the importance and desirability of establishing through the Convention a legal order for the seas and oceans, which will facilitate, among other objectives, the conservation of their living resources.[354] Furthermore, the Preamble also notes that the State parties "solemnly declared *inter alia* that the area of the sea-bed and ocean floor and the subsoil thereof, beyond the limits of national jurisdiction, as well as its resource, 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 locations of States."[355]

In both of the abovementioned paragraphs of the Preamble, the term ´resources´ is employed as a central concept to the purpose and object of the Convention. The preceding paragraph actually uses the term ´living resources´, a term equal to that of genetic resources. In light of the 1966 Vienna Convention on the Law of Treaty, that states that a treaty shall be

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[351] Barrows, E.M: *Animal Behavior Desk Reference: A Dictionary of Animal Behavior, Ecology, and Evolution (3rd ed.)*, p. 107.
[352] An example of a Hyperbenthos would be Rock Cod.
[353] Ritzrau, W.: "Activity in the Benthic Boundary Layer: Small-Scale Distribution and its Relationship to the Hydrodynamic Regime", p. 171-180.
[354] UNCLOS Preamble, para 3. See original text: "Recognizing the desirability of establishing through this Convention, with due regard for the sovereignty of all States, a legal order for the seas and oceans which will facilitate international communication, and will promote the peaceful uses of the seas and oceans, the equitable and efficient utilization of their resources, the conservation of their living resources, and the study, protection and preservation of the marine environment,"
[355] UNCLOS Preamble, para 6.

interpreted in light of its object and purpose, we may be assured that living resources, in general, fall within the scope of the Convention,[356] this of course being subject to the actual provisions of the convention in question.

When discussing terminology and/or conceptual interpretation of UNCLOS provisions, it is essential that we take notice of the fact that the nature of specific terms and concepts, found within the provisions, follow the "the specific characteristics of the resources and activities known at the time of its negotiation".[357] Interpretational methodology, such as for example; evolutionary interpretation theory, may result in differing understandings of the conceptual meaning. [358] As an example, an evolutionary interpretation of the provisions would support the opinion that the concept ´living resources´ equals that of ´genetic resources´.

8.2 Living resources outside of the Area

8.2.1 The continental shelf

Outside of the Area and within the national jurisdiction, we must look towards Part VI of the Convention to realise the legal regime of resources, including living resources, on the seabed and within the subsoil.

Importantly, Part VI establishes the continental shelf of a coastal State.[359] It maintains that the continental shelf covers the seabed and subsoil "of the natural prolongation of its land territory to the outer edge of the continental margin or to a distance of 200 nautical miles from the baseline from which the breadth of the territorial sea is measured where the outer edge of the continental margin does not extend up to that distance."[360] It is further noted that the continental shelf, as presented within Part VI, does not extend to the deep ocean floor, oceanic ridges or the subsoil thereof.[361]

While the exact delimitation of the continental shelf is discussed in Art. 76(4), it is in Art.76(5) that we observe that, under certain conditions, the continental shelf may be extended as far as 350 nautical miles from the baseline.[362] Art. 77, concerning the rights of the coastal State over the continental shelf states that:

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[356] See: Art.31 of the 1966 Vienna Convention on the Law of Treaty.
[357] UNU-IAS Report - Bioprospecting of Genetic Resources in the Deep Seabed: Scientific, Legal and Policy Aspects, p. 30.
[358] Arico, S, Salpin, C.: *UNU-IAS Report, Bioprospecting of Genetic Resources in the Deep Seabed: Scientific, Legal and Policy Aspects*. p. 30. See also: Spanó, R.R., *Túlkun lagaakvæða*, p. 59-92.
[359] UNCLOS Art. 76(1).
[360] UNCLOS Art. 76(1).
[361] UNCLOS Art. 76(3).
[362] See: Churchill, R.R., Lowe, A.V.: *The Law of the Sea*, p. 142.

> 1. The coastal State exercises over the continental shelf sovereign rights for the purpose of exploring it and exploiting its natural resources.
> 2. The rights referred to in paragraph 1 are exclusive in the sense that 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.
> 3. The rights of the coastal State over the continental shelf do not depend on occupation, effective or notional, or on any express proclamation.
> 4. The natural resources referred to in this Part consist of the mineral and other non-living resources of the seabed and subsoil 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.[363]

The most interesting aspect of the article is the fact that paragraph 4 stipulates and establishes a benchmark within UNCLOS, or at least for the purposes of Part VI, as to the very nature and meaning of the term ´living resources´. The paragraph organises living resources as:

1. Belonging to sedentary species, organisms that are;
    a. immobile on or under the seabed or,
    b. unable to move except in constant physical contact with the seabed or the subsoil.
2. Being of a harvestable stage.

As has been discussed in earlier chapters those organisms that are found in places such as hydrothermal vents and cold seeps fall under the category of sedentary species. These species represent the type of living resources that have caught the interest of prospective bioprospectors. The reason for this being their highly evolved biochemical and biological composition, which may hold the keys to unlocking potentially new biotechnological innovations as well as evolve pharmaceutical products.[364]

Prior to 1953, minerals were the only resources considered to be subject to any continental shelf regime by the International Law Commission (herein after ILC). This meant that sedimentary species, and any living resources for that matter, did not fall under the same regime as the continental shelf and its accompanying mineral resources. In 1953 the ILC changed the definition of the continental shelf resources from “mineral resources” to “natural resources”, this broadened the term ´resources´ considerably. The reason for this change was

[363] UNCLOS Art. 77
[364] Arico, S, Salpin, C.: *UNU-IAS Report, Bioprospecting of Genetic Resources in the Deep Seabed: Scientific, Legal and Policy Aspects*, p. 30. See also: Farrier, D., Tucker, L.: “Access to Marine Bioresources: Hitching the Conservation Cart to the Bioprospecting Horse”, p. 213-239.

that the ILC considered that the constant contact to the actual seabed by sedentary species was such that it warranted a rational change.[365]

8.2.2 The exclusive economic zone and the high seas

It is noteworthy that, those living resources that do not fall under the scope found in Art. 78(4), that is to say "belonging to sedentary species, […], 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",[366] and are therefore situated within the water column above the continental shelf are subject to a whole different regime, based on the delimitation of oceanic areas.

Though it is not within the scope of this dissertation, it is important to mention in passing the legal status of living resources within the exclusive economic zone (herein after: EEZ) as well as on the hgh seas, in order to ease the discussion of the legal status of living resources within the Area.

Living resources within the EEZ, falling under the regime of Part V, are subject to the sovereign rights of the coastal State. As stated in Art. 56(1)(a), the coastal State has sovereign rights for the purpose of exploring and exploiting natural resources, including living resources, of the waters superjacent to the sea-bed and of the sea-bed and its subsoil.[367]

Living resources within the high sea´s water column, falling under the regime of Part VII, are subject to wide-reaching and expansive exploration and exploitation entitlements of States acting under the freedom of the high seas principle.[368] This freedom, though subject to flag State jurisdiction in matters of administrative, technical and social issues[369], is nevertheless also bound by the provisions of Section 2 of Part VII, concerning the conservation and management of the living resources of the high seas. Most importantly, under Section 2, States have a duty to adopt measures for the conservation of living resources of the high seas with respect to their national measures.[370]

They likewise have a duty to co-operate with other States in the management and conservation of living resources.[371] These measures are specifically designed exclusively towards non-sedentary species (fish and mammals) and do not specifically look to those

[365] Pfirter, F.M.A: "The Management of Seabed Living Resources in "the Area" under UNCLOS", p. 19-20.
[366] UNCLOS Art. 77(4).
[367] UNCLOS Art. 56.
[368] UNCLOS Art. 87.
[369] UNCLOS Art. 94.
[370] UNCLOS Art. 117.
[371] UNCLOS Art. 118.

different species that fall under the living resources concept of Art. 77(4) and are commonly found on the seabed or within the subsoil.[372]

8.3 Living resources within the Area

8.3.1 An overview of Art. 133

As has been mentioned before in this dissertation, the Area, in the context of the Convention, falls under the regime of Part XI, followed by specific provisions of the 1994 Implementation Agreement.

In Section 1 of Part XI under the terms of ´General Provisions´, the term resources is restricted to a specific type of natural resources. According to the Section 1 the term ´resources´, for the purpose of Part XI, are to be understood to mean all solid, liquid or gaseous mineral resources *in situ* in the Area at or beneath the seabed, including polymetallic nodules.[373] When such resources have been recovered from the Area they are specifically to be referred to as ´minerals´[374].

Consequently, any living resources, as understood by direct textual interpretation of the provisions of Art. 133, do not fall within the scope of Part XI. Not only does the Section 1 provide for the general provisions to be adhered to within Part XI as a whole, but the very phrasing of Art. 133(a) states; "For the purpose of this Part:". Hence, any attempt to broaden the comprehension of the text, for example; via an evolutionary interpretational theory, would be countered by direct textual interpretation. To this extent it is interesting to remark on the history of Art. 133, Pfirter has noted that:

> 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. […] 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.[375]

Importantly, by concluding that living resources are excluded from the provisions and scope of Part XI it is assumed that living resources within the Area are likewise excluded

[372] UNCLOS Art. 119.
[373] UNCLOS Art. 133(a).
[374] UNCLOS Art. 133(b).
[375] Pfirter, F.M.A: "The Management of Seabed Living Resources in "the Area" under UNCLOS", p. 13.

from the principle of the common heritage of mankind, the principle being presented in Art. 136 as including the Area and its resources.[376] Subsequently, the exploitation of living resources within the Area would also be excluded from any obligation to be conducted for the benefit of mankind. In general the rational principle of *expressio unius est exclusio alterius*[377] seems to apply to the issue at hand.

The majority of scholarly literature on the subject seems to concur with a textual based interpretation of Art. 133. Notably, Churchill and Lowe state that “[b]oth the Area itself, which comprises about sixty per cent of the whole sea bed, and its resources (limited by article 133 to mineral resources) are the ´common heritage of mankind´.”[378] They continue by stating, in an accompanying footnote, that “[l]iving resources and other non-mineral resources (e.g., thermal energy) remain subject to the regime of the high seas.” Similarly, Korn, Friedrich and Feit state that “[t]he resources of the Area include ´all solid, liquid or gaseous mineral resources *in situ* in the Area at or beneath the seabed, including polymetallic nodules´. Living marine resources are not included.”[379]

8.3.2 Contrary interpretations of Art. 133

Some would maintain that the provisions of Art. 133, and therefore also other related provisions within Part XI, are not limited by the direct or immediate understanding found in Art. 133(a), concerning which natural resources are subject to the provisions of the Part. Namely, that such ´resources ‘are limited to non-living mineral resources.[380]

Progressive in theory, such interpretations often take a more classical view of interpretation theory, referring generally to Art. 31(1) of the 1969 Vienna Convention on the Law of Treaties (herein after the 1969 Vienna Convention). [381] The 1969 Vienna Convention Art. 31(1) stipulates that there are three distinct bases for the interpretation of treaty terms. These three bases being:

a) the context of the term in question,
b) the object of the treaty and

[376] UNCLOS Art. 136.
[377] Meaning; the expression on one fact/thing excludes the alternative.
[378] Churchill, R.R., Lowe, A.V.: *The Law of the Sea*, p. 238.
[379] Korn, H., Friedrich, S., Feit, U.: *Deep Sea Genetic Resources in the Context of the Convention on Biological Diversity and the United Nations Convention on the Law of the Sea*, p. 28.
[380] In the next chapter there will be a more comprehensive overview of different views between the State parties, concerning the legal status of living resources. See chapter 8.5.
[381] Artem, B.: *The Role of the International Seabed Authority in the regime of the protection of the living resources within Areas Beyond National Jurisdiction*, p. 20.

c) the purpose of the treaty.[382]

Based on this, those that would consider a broad interpretation of the provision of Art. 133 look to go beyond the text of the treaty and look towards the actual object and purpose of the 1984 Convention itself and place the term ´living resources´ equal to ´mineral resources´ within the Area and subject to the regime proposed within Part XI.[383]

8.3.3 The context of Art. 133

Such interpretations are often rationalised by emphasising that the limitations of Art. 133 are not unconditional, and that the Convention does mention ´natural resources´, a far broader concept than ´mineral resources´ as belonging to the Area. Art. 145 highlights that activities in the Area should be conducted with respect to protecting the marine environment. This includes that necessary measures be taken with respect to activities in the Area for effective protection of the marine environment The Authority is to adopt appropriate rules, regulations and procedures *inter alia* 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.[384]

Hence, some would interpret Art. 133 as not limiting the type of resources applicable under Part XI [385] This argument is however weakened by the fact that Art. 145 does not adhere to the regime found within Part XI, which is specifically intended, among other things, to manage the exploration and exploitation of the Area.

8.3.4 The object and purpose of the Convention in light of its Preamble

Treaties are to be interpreted in aim of its object and purpose.**[386]** The object and purpose of a treaty indicates those goals and considerations "that motivated the drafting and ratification of

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[382] See: Jonas, D., Saunders, T., "The object and purpose of a treaty: Three interpretive methods".

[383] Artem, B.: *The Role of the International Seabed Authority in the regime of the protection of the living resources within Areas Beyond National Jurisdiction*, p. 20.

[384] UNCLOS Art. 145(b).

[385] Elferink, O.: "The Regime of the Area: Delineating the Scope of Application of the Common Heritage Principle and Freedom of the High Seas", p. 152. See: Artem, B.: *The Role of the International Seabed Authority in the regime of the protection of the living resources within Areas Beyond National Jurisdiction*, p. 20-21.

[386] 1969 Vienna Convention Art. 31(1): "A treaty shall be interpreted in good faith in accordance with the ordinary meaning to be given to the terms of the treaty in their context and in the light of its object and purpose."

a treaty".[387] These considerations are generally to be found under the Preamble of the treaty in questions, which denotes the ´desires´, ´aspirations´, etc. of those that draft the actual text itself.[388]

Those seeking a broad or all-inclusive interpretation as to what resources fall within the regime of Part XI, the Area and the common heritage principle often remind others of the perspective found in the Preamble to UNCLOS, especially paragraph 6 that states:

> 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.[389]

The paragraph significantly only refers to resources, without limiting the concept to mineral resources. Such resources are furthermore to be the common heritage of mankind. This may be seen in contrast to Art. 133 and the disparity in wording coupled with this object and purpose of the convention is perceived to be in favour of a broad understanding of resources.

Nevertheless, it seem that those in favour of such interpretations disregard the notion that the resources denoted in paragraph 8 of the Preamble are the resources of the Area, as described by Part XI, which limits the such resources to mineral resources, leaving the prior argument weak, especially in light of supporting evidence to the contrary by the text of Art. 133.

The question of interpreting and applying the term ´resources´ is heated due to the fact that State tend to remain divided between industrially developed States on one hand, capable of exploration and exploitation, and developing States on the other, neither financially or technically capable of exploration or exploitation, this even though many of the purported developing States have gained industrial capabilities.

This schism is nowhere as well reflected as in the different policies held on the legality and the purpose of the common heritage principle. On one hand, there is the interest to limit the reach of the Area solely to mineral resources, allowing other resources, such as living resources, to fall outside Part XI. Such an understanding means that living resources would be considered to fall under Part VII, or the freedom of the high seas. On the other

[387] Jonas, D., Saunders, T.: "The object and purpose of a treaty: Three interpretive methods", p.581.
[388] In the instance of UNCLOS see its Preamble.
[389] UNCLOS, Preamble, para 6.

hand, there are those, mainly developing States, that are interested in extending the reach and application of the Area and hence Part XI to embrace other resources than only mineral resources in an effort to widen the scope of the common heritage principle and secure any resources, living or otherwise, so that the benefits deriving from their exploitation are equitably shared under a benefit sharing system.[390]

8.4 Living resources within the scope of the 1994 Implementation Agreement

The 1994 Implementation Agreement,[391] as well as its Annex, does not discuss the issues of what resources fall within the scope of Part XI, noting only the term ´resources´ in general and in the same context as in Part XI. In its preamble the Agreement states:

> Reaffirming that the seabed and ocean floor and subsoil thereof, beyond the limits of national jurisdiction (hereinafter referred to as "the Area"), as well as the resources of the Area, are the common heritage of mankind.[392]

The purpose and the objective of the Agreement seem always to have been aimed at realising targeted aspirations towards a mining regime within the Area, beyond anything else. The possibility of other resources than mineral resources seems to have been largely, if not entirely, ignored both in the negotiation and the adoption of the Agreement.[393]

State parties at the negation rounds of the Agreement were mindful of the importance of facilitating universal participation to the Convention[394] and believed that an agreement relating to the implementation of Part XI would best meet that objective.[395] Therefore it is likely that there may have been an emphasis on allowing controversial issues to lay dormant and focus instead on matters that may be agreed to.

By further examining the actual text of the Agreements and its Annex and subsections, it becomes clear that the goal is to create an implementation instrument exclusively intended towards facilitating mineral mining. The matter of commercial mineral mining was at the forefront in a report given by the Secretary-General concerning the outstanding issues relating to the deep seabed mining provisions of the United Nations

[390] See: Lehmann, F.: “The Legal Status of Genetic Resources of the Deep Seabed”, p 43-44.
[391] *“Agreement relating to the implementation of Part XI of the United Nations Convention on the Law of the Sea of 10 December 1982 Overview, 21 July 2010”* URL: http://www.un.org/depts/los/convention_agreements/convention_overview_part_xi.htm. Retr. 1 May 2015.
[392] 1994 Implementation Agreement, Preamble, para 2.
[393] Drankier, P.: “Marine genetic resources in Areas beyond National Jurisdiction: Access and Benefit-Sharing”, p. 403. See also: Hayes, M. “Charismatic Microfauna: Marine Genetic Resources and the Law of the Sea”, p. 688-689.
[394] 1994 Implementation Agreement, Preamble, para 6.
[395] 1994 Implementation Agreement, Preamble, para 7.

Convention on the Law of the Sea from the 9th of June 1994.[396] The report formed what was to be understood as the informal consultations of the State parties. The Secretary-General noted:

> Prospects for commercial mining of deep seabed minerals had receded into the next century, which was not what was envisaged during the negotiations at the Third United Nations Conference on the Law of the Sea.[397]

If this is any indication to the purpose or objective of the Agreement it must be concluded that it aimed specifically at providing instrumental implementation in favour of mineral mining and consequently mineral resources. Harrison states that:

> the instrument [the Agreement] has had an indirect law-making impact on all states by establishing and consolidating an exclusive regime for the exploration and exploitation of minerals in the International Seabed Area.[398]

This is in line with other similar statements which conclude unequivocally that living resources are not contained within the scope of the Agreement.[399]

8.5 Applicable legal regime and the Ad Hoc Open-ended Informal Working Group

The issue of whether the exploration and exploitation of living resources within the Area is subject to the same legal regime as the exploration and exploitation of mineral resources, has been at the fore-front of discussions at an international level.

By analysing and reviewing the discussions that have been taking place within the United Nations we are able to glimpse the differing views concerning the legal status of living resources on the seabed outside of national jurisdiction, views that might best be described as contradictory to each other.[400]

Since 2005, the United Nations has sponsored an Ad Hoc Open-ended Informal Working Group tostudy issues relating to the conservation and sustainable use of marine biological diversity beyond areas of national jurisdiction (herein after: Ad Hoc Working Group).[401]

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[396] UN Doc. A/48/950.
[397] UN Doc. A/48/950, para 2.
[398] Harrison, J: "*Developments in the deep seabed mining regime*", p. 90.
[399] See for example: Drankier, P.: "Marine genetic resources in Areas beyond National Jurisdiction: Access and Benefit-Sharing", p. 403.
[400] See: Artem, B.: *The Role of the International Seabed Authority in the regime of the protection of the living resources within Areas Beyond National Jurisdiction*. p. 16-18.
[401] "Ad Hoc Open-ended Informal Working Group to study issues relating to the conservation and sustainable use of marine biological diversity beyond areas of national jurisdiction". Division for Ocean Affairs and Law of

In 2006, at the 61st Session of the Ad Hoc Working Group differing view where expressed as to the actual nature of the legal regime covering the issue of exploiting living resources within the Area. Some of the delegations noted that:

> [I]n accordance with their understanding of the principle of the common heritage of mankind, access to genetic resources in the deep seabed beyond areas of national jurisdiction should be, in principle, like the mineral resources in the Area, subject to the sharing of benefits based on consideration of equity.[402]

To this extent they highlighted the symbiotic relationship that living ("genetic") resources had with mineral (non-living) marine resources and other living resources in the water column.[403] This same group of delegations further stated that:

> [A] regulatory mechanism, including the adoption of improved norms and/or an implementing agreement to the Convention, may become necessary to clarify such matters as the relationship between marine scientific research and bioprospecting. A regulatory mechanism could also address the question of access to those resources and legal options for benefit-sharing, including non-monetary benefits, international cooperation in marine scientific research through the exchange, sharing and dissemination of information on research programmes, their objectives and results, and cooperation in the transfer of technology. The mandate of the Authority, which currently covered the protection of the marine environment, including biodiversity, under article 145 of the United Nations Convention on the Law of the Sea, could potentially be expanded to deal with all issues relating to deep-sea biodiversity, including genetic resources. In this regard, an objection was expressed to any provisions purporting to grant free access or unrestricted freedom of exploitation of genetic resources beyond areas of national jurisdiction. Several delegations referred to bioprospecting, calling for a definition of both marine scientific research and of bioprospecting. Others were of the idea that it was not necessary to differentiate between the two activities. Any development of a regulatory framework should not be developed in isolation from wider provisions for the conservation and sustainable use of marine biodiversity.[404]

At the same session other delegations noted that "that any measures that may be taken in areas beyond national jurisdiction must be consistent with international law".[405] Furthermore, within this specific group of delegations the understanding was expressed that:

> [T]he [living] resources were covered by the regime of the high seas, under part VII of the Convention. They argued that there was no legal gap with respect to living resources in areas beyond national jurisdiction and that the freedoms of the high seas were applicable to activities relating to marine genetic resources. On this basis, they did not see the need for a

the Sea. URL: http://www.un.org/depts/los/biodiversityworkinggroup/biodiversityworkinggroup.htm. Retr. 1 may 2015.

402 UN Doc. A/61/65, para 29.

403 UN Doc. A/61/65, para 29.

404 UN Doc. A/61/65, para 29.

405 UN Doc. A/61/65, para 30.

new regime to address the exploitation of marine genetic resources in areas beyond national jurisdiction or to expand the mandate of the International Seabed Authority.[406]

Additionally some delegations were of the opinion that there was a need for further clarification with regard to the actual legal status of living resources in the seabed and subsoil of the Area.[407]

Five years later at the 66th Session of the Ad Hoc Working Group a letter, dated the 30th of June 2011, was sent from the Co-Chairs of the Ad Hoc Working Group to the President of the General Assembly.[408] The letter stipulated a number of understandings of various delegations as well as noting that there had been little discussion since the 61st Session on the subject of ´genetic resources´ in the Area. There was still a clear distinction between those delegations that believed that the common heritage principle should apply to living resources in the same manner as non-living resources and those that outright denied that the common heritage principle could be applied to anything but mineral resources of the Area.[409] Interestingly a number of delegations were recorded to note that:

> the overall goal of the international community should be the conservation and sustainable use of marine biodiversity beyond areas of national jurisdiction. They underlined that the "first come, first served" approach existing on the high seas was counterproductive and undermined sustainability. The view was also expressed that a link existed between the common heritage of mankind and the conservation and preservation of the marine environment.[410]

This seems to assume a considerably broadminded understanding of the common heritage principle as not only concerned with benefit sharing, but also conservation and preservation. [411]

At the 67th Session, in 2012, delegations still stuck to diverging opinions on the nature of the legal regime applicable to living resources in the Area. New reasoning was nevertheless given in order to strength each view. Those delegations that believed that living resources fall within the concept of the common heritage principle made specific note of the location and the governance of different maritime zones, stating that:

> the regulation of activities in the oceans and use of their resources depended on the maritime zones in which they were conducted or found. The resources of the seabed and ocean floor

[406] UN Doc. A/61/65, para 30.
[407] UN Doc. A/61/65, para 31.
[408] UN Doc. A/66/119.
[409] UN Doc. A/66/119, para 15, 16.
[410] UN Doc. A/66/119, para 17.
[411] UN Doc. A/66/119, para 17.

> beyond areas of national jurisdiction, including the living resources, were, therefore, resources of the Area and the principles enshrined in Part XI of the Convention were also applicable to marine genetic resources from the Area. In this respect, attention was drawn to the responsibilities entrusted to the International Seabed Authority with regard to marine scientific research and the protection of the marine environment.[412]

Some noted the opinion and reminded other delegations, that in the absence of a legal regime the exploitation of living resources within the Area by only a few States might have" serious global economic and social implications and was not consistent with general principles of international law, in particular those on equity."[413]

The matter of diverging opinions continued and at the 69th Session in 2014, a letter, dated the 35th of July 2014, was sent from the Co-Chairs of the Ad Hoc Working Group to the President of the General Assembly.[414] In the letter´s general considerations a mass of differing opinions was expressed. Some delegations reiterated the importance of the Convention as the legal framework for addressing, amongst other things, sustainable use of living resources ("marine biodiversity") in the Area.[415] This seems to have prompted a number of delegations to declare the 1984 Convention to be the legal framework by which all activities must be carried out. Others reminded of the importance of the common heritage principle and bluntly stated that it applied to living resources within the Area. One delegations went as far as going on record noting that any opinion expressed to the contra – that the common heritage principle was applicable – faced the burden of proof and had to indicate what other options were more "appropriate to avoid the tragedy" of the *res communis*.[416]

Matters concerning the possibility of a new "instrument under the Convention" were discussed. Many delegations thought that an international instrument in the form of an implantation agreement was needed "to effectively address issues related to the conservation and sustainable use of marine biodiversity beyond areas of national jurisdiction."[417] Other believed that the existing implementing agreements to the 1984 Convention, that is to say; Agreement relating to the implementation of Part XI and the United Nations Fish Stocks Agreement, should be utilized in order to identify and respond to new challenges, such as living resources within the Area (though this was of course noted in a wider context).[418] One

412 UN Doc. A/67/95, para 15.
413 UN Doc. A/67/95, para 16.
414 UN Doc. A/69/177
415 UN Doc. A/69/177, para 12.
416 UN Doc. A/69/177, para 12.
417 UN Doc. A/69/177, para 13.
418 UN Doc. A/69/177, para 15.

delegation recorded that their understanding was that any new legal instrument should be limited to addressing legal gaps and not implementation gaps.[419] What follows in the letter is an all-out wish list made by the delegations to the session under the speculative appellation; “Scope, parameters and feasibility of an international instrument under the United Nations Convention on the Law of the Sea“.[420]

Concerning any views on the differing legal views or actual legal and regulatory gaps, it was stated that:

> In relation to legal and regulatory gaps, several delegations highlighted the legal gap in relation to marine genetic resources, including questions relating to the sharing of benefits. Some delegations believed that only legal gaps in the current framework for relevant activities should be addressed in an international instrument, such as in relation to marine genetic resources. In their view, this would exclude issues relating to fisheries, for which the Convention, the United Nations Fish Stocks Agreement and regional fisheries management organizations and arrangements provided the legal framework. In particular, it was noted that regional fisheries management organizations and arrangements already had the mandate to implement area-based management tools, including marine protected areas, both in relation to particular stocks and the effects of fishing activities on vulnerable marine ecosystems in the high seas. Some other delegations indicated that, in the light of the impact of fishing activities on marine biodiversity and the need to implement an ecosystem approach, such activities should be included in an international instrument. Another suggestion was made that existing fisheries-related instruments and organizations could be further utilized to minimize impacts of fishing activities on the conservation and sustainable use of marine biodiversity in areas beyond national jurisdiction.[421]

That matter of a supposed legal framework for such an instrument was also discussed and understandings recorded. The majority of delegations seem to have acknowledged that the 1984 Convention provided the base for any legal framework for “an international instrument governing the conservation and sustainable use of marine biodiversity in areas beyond national jurisdiction“.[422] The same delegations also noted that even though the term “biodiversity” does not apply to the 1984 Convention, the convention does nevertheless look to and address issues of living resources and other forms of marine life, which make up ecological biodiversity.[423] Beyond the 1984 Convention the delegations make notice of the United Nations Convention on Biological Diversity as an important legal text in the usage of living resources in the Area, stating that:

[419] UN Doc. A/69/177, para 16.
[420] UN Doc. A/69/177, para 23.
[421] UN Doc. A/69/177, para 25.
[422] UN Doc. A/69/177, para 29.
[423] UN Doc. A/69/177, para 29.

> Some delegations also underscored that the two implementing agreements to the Convention also formed part of this legal framework along with other relevant instruments, including Agenda 21, as well as the Convention on Biological Diversity and the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from Their Utilization thereto. It was suggested, in particular, that the definition of biodiversity contained in the Convention on Biological Diversity could be used in the context of a new implementing agreement.[424]

There seems that been emphasis placed on the fact that the supposed international instrument was not intended to "duplicate the existing legal framework, but rather complement the Convention and fill gaps in governance and legal and regulatory gaps by strengthening and further elaborating existing provisions and operationalize relevant principles found in the Convention and customary international law."[425]

To date, there is no clear consensus or well-defined standing on the applicable legal regime when it comes to the exploration and exploitation of living resources in the Area, even though there are both clear cut and ambiguous provisions to be found in current legal frameworks, especially within the 1984 Convention and the Convention on Biological Diversity, which will be discussed later. The 69th Session in 2014 has been instrumental in placing the matter at the forefront, though it may be that it has entangled itself with new legal as well as political issues deriving from the conceptual understanding of biological diversity, this remains to be seen.

At the 69th Session of the Ad Hoc Working Group, in 2015, a letter, dated the 13th of February 2015, reviewed the outcome of the Ad Hoc Open-ended Informal Working Group to study issues relating to the conservation and sustainable use of marine biological diversity beyond areas of national jurisdiction and Co-Chairs' summary of discussions. [426] The letter is the final report from the Ad Hoc Working Group, concluding the fulfilment of its mandate to provide recommendations to the General Assembly, as requested in paragraph 214 of resolution 69/245.[427] The overall conclusion was positive and there are recommendations concerning a variety of possible ways forward, though most seem focussed on creating a new international instrument with regards to the 1984 Convention. Nonetheless, if the 2015 letter is read carefully there still seems to be an underlying divergence of opinion between States. One might not be at fault if one concluded that in fact nothing seems to have changed in any major way, especially concerning the positions certain delegations have towards the issue.

[424] UN Doc. A/69/177, para 29.
[425] UN Doc. A/69/177, para 30.
[426] UN Doc. A/69/780.
[427] UN Doc. A/69/780, p.1.

However, one does note that since the 2006 session the terminology and conceptual usage has moved from the terms ´genetic-´, ´natural-´ and/or ´living resources´, and now concentrated on the concepts of biological diversity and sustainable use, at least within the context of the discussions reported. The continuing divergence between States is notable in paras 12-14 of the 2015 letter. There it is stated that:

> Many delegations reiterated that the status quo was not acceptable and considered that there was growing momentum to recommend to the General Assembly that it decide to launch negotiations to develop an international instrument under the Convention. They considered that the elaboration of such an instrument was feasible from a political, legal and technical standpoint. In their view, the instrument would have to be negotiated on the basis of, and address, the package of issues agreed upon in 2011 in resolution 66/231, namely marine genetic resources, including questions on the sharing of benefits, measures such as area-based management tools, including marine protected areas, and environmental impact assessments, capacity-building and the transfer of marine technology. Many delegations supported negotiating such an instrument as a legally binding agreement under the Convention. Several delegations underlined that a third implementing.[428]

This is countered by the opposite camp within the Ad Hoc Working Group. This group of delegations left with the impression that the discussions had not been exhausted and that more could have been done. These delegations believed that matters concerning issues relating to the conservation and sustainable use of ´marine biological diversity´ beyond areas of national jurisdiction, including the Area, had not been addressed appropriately, moreover that some questions where still entirely ignored:[429]

> It was observed that the status quo was mainly due to limited political will to implement existing instruments, which did not constitute a legal gap but one of implementation that would not be addressed by adopting a new instrument. Some delegations observed that focusing on the effective implementation and enforcement of existing legally binding instruments would better ensure the conservation and sustainable use of marine biodiversity beyond areas of national jurisdiction. In that regard, given the need to tackle issues on an urgent basis and the significant resources and efforts required to negotiate a new instrument, preference was expressed for focusing on ways to strengthen the implementation of existing instruments.[430]

On the same spectrum as the discontent, there were some delegations that left the discussions, which had proposed a new legally binding agreement on the conservation and sustainable use of marine biological diversity beyond areas of national jurisdiction, that noted

[428] UN Doc. A/69/780, para 12.
[429] UN Doc. A/69/780, para 13.
[430] UN Doc. A/69/780, para 13.

they did not have a clear understanding of what it would cover and that the discussions had lacked clarity.[431]

9 The Convention on Biological Diversity and living resources in the Area[432]

9.1 In general

It is not the intention of this dissertation to go into great depths concerning the Convention on Biological Diversity (herein after CBD). The nature of CBD is substantially different than from UNCLOS. The CBD looks to the conservation of biological diversity, regardless of specific jurisdictions or delimited areas. The object and purpose of the CBD is conscious of the "intrinsic value of biological diversity and of the ecological, genetic, social, economic, scientific, educational, cultural, recreational and aesthetic values of biological diversity and its components" as well as "the importance of biological diversity for evolution and for maintaining life sustaining systems of the biosphere."[433]

Nevertheless, the CBD is a principle international legal framework for the sustainable use of the components of biological diversity and the fair and equitable sharing of benefits that may arise from genetic resources.[434] As such, it is of considerable importance to any bioprospecting of living resources within the Area. With regard to previous chapters, particularly as the legal framework behind the bioprospecting of living resources in the Area within UNCLOS is at least controversial and at best questionable. Therefore, regardless whether an activity aimed at bioprospecting is conducted under the freedom of the high seas, hence Part VII of UNCLOS, or under the management of the Authority, hence Part XI of UNCLOS, the CBD must be taken into consideration, chiefly due to the very ecological nature of living resources in the Area, which is reflected in CBD´s legal framework. The role of CBD is to direct anthropogenic activities concerning biological resources or other activities that may harm biological diversity in such a way as to mitigate any impact, encourage the appreciation the value of biological diversity and sustainable use.[435] One of the core programs of the CBD Secretariat, an international body established by the CBD, is to look to the sustainable usage of marine and costal biodiversity. This includes deep seabed biodiversity:

[431] Un Doc. A/69/780, para 14.
[432] Wolfrum, R., Matz, N.: "The Interplay of the United Nations Convention on the Law of the Sea and Convention on Biological Diversity", p. 445-480.
[433] CBD, Preamble, para 1-2.
[434] UNEP/CBD/SBSTTA/8/INF/3/Rev.1, para 68.
[435] See in general the text of CBD.

> Major existing and potential anthropogenic threats are posed by destructive […] mining, marine scientific research and bioprospecting with destructive impacts. Ocean acidification has been identified as a potentially serious threat to cold-water corals and other deep-water biodiversity.[436]

The CBD aims at assisting in the development of national policies and legislation that are intended to aid the conservation and sustainable use of biological diversity. The provisions of the CBD apply in relation to each contracting party (State) regardless of national or international jurisdiction.[437] Such jurisdiction is nonetheless with regard to CBD´s principle statement that "States have, in accordance with the Charter of the United Nations and the principles of international law, the sovereign right to exploit their own resources pursuant to their own environmental policies, and the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction."[438] The CBD has been said to complement UNCLOS "in relation to the conservation and sustainable use of marine biodiversity."[439]

9.2 The history of the Convention on Biological Diversity

The United Nations has for some time recognized the inherent importance of living resources and its effect and potential benefit for economic and social development. Such resources represent a "global asset of tremendous value"[440], both towards humanity today as well as those generations that will follow. It was therefore considered imperative to compose a formal recognition of the importance of biological diversity and encourage sustainable use of such resources that fell within the spectrum of ecological diversity, especially as the anthropogenic activity has and continuous to have negative effect on our surrounding biological life.

To this extent an Ad Hoc Working Group of Experts on Biological Diversity was convened by the United Nations Environment Programme (herein after: UNEP) in November of 1988. The meeting of the Ad Hoc Working Group was to investigate and report on the options and need for an international instrument in the field of biological diversity.[441]

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436 See: "Deep Seabed Biodiversity". URL: https://www.cbd.int/marine/seabed.shtml. Retr. 1 May 2015.
437 CBD Art. 4.
438 CBD Art. 3.
439 de la Fayette, L.: "The Conservation of Biodiversity and Genetic Resources of the Deep Seas. Is There a Legal Gap?", para 3.
440 See: "History of the Convention". URL: https://www.cbd.int/history/default.shtml. Retr. 1 May 2015.
441 See: "The Convention on Biological Diversity". E&D Files NGLS. URL: http://www.un-ngls.org/orf/documents/pdf/ED/biodiv.pdf. Retr. 1 may 2015.

In 1989 UNEP established another Ad Hoc Working Group, no comprising of Technical and Legal Experts. Their task was to make ready and prepare for the creation of an international legal instrument for the conservation and sustainable use of biological diversity. “The Working Group was mandated to take ´account of the need to share costs and benefits between developed and developing countries and ways and means to support innovation by local people´.”[442]

The Ad Hoc Working Group of Technical and Legal Experts became the Intergovernmental Negotiating Committee in 1991. On the 22nd of May 1992 the Intergovernmental Negotiating Committee´s work was presented at the Nairobi Conference. The CBD opened for signature at the Earth Summit held in Rio de Janeiro on the 5th of June 1992. It entered into force on the 29th of December 1993. To date it has 196 parties, 168 signatories and 30 ratifications.[443]

9.3 Important provisions in regard to bioprospecting in the Area

9.3.1 Jurisdictional scope in Art. 4

When looking at the CBD in regard to deep seabed bioprospecting, there are a number of important provisions that may apply. The first of these provision has already been mentioned, namely Art. 4 on jurisdiction, which states that:

> Subject to the rights of other States, and except as otherwise expressly provided in this Convention, the provisions of this Convention apply, in relation to each Contracting Party:
> (a) In the case of components of biological diversity, in areas within the limits of its national jurisdiction; and
> (b) In the case of processes and activities, regardless of where their effects occur, carried out under its jurisdiction or control, within the area of its national jurisdiction or beyond the limits of national jurisdiction.[444]

The first observation made from Art. 4 is the fact that it makes two separate distinctions. Firstly, it makes a distinction between components of biological diversity and processes and activities. Secondly, it makes a distinction, in regard to the abovementioned, between activities carried out either within or outside national jurisdiction.

This effectively means that within national jurisdiction, under CBD, the State has jurisdiction over both components of biological diversity and processes and activities. In return, in areas beyond national jurisdictions, such as within the Area, the conservation and

[442] “Evaluation of the Environmental Law, Institutions and Policies”. ELIPAC Report. p. 16.
[443] See: “History of the Convention”. URL: https://www.cbd.int/history/default.shtml. Retr. 1 May 2015.
[444] CBD Art. 4.

sustainable use of living resources, as mandated by any and all provisions, is only applicable in respect to the processes and activities conducted by Contracting Parties to CBD. What this means is that States may and are encouraged to regulate the processes and activities of their nationals within areas beyond national jurisdiction, such as the Area. However, the State is not obliged to regulate components of biological diversity, such as conservation and sustainable use of living resources within the Area.[445]

On the other hand, the State of course looks towards matters of co-operation between Contracting Parties, as stipulated in Art. 5 of the CBD, which underlines the need and importance of such co-operation, when determining its obligations under the jurisdictional scope. Again, this may be viewed with respect to general principles of due regard between States. The United Nations Environment Programme[446] (herein after: UNEP) has stated on this matter that:

> Given the limitations in the relevant provisions of the [CBD], issues regarding the genetic resources of the deep seabed beyond the limits of national jurisdiction can only be addressed comprehensively through further cooperative initiatives amongst Parties and Governments. Of course, individual Parties may impose certain strictures on their nationals regarding the exploitation of genetic resources in these areas. However, such interventions would not represent a coordinated approach to the issue and do not constitute an effective response to the vast array of issues that need to be dealt with. The [CBD] nevertheless contains important principles and concepts that would be relevant in any international effort to address this problem.[447]

9.3.2 Precautionary approach in Art. 3

Article 3 of CBD states the principle of the convention:

> States have, in accordance with the Charter of the United Nations and the principles of international law, the sovereign right to exploit their own resources pursuant to their own environmental policies, and the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction.[448]

Interestingly the article makes to important limitations to the sovereign right of States to exploit their own resources, that is to say that any activities to such an extent do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction, including the Area.

[445] UNEP/CBD/SBSTTA/8/INF/3/Rev.1, para 69-70.
[446] A United Nations agency.
[447] UNEP/CBD/SBSTTA/8/INF/3/Rev.1, para 72.
[448] CBD, Art. 3.

This is relevant to bioprospecting in the Area as there are sections of the seabed where the boarders of continental shelves, under national jurisdiction, and that of the Area encounter each other. Any activity on either side concerning the bioprospecting of living resources may therefore be considered subject to the obligation to prevent damage and required to take precautionary approaches to the processes employed in such activities.[449]

9.3.3 Conservation and sustainable use in Art. 8 and 9

We must bear in mind that, as mentioned above, the jurisdictional scope of CBD beyond national jurisdiction only covers the processes and activities conducted by Contracting Parties to CBD.[450] Regardless of this, there are specific provisions within CBD that may be utilized in order to conservation and safeguard sustainable use of the ecosystems that pertain to living resources in the Area. [451]

9.3.3.1 In situ and ex situ

Article 8 and 9 of CBD catalogues a variety of measures that are to be enacted by Contracting Parties, concerning the conservation and sustainable use of genetic resources.

The characteristics of the activities engaged in under the concept of bioprospecting are numerous. There is, for example, the actual act of mining or prospecting as well as any later stages that may involve laboratory work or experimentation and furthers steps taken towards industrial commercialization. The CBD, however, does not define the term bioprospecting.

Nonetheless, we can look to other references such as Art. 78(4) of UNCLOS, that mentions living resources as being “organisms which, at the harvestable stage”.[452] There are examples of national legislation that give bioprospecting a legal definition.[453]

Fiji´s Draft Sustainable Development Bill provides, for example a restricted definition of bioprospecting, stating that it is “any activity undertaken to harvest or exploit biological resources for commercial purposes … [including] investigative research and sampling.”[454] IN cintrast Philippines Executive Order No. 247 provides a broader definintion of the term, stating that bioprospecting is the “collection and utilization of biological and genetic

[449] UNEP/CBD/SBSTTA/8/INF/3/Rev.1, para 73.
[450] CBD, Art. 4(b).
[451] UNEP/CBD/SBSTTA/8/INF/3/Rev.1, para 78.
[452] UNCLOS, Art. 78(4).
[453] Glowka, L: *A Guide to Designing Legal Frameworks to Determine Access to Genetic Resources*, p. 28-29.
[454] Glowka, L: *A Guide to Designing Legal Frameworks to Determine Access to Genetic Resources*, p. 29.

resources for purposes of applying the knowledge derived therefrom to scientific and/or commercial purposes".[455]

There are also definitions of the term found outside of the realm of legal texts, such as in the Encyclopaedia of Biodiversity that defines it as the "systematic search for genes, natural compounds, designs, and whole organisms in wild life with the potential for product development by biological observation and biophysical, biochemical and genetic methods, without disruption to nature." [456]

This all amounts to the fact that within the conceptual umbrella of bioprospecting, activities are conducted *in situ* and *ex situ*. The issues of *in situ* and *ex situ* conservation and sustainable development, as encouraged and provided for by CBD, are specifically dealt with in articles 8[457] and 9[458] of CBD. These provisions may be utilized in such an order that they cover only the processes and

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[455] Glowka, L: *A Guide to Designing Legal Frameworks to Determine Access to Genetic Resources*, p. 29.
[456] *Encyclopaedia of Biodiversity*, p. 471.
[457] CBD Art. 8:
"Each Contracting Party shall, as far as possible and as appropriate: (a) Establish a system of protected areas or areas where special measures need to be taken to conserve biological diversity; (b) Develop, where necessary, guidelines for the selection, establishment and management of protected areas or areas where special measures need to be taken to conserve biological diversity; (c) Regulate or manage biological resources important for the conservation of biological diversity whether within or outside protected areas, with a view to ensuring their conservation and sustainable use; (d) Promote the protection of ecosystems, natural habitats and the maintenance of viable populations of species in natural surroundings; (e) Promote environmentally sound and sustainable development in areas adjacent to protected areas with a view to furthering protection of these areas; (f) Rehabilitate and restore degraded ecosystems and promote the recovery of threatened species, inter alia, through the development and implementation of plans or other management strategies; (g) Establish or maintain means to regulate, manage or control the risks associated with the use and release of living modified organisms resulting from biotechnology which are likely to have adverse environmental impacts that could affect the conservation and sustainable use of biological diversity, taking also into account the risks to human health; (h) Prevent the introduction of, control or eradicate those alien species which threaten ecosystems, habitats or species; (i) Endeavour to provide the conditions needed for compatibility between present uses and the conservation of biological diversity and the sustainable use of its components; (j) Subject to its national legislation, respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity and promote their wider application with the approval and involvement of the holders of such knowledge, innovations and practices and encourage the equitable sharing of the benefits arising from the utilization of such knowledge, innovations and practices; (k) Develop or maintain necessary legislation and/or other regulatory provisions for the protection of threatened species and populations; (l) Where a significant adverse effect on biological diversity has been determined pursuant to Article 7, regulate or manage the relevant processes and categories of activities; and (m) Cooperate in providing financial and other support for in-situ conservation outlined in subparagraphs (a) to (l) above, particularly to developing countries."
[458] CBD Art. 9:
"Each Contracting Party shall, as far as possible and as appropriate, and predominantly for the purpose of complementing in-situ measures: (a) Adopt measures for the ex-situ conservation of components of biological diversity, preferably in the country of origin of such components; (b) Establish and maintain facilities for ex-situ conservation of and research on plants, animals and micro- organisms, preferably in the country of origin of genetic resources; (c) Adopt measures for the recovery and rehabilitation of threatened species and for their reintroduction into their natural habitats under appropriate conditions; (d) Regulate and manage collection of biological resources from natural habitats for ex-situ conservation purposes so as not to threaten ecosystems and in-situ populations of species, except where special temporary ex-situ measures are required under subparagraph

activities conducted by Contracting Parties to CBD, and therefore are applicable to bioprospecting in the Area.[459]

9.4 Regulating activities in the Area

Article 8 of CBD places an obligation on States to develop and/or maintain necessary legislation or other regulatory instruments for the protection of threatened living resources.[460] Article 8 also notes that where a significant adverse effect on biological diversity has been determined[461], the State must regulate or manage the relevant processes and categories of activities.[462] This would imply that States have a regulatory obligation towards activities carried out by their nationals in areas beyond national jurisdiction; this would by applicable to the Area in matters of deep seabed bioprospecting.

Conservation measures and the adoption of such measures, both *in situ* and *ex situ* are referred to in both Art. 8 and 9 of CBD. These measures stipulated, among other things, that States should develop guidelines for the selection, establishment and management of protected areas[463] in order to conserve biological diversity.[464] Regulate or manage biological resources important for the conservation of biological diversity[465] and regulate to protect ecosystems, natural habitats and maintain species.[466] Though not directly related to the regulation of activities within the Area, the establishment and management of protected areas within national jurisdiction may have a direct effect on the activities of those operating bioprespecting ventures in the Area.

9.5 The fair and equitable sharing of the benefits arising out of the utilization of living resources[467]

Both Art. 1 and the Preamble of CBD state the importance and desirability to maintain a fair and equitable sharing of the benefits arising out of the utilization of genetic resources:

(c) above; and (e) Cooperate in providing financial and other support for ex-situ conservation outlined in subparagraphs (a) to (d) above and in the establishment and maintenance of ex- situ conservation facilities in developing countries.".

459 UNEP/CBD/SBSTTA/8/INF/3/Rev.1, para 79.

460 CBD, Art. 8(k).

461 Pursuant to CBD Art. 7.

462 CBD, Art. 8(l).

463 "Marine and Coastal Protected Areas". URL: https://www.cbd.int/marine/PA.shtml. Retr. 1 May 2015.

464 CBD, Art. 8(b).

465 CBD, Art. 8(c).

466 CBD, Art. 8(d).

467 Jeffery, M.I.: "Bioprospecting: Access to Genetic Resources and Benefit-Sharing under the Convention on Biodiversity and the Bonn Guidelines", p. 747–808.

> The objectives of this Convention, to be pursued in accordance with its relevant provisions, [is] the fair and equitable sharing of the benefits arising out of the utilization of genetic resources.[468]

> Recognizing the close and traditional dependence of many indigenous and local communities embodying traditional lifestyles on biological resources, and the desirability of sharing equitably benefits arising from the use of traditional knowledge, innovations and practices relevant to the conservation of biological diversity and the sustainable use of its components.[469]

What is interesting is the seeming overlap between CBD and UNCLOS in this sense. Notably, UNCLOS adheres to a similar principle within the common heritage of mankind principle, that is aimed specifically at "the seabed and ocean floor and subsoil thereof, beyond the limits of national jurisdiction"[470] The fact that the CBD does not mention the common heritage principle seems to overtly strengthen the interpretation of those of the opinion that UNCLOS does not considered living resources as falling under the deep seabed mining regime in Part XI.

As in UNCLOS, CBD aims to create incentives by fair and equitable sharing of benefits. Hence, the more that is conserved and sustainably used, the more benefits may arise from the potential resource. Benefit-sharing becomes vital as living resources within the areas beyond national jurisdiction (like the Area) are not easily accessible by all States and it would be seemingly unfair that "common concern of humankind"[471] be utilized for the benefit of the few:[472]

> The sharing of benefits arising from the exploitation of the genetic resources of the deep seabed beyond the limits of national jurisdiction can only be effected if such resources are brought under a regime similar to the one governing the mineral resources of the Area under UNCLOS. The principles embodied in the [CBD] may be useful in any attempt to deal with issues of equity regarding access to and the exploitation of such resources.[473]

10 Conclusions

10.1 An overview

This dissertation has endeavoured to focus on the legal regime governing deep seabed mining in the Area, as well as examining the current legal issues surrounding bioprospecting. In doing so, similarities and differences between the two are highlighted. Diverging opinions

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[468] CBD, Art. 1.
[469] CBD, Preamble, para 12.
[470] UNCLOS, Art. 136.
[471] CBD, Preamble, para 3.
[472] UNEP/CBD/SBSTTA/8/INF/3/Rev.1, para 97-98. To see the forms and modalities of benefit sharing under CBD, see: CBD Art. 1, 15, 16 and 19.
[473] UNEP/CBD/SBSTTA/8/INF/3/Rev.1, para 100.

concerning legality and policy have also been underlined. These analytic efforts have been made in order to effectively form a coherent understanding, an overview, over the present and perhaps future legal regime.

The dissertation makes and effort to structurally outline the legal history of the regime of Part XI of UNCLOS, both prior to and within the context of UNCLOS III. The legal history illustrates the somewhat troublesome development of Part XI of UNCLOS, its provisions, principles and international bodies that form the regulatory and executive organization behind the mining activities within the Area. The distinct contrast between groups of States participating at UNCLOS III, when it came to agreeing on a viable legal instrument, is concluded as having been based on political tensions, an ideological conflict which is likely to have had detrimental consequences and temporally hindered the Convention taking legal effect.

The consequences of preparatory investment protection and pioneer investment, concerning mineral mining in the area beyond national jurisdiction, on the legislative and regulatory development are stressed in the dissertation. By reviewing the legal norms behind preparatory investment protection and the Reciprocating State Regime we may perhaps glimpse the structural essence of the current legal regime, though deprived of course of the those policies that have amended the regime towards cooperative measures and obligations. Nevertheless, it is evident that those States that were supportive of the Reciprocating State Regime had an acute effect on the current regime by via PrepCom and the 1994 Implementation Agreement.

The issues and principles of benefit sharing due to the historically different standing, both economic and technical, between developing and developed States ranks high in this overview. The general principle and legality of the common heritage of mankind are discussed throughout the dissertation. Regarding bioprospecting, the fair and equitable sharing of living resources is addressed later in the dissertation and it is compared to the common heritage of mankind principle.

The legal framework specified by UNCLOS forms the current regime for mineral exploration and exploitation in the Area. The legal concepts of the Area, the Authority and its principle organs are noted. In this review the confines of these concepts are explored in order to stress what activities are applicable under the regime and how they conform to the general principles of jurisdiction under UNCLOS and the common heritage of mankind. Considerable emphasis is likewise placed on the issue of dispute settlement, which in the case of the Area is restricted to compulsory settlement under the seabed dispute chamber of

ITLOS. The dispute settlement provisions of Part XI are considerably complex and specific, albeit the chamber has only been convened once.

The mining regulations and recommendations published by the Authority are stipulated. The regulations form the backbone of the regulatory measures employed to outline the legal obligations and rights of contractors that contract with the Authority. This includes everything from practicalities concerning the geographical size of the mining site and application fees to training obligations imposed on contractors. Recommendations made by the Legal and Technical Commission in order to assist contractors fulfil their legal and contractual obligations are also mentioned.

Prior to any discussion on the legal regime covering bioprospecting in the Area, the issue the actual biodiversity and ecology within the Area is needed. The dissertation makes a point of reviewing possible living resources that may be of commercial interest as well as their ecological vulnerability. What is perhaps most striking is the seeming symbiotic nature between mineral resources and living resources of the Area, especially those resources subject to the location of deep sea hydrothermal vents, seamounts, deep sea coral reefs and cold seeps and pockmarks. The nature of benthic ecology is of particular interest as a commercially attractive resource, due mainly to the extreme environment such life forms thrive in and their subsequent singular composition.

UNCLOS, as the principle legal framework for the international Law of the Sea, is analysed with regard to bioprospecting activities. There is considerable difference between the legal regime governing bioprospecting of living resources between differently delimitated oceanic areas. Within national jurisdiction the State enjoys sovereign rights as to the exploration and exploitation of living resources on the seabed. Similarly, there are different legal regimes that govern living resources within the water columns of the EEZ and high seas. In the review of the UNCLOS regime it is important to note the conceptual understanding of resources found in Art. 133. Owing to the importance of Art. 133 in determining the applicability of Part XI to living resources, hence bioprospecting, the context and differing interpretations of the article are debated. By evaluating and interpreting the article, with consideration given to the 1994 Implementation Agreement, it is the conclusion of the dissertation that living resources do not fall within the framework of Part XI according to direct textual interpretation of Art. 133, that makes specific provisions for mineral resources only. This is unlike the specific provisions made for coastal State rights over living resources on the continental shelf in Art. 77(4).

The recent developments within the United Nations as to the status of living resources (genetic resources) beyond national jurisdiction is discussed alongside the applicability of UNCLOS towards bioprospecting. The Ad Hoc Open-ended Informal Working Group entrusted to review the need for legal response to the issue of conservation and sustainable use of marine biological diversity finished its work in 2015. The conclusion of the Ad Hoc Working Group promotes a number of ideas and reccomendations as to legal development and amendments in the field of conservation and sustainable use of marine biological diversity, living resources, one of which is the establishment of new legal instruments.

The CBD is discussed with consideration to its applicability in general to bioprospecting. The reason for this is the fact that the CBD contains a array of provisons important to activities that directly affect the enviornment, as does any exploitation of lving resources. The dissertation marks that the CBD is restricted in its jurisdictional scope when dealing with areas outside of national jurisdiction, such as the Area. The applicability of the CBD in the matter of bioprospecting in the Area is therefore secondary, mainly via national legislation where States, obliged to conform with the provisions of CBD, regulate the activity of their own nationals or sponsored entities in the Area.

10.2 Answering the research questions

The abovementioned research is constructed around three specific research questions, as mentioned in the beginning of the dissertation:

Q1.: What is the legal regime of deep seabed mining beyond national jurisdiction?

Q2.: Can the deep seabed mining of living resources (bio-prospecting) beyond national jurisdiction be conducted under the same legal regime as the more conventional deep seabed mining?

Q3.: Is there a need for a specific international legal regime for the deep seabed mining of living resources beyond national jurisdiction?

Though answered in passing throughout the dissertation and difficult to condense into a few words, the brief answers to the abovementioned questions are as follows:

A1.: The legal regime of the deep seabed mining beyond national jurisdiction depends entirely on the resources being mined for. If the resources is mineral in nature Part XI of UNCLOS is the explicitly intended to govern the exploration and exploitation of mineral resources and has established developed frameworks and international bodies to that extent. There are special consideration to be made to the 1994 Implementation Agreement as to the exact nature of the regime as well as secondary regulatory mechanisms found in the Regulations and Recommendations of the Authority.

A2.: If the exploration and exploitation refers to living resources, the matter of applicable legal regime is all more elusive. It is the conclusion of this dissertation that such activities do not fall with Part XI of UNCLOS and are therefore not part of the same legal regime as mineral resources. It follows that, based on oceanic delimitation, that the exploration and exploitation of living resources, a.k.a. bioprospecting, falls within the legal regime of the high seas as stipulated in Part VII of UNCLOS. The nature of this is however not entirely without controversy. Many note that high seas freedoms applied to the exploration and exploitation of living resources in the Area may be detrimental and wholly inconsistent with the common heritage of mankind principle found in UNCLOS as well as the benefit-sharing principles of CBD. The symbiotic nature of the two resources, mineral and living, may also be such that it would be highly irrational to make a legal distinction between them. There is also discourse about what high seas freedoms would mean to biopropecting. Does it entail total freedom to explore and exploit living resources or is it limited in any way? The principles and legal regime within CBD is also relevant as it stipulates certain obligation towards States, that would include activities as bioprospecting.

A3.: Whether or not a specific legal instrument is needed may be difficult to answer. Nonetheless, it is clear from the work of the Ad Hoc Open-ended Informal Working Group concerning the conservation and sustainable use of marine biological diversity, that there is considerable interest, understandable so, towards the creation of a comprehensive legal instrument aimed specifically at living resources, for example in the Area. However, there is also a sense amongst some that there is no need for a new instrument and that living resources fall within present legal frameworks. What might be noted is that there is already a wealth of knowledge, both legal and technical, when it comes to the exploration and exploitation of the deep seabed within the Authority. It would seem illogical to separate the two resources into two distinct legal regimes while remaining in a state of symbiotic nature. Any future development in the field should take considerable notice as to the work previously accomplished. If there is to be a new instrument the seemingly obvious choice would be to design an implementation agreement aimed at conservation and sustainable exploration and exploitation of living resources and biological diversity in the Area.

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UN Doc. A/48/950 (1994)	Consultations of the Secretary-General on outstanding issues relating to the deep seabed mining provisions of the United Nations Convention on the Law of the Sea
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Reports of the Ad Hoc Open-ended Informal Working Group

A/61/65	Report of the Ad Hoc Open-ended Informal Working Group to study issues relating to the conservation and sustainable use of marine biological diversity beyond areas of national jurisdiction
A/66/119	Letter dated 30 June 2011 from the Co-Chairs of the Ad Hoc Open-ended Informal Working Group to the President of the General Assembly
A/67/95	Letter dated 8 June 2012 from the Co-Chairs of the Ad Hoc Open-ended Informal Working Group to the President of the General Assembly
A/69/177	Letter dated 25 July 2014 from the Co-Chairs of the Ad Hoc Open-ended Informal Working Group to the President of the General Assembly
A/69/780	Letter dated 13 February 2015 from the Co-Chairs of the Ad Hoc Open-ended Informal Working Group to the President of the General Assembly

International Seabed Authority Documents

Assembly

ISBA/19/A/7 - ISBA/19/C/11	Report of the Finance Committee

ISBA/19/A/9	Decision of the Assembly of the International Seabed Authority regarding the amendments to the Regulations on Prospecting and Exploration for Polymetallic Nodules in the Area
ISBA/19/A/12	Decision of the Assembly of the International Seabed Authority concerning overhead charges for the administration and supervision of exploration contracts
ISBA/6/A/18	Decision of the Assembly relating to the regulations on prospecting and exploration for polymetallic nodules in the Area
ISBA/18/A/11	Decision of the Assembly of the International Seabed Authority relating to the Regulations on Prospecting and Exploration for Cobalt-rich Ferromanganese Crusts in the Area

Council

ISBA/19/C/4	Proposal for a Joint Venture Operation with the Enterprise. Report by the Interim Director-General of the Enterprise
ISBA/19/C/6	Considerations relating to a proposal by Nautilus Minerals Inc. for a Joint Venture Operation with the Enterprise
ISBA/19/C/16	Decision of the Council relating to financial and budgetary matters
ISBA/19/C/17	Decision of the Council of the International Seabed Authority relating to amendments to the Regulations on Prospecting and Exploration for Polymetallic Nodules in the Area and related matters

Legal and Technical Commission

ISBA/3/LTC/WP.1	Draft Regulations on Prospecting and Exploration of Polymetallic Nodules in the International Seabed Area
ISBA/10/WP.1	Draft Regulations on Prospecting and Exploration of Polymetallic Sulphides and Cobalt rich Ferromanganese Crusts in the Area
ISBA/15/LTC/7	Recommendations for the guidance of contractors for the reporting of actual and direct exploration expenditures as required by annex 4, section 10, of the Regulations on Prospecting and Exploration for Polymetallic Nodules in the Area
ISBA/19/LTC/8	Recommendations for the guidance of contractors for the assessment of the possible environmental impacts arising from exploration for marine minerals in the Area
ISBA/19/LTC/14	Recommendations for the guidance of contractors and sponsoring States relating to training programmes under plans of work for exploration

ISBA/15/LTC/7	Recommendations for the guidance of contractors for the reporting of actual and direct exploration expenditures as required by annex 4, section 10, of the Regulations on Prospecting and Exploration for Polymetallic Nodules in the Area.

United Nations Environment Project – CBD - document

UNEP/CBD/SBSTTA/8/INF/3/Rev.1	Marine and Coastal Biodiversity: Review, Further Elaboration and Refinement of the Programme Of Work: Study of the relationship between the Convention on Biological Diversity and the United Nations Convention on the Law of the Sea with regard to the conservation and sustainable use of genetic resources on the deep seabed (decision II/10 of the Conference of the Parties to the Convention on Biological Diversity**.**

Advisory Opinion of the Seabed Chamber, ITLOS

Case No. 17 - Responsibilities and obligations of States sponsoring persons and entities with respect to activities in the Area (Request for Advisory Opinion submitted to the Seabed Disputes Chamber)

APPENDIXES

Overview of contracts and contractors[474]

Status of Contracts for the Exploration for Polymetallic Nodules

Contractor	Date of entry into force of contract	Sponsoring State	General location of the exploration area under contract	Area Size (sq km)	Date of expiry of contract
Interoceanmetal Joint Organization	29 March 2001	Bulgaria, Cuba, Czech Rep., Poland, Russian Fed., Slovakia	Clarion-Clipperton Fracture Zone	75,000	28 March 2016
Yuzhmorgedogiya	29 March 2001	Russian Fed.	Clarion-Clipperton Fracture Zone	75,000	28 March 2016
Government of the Republic of Korea	27 April 2001	Rep. of Korea	Clarion-Clipperton Fracture Zone	75,000	28 April 2016
China Ocean Mineral Resources Research and Development Assoc.	22 May 2001	China	Clarion-Clipperton Fracture Zone	75,000	21 May 2016
Deep Ocean Resources Development Co. Ltd.	20 June 2001	Japan	Clarion-Clipperton Fracture Zone	75,000	19 June 2016
Institut francais de recherché pour l´exploitation de la mer	20 June 2001	France	Clarion-Clipperton Fracture Zone	75,000	19 June 2016
Government of India	25 March 2002	India	Indian Ocean	75,000	24 March 2017
Federal Institute for Geoscience and Natural	19 July	Germany	Clarion-Clipperton	75,000	18 July

474 “Fact Sheet: Contractors for Seabed Exploration”. *The International Seabed Authority*. 2014.

Resources of Germany	2006		Fracture Zone		2021
Nauru Ocean Resources Inc.	22 July 2011	Nauru	Clarion-Clipperton Fracture Zone	75,000	21 July 2026
Tonga Offshore Mining Ltd.	11 January 2012	Tonga	Clarion-Clipperton Fracture Zone	75,000	10 January 2027
Marawa Research and Exploration Ltd.	To be signed	Marawa	Clarion-Clipperton Fracture Zone	75,000	NA
UK Seabed Resources Ltd.	8 February 2013	UK	Clarion-Clipperton Fracture Zone	58,620	7 February 2028
G TEC Sea Mineral Resources NV	14 January 2013	Belgum	Clarion-Clipperton Fracture Zone	76,728	13 January 2028

Status of Contracts for the Exploration for Polymetallic Sulphides

Contractor	Date of entry into force of contract	Sponsoring State	General location of the exploration area under contract	Area Size (sq km)	Date of expiry of contract
China Ocean Mineral Resources Research and Development Assoc.	18 November 2011	China	Southwest Indian Ridge	10.000	17 November 2026
Russian Federation	29 October 2012	Russian Fed.	Mid-Atlantic Ridge	10.000	28 October 2027
Government of the Republic of Korea	To be signed	Korea	Indian Ocean	10.000	NA
Institut francais de recherché pour l´exploitation de la mer	To be signed	France	Mid-Atlantic Ridge	10.000	NA

Status of Contracts for the Exploration for Cobalt-Rich Ferromanganese Crusts

Contractor	Date of entry into force of contract	Sponsoring State	General location of the exploration area under contract	Area Size (sq km)	Date of expiry of contract
Japan Oil, Gas and Metals National Copor.	27 January 2014	Japan	Western Pacific Ocean	3000	26 January 2029
China Ocean Mineral Resources Research and Development Assoc.	29 April 2014	China	Western Pacific Ocean	3000	28 April 2029

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