

UNIVERZITA KARLOVA

Právnická fakulta

Štěpán Hron

Deep Seabed Mining in the Area:  
Environmental Aspects of the Legal Framework

Diplomová práce

Vedoucí diplomové práce: JUDr. Karolina Žáková, PhD.

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V Praze dne 4. září 2022

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# Table of Contents

Introduction .....	1
1 Deep seabed mining: what do we know? .....	4
1.1 The Deep Seabed Environment .....	4
1.2 Resources of the Area .....	7
1.2.1 Shared challenges of the resources of the Area .....	8
1.2.2 Resource classes of the Area .....	9
1.3 Deep seabed mining and its impacts on the marine environment .....	12
2 Sources of the legal framework .....	16
2.1 UNCLOS: the Constitution for the Oceans .....	17
2.1.1 The Historical Background .....	17
2.1.2 Key provisions within UNCLOS .....	18
2.2 International Custom and General Legal Principles .....	20
2.3 'The Mining Code' of the International Seabed Authority .....	21
2.4 Decisions and opinions of International Judiciaries .....	24
2.5 National laws and Administrative measures .....	25
3 Subject Matter of the Legal Framework .....	26
3.1 Activities in the Area .....	26
3.2 Prospecting .....	28
3.3 Exploration .....	28
3.4 Exploitation .....	29
4 Key Actors of DSBM and their Obligations .....	30
4.1 States .....	30
4.1.1 States as States Parties .....	30
4.1.2 Activities in the Area under State sponsorship .....	32
4.1.3 Responsibilities and obligations of sponsoring States in light of the 2011 Advisory Opinion .....	34
4.1.4 Liability of the sponsoring State .....	36
4.2 International Seabed Authority .....	37
4.2.1 Organs of the ISA: Seeking institutional balance and equitable representation ..	38
4.2.2 ISA's Environmental Mandate as Legislator .....	41
4.2.3 Limitations of mandate of the ISA .....	44
4.3 Contractors .....	45

4.3.1	Contractors as they carry out activities in the Area.....	46
4.3.2	Brief look at the Exploitations Regulations in their drafting phase .....	51
5	Environmental Measures Employed by the ISA .....	54
5.1	Strategic Planning of the ISA .....	54
5.2	Environmental Assessment .....	58
5.3	Spatial based protection .....	59
5.3.1	Areas of Particular Environmental Interest, Areas in Need of Protection, Sites in Need of Protection and Sites/Areas in Need of Precaution.....	59
5.3.2	Impact Reference Zones and Preservation Reference Zones .....	61
6	National Legislations.....	63
6.1	Federal Republic of Germany: adoption of Seabed Mining Act of June 1995 .....	64
6.2	Czech Republic: adoption of Seabed Mining Act no. 150/2000 Coll.....	68
7	Conclusion.....	72
8	List of Main Abbreviations .....	76
9	Bibliography.....	77
10	Abstract .....	84
11	Abstrakt .....	84



## Introduction

Our planet's oceans and seas have been at the heart of human social and economic activity since time immemorial and the principle of the freedom of the seas is one of the oldest rules of what now constitutes public international law. For much of that time, however, people had no knowledge of or access to what hid far below the water's surface.

The discoveries of geological structures and ecosystems of the Deep in the 19<sup>th</sup> and 20<sup>th</sup> centuries were ground-breaking. They significantly broadened our understanding of conditions that may support life and introduced us to unique geological zones, with topographic diversity comparable to those on land.

A large body of scientific research already exists on deep sea minerals' geologic and chemical properties and significant effort has been put towards mapping the living communities of the deep. However, the scientific community agrees that there is still a critical lack of understanding of many key aspects of deep-sea ecology. Rather than filling the gaps in our knowledge, we are still at a phase where we are establishing islands of knowledge in a vast and empty void.

Previously undisturbed by humans, these ocean environments and their ecosystems are now the target of activities that would breach another frontier of resource extraction—that of multiple kilometres of water column. These activities are collectively known as deep seabed mining (hereinafter DSBM) and are most broadly defined as the process of retrieving mineral deposits from the deep sea, i.e., the ocean area below 200 meters in depth.

DSBM was first spoken about in the 1960s, at the time with wide-eyed optimism, and it was considered as a viable extraction method for the following decades. These initial efforts lead to more grounded estimations of the possible profits as experimental probes provided more factual insight. The initial regulatory efforts are marked by their times. Heightened tension, influenced by Cold War and the process of de-colonisation, lead to lengthy legal negotiations and general lack of consensus on the very essential questions, resulting in legally binding framework, the 1982 United Nations Convention on the Law of the Sea<sup>1</sup> (hereinafter UNCLOS) and the

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<sup>1</sup> 1982 United Nations Convention on the Law of the Sea (adopted 10 December 1982, entered into force 16 November 1994) 1833 UNTS 3 97, 21 ILM 1261 (1982).

Agreement relating to the Implementation of Part XI UNCLOS of 10 December 1982 (hereinafter 1994 Implementation Agreement),<sup>2</sup> which only came into force in the mid-1990s.

An interplay of factors, including legal uncertainty, sufficient supplies from land mines, technological challenges, and uncertain profitability, resulted in progress towards commercial mining that had been highly volatile, with periods of rapid development and investment alternating with those where DSBM seemed unrealistic. During the past decade, a period of renewed interest started with the expected transition from fossil fuels (mainly petrol, natural gas and coal) to a 'battery-powered economy', which brings about predictions of a significant increase in demand for metals needed in the high-tech industry. The rise may be substantial as to make the available land supplies insufficient. Backed by the rapid technological progress of past decades, these considerations led governments and private actors to invest in ventures, whose ultimate objective is to extract these metals in the Area for profit. To date, no commercial exploitation has been carried out. DSBM thus benefits from the historical opportunity to form a comprehensive, precautionary, environmentally sound framework relating to non-living resources before any commercial activities start.

In the most general terms, the central conflict lies between the demand to obtain mineral resources at a profit and the paramount importance of ensuring effective protection of the ocean environment. This thesis aims to present an overview of the existing legal landscape relating to activities in the Area and their impacts on the marine environment and addresses this central question: What are the institutional, regulatory, and policy mechanisms in place that ensure that DSBM does not lead to unacceptable consequences to the marine environment?

It specifically addresses the environmental aspects of the legal framework relating to activities concerning non-living (mineral) resources in the Area and only notes on the general public international law relating to the Area where necessary. That also means that resource extraction of living marine resources and mining in areas within the national jurisdictions in the broadest sense (i.e., to the outer limits of the exclusive economic zone or the continental shelf) fall outside its scope, following the inherent logic of the regime of the Area to strictly address only activities relating to non-living resources.

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<sup>2</sup> 1994 Agreement Relating to the Implementation of Part XI of the United Nations Convention on the Law of the Sea of 10 December 1982 (adopted 28 July 1994, entered into force 28 July 1996) UNGA Res 263 UN GAOR 48th Session Supp No 49A UN Doc A/Res/48/263 (1994).



This thesis is divided into six Chapters. In Chapter 1, it dives into the ocean waters to illuminate the environments at the focus of DSBM. It naturally follows to inquire about the potential for harm of the marine environment and impacts on the geological, chemical and biological balance of the potential mining sites for all resource classes. Both general and specific (mining techniques, size of impacted areas and ecosystem variety) considerations of all viable mineral classes are addressed in this overview.

Following this chapter, the thesis elaborates on the legal sources of the framework in Chapter 2. These sources determine the subject matter of the framework – activities in the Area, with its three distinctive phases: prospecting, exploration and exploitation – discussed in Chapter 3 and set forth rights and obligations of the key actors (in their manifold roles), which determine how these activities are carried out in different phases of activities, as discussed in Chapter 4.

In Chapter 5, the thesis introduces the environmental policy instruments, through which the International Seabed Authority (hereinafter ISA) aims to ensure effective protection of the marine environment by expanding on its purely legal instruments.

Chapter 6 gives example of how the international legal framework translates to the national level. I have chosen the Czech Republic and the Federal Republic of Germany to examine their approaches to DSBM and how the two countries implemented their international law obligations. Both countries are sponsoring States under UNCLOS and thus the obligations relating to marine environment apply in their full extent.

This thesis considers the legal framework as of 1 September 2022.

# 1 Deep seabed mining: what do we know?

## 1.1 The Deep Seabed Environment

The world's ocean covers two-thirds of the Earth. Underwater interactions between tectonic plates have created distinctive geological areas of the ocean.<sup>3</sup> The resulting topographical diversity of the ocean floor is thus comparable to that on land. In the deep sea, beyond the outer limits of the continental shelf, these processes have created four primary physiographic zones: abyssal plains, mid-ocean ridges, seamounts, and deep ocean trenches. The first three zones feature structures at the focus of DSBM activities.

*Abyssal plains* are vast seabed areas covered with sediments consisting of extremely fine particles. They constitute almost 80% of the total surface area of the open ocean, spanning depths from 700 meters to 6 500 meters.<sup>4</sup> These plains are divided into basins, each with its specific geomorphology and ecosystems. The basins where exploration for deep sea mineral resources takes place are:

- the Clarion-Clipperton Fracture Zone (hereinafter CCZ) in the Central Pacific, between Hawaii and Mexico,
- the Peru and Penrhyn Basins off the Pacific Coast of South America,
- the Central Indian Basin in the Indian Ocean, to the west of Reunion and Mauritius, and
- the basins on the two sides of the Mid-Atlantic Ridge.<sup>5</sup>

The CCZ is particularly important as 15 of the 31 exploration areas granted to date under a contract with the ISA are found there. As discussed later, the CCZ is also the first zone to have a dedicated Regional Environmental Management Plan, adopted in 2012, that created nine Areas of Particular Environmental Interest excluded from future exploitation.<sup>6</sup>

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<sup>3</sup> This process is upheld by plate tectonics theory. This universally accepted theory, originating in the 1960s, revolutionised the understanding of geological processes—such as mountain formation, volcanic activity and earthquakes—by introducing a model of a rigid outer layer (lithosphere), separated into multiple pieces of varying size, thickness and density (plates), which move around and interact on a plastic layer (asthenosphere). These interactions can be schematically described as 'spreading', where two plates move away from each other, 'grinding', in which two plates rub on each other creating fault lines, and 'subduction', a result of collision typical for the ocean floor, where one plate slides underneath another. Encyclopaedia Britannica, 'Plate tectonics', <https://www.britannica.com/science/plate-tectonics>, last accessed 3 March 2022.

<sup>4</sup> Lusty, P. A. J., Murton, B. J., 'Deep-Ocean Mineral Deposits: Metal Resources and Windows into Earth's Processes', Elements, vol. 5, October 2018, p. 302.

<sup>5</sup> Summarized from: Cuyvers, L., Berry, W., Gjerde, K., Thiele, T. and Wilhem, C., 'Deep seabed mining: a rising environmental challenge', 2018, Gland, IUCN and Gallifrey Foundation, p. 8.

<sup>6</sup> ISA, Decision of the Council relating to an environmental management plan for the Clarion-Clipperton Zone, 13 July 2011, ISBA/18/C/22, p. 4, 5.

Seamounts are underwater mountains that rise steeply from the seabed to heights of over 1 000 meters above the surrounding seabed and mainly occur in clusters or ranges. They are usually tectonic or volcanic in origin and exist in all oceans, with most remaining uncharted.<sup>7</sup> Because of their variable geology, changes in geomorphology and important interaction with ocean currents that take place over time, seamounts are highly heterogeneous (from flat-topped, with extensive summit plateaus to very rugged, including steep slopes and cliffs) and dynamic mineral-forming environments, meaning that the characteristics of the deposits of minerals vary from seamount to seamount.<sup>8</sup>

Hydrothermal vents, found in all oceans, typically occur along the boundaries of tectonic plates. They can be either active or extinct. The scientists are emphasise the role of active vents as carbon sinks and agree that water filtration through the vents is massive in scale: the complete volume of ocean filters through them every 200 000 years.<sup>9</sup> They also participate significantly in heat regulation of the Earth's crust and in maintaining sustainable levels of metals dissolved in seawater.<sup>10</sup> Being much more geologically dynamic in time, the time scales on which they function are significantly shorter than in the other zones. As opposed to the other environments, the temperature exiting water from the vents can reach 400 °C, and it is very rich in chemical substances that serve as nutrients.<sup>11</sup>

The first-large scale research effort to map the depths of the ocean beyond the narrow strip of sea adjacent to the coast was undertaken by the Challenger expedition between 1872 and 1876.<sup>12</sup> It gathered observations worldwide on various characteristics of the marine environment and its results (published in no less than 50 volumes) made it a landmark in ocean exploration. Notably, upon trawling the seabed, the expedition lifted and described metal-rich rocks that lay scattered on it, the nodules. On closer analysis, these nodules were found to contain a mixture of metals and rare earths. Already at the time, their potential economic importance was acknowledged.<sup>13</sup>

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<sup>7</sup> Lusty, P. A. J., Hein, J. R., Josso, P., 'Formation and Occurrence of Ferromanganese Crusts: Earth's Storehouse for Critical Metals, Elements', vol. 5, October 2018, p. 314.

<sup>8</sup> *Ibid*, p. 315.

<sup>9</sup> Lusty, P. A. J., Murton, B. J., *supra* n. 4, p. 303.

<sup>10</sup> *Ibid*, p. 303.

<sup>11</sup> Mullineaux L.S., Metaxas A., Beaulieu S.E., Bright M., Gollner S., Grupe B.M., Herrera S., Kellner J.B., Levin L.A., Mitarai S., Neubert M.G., Thurnherr A.M., Tunnicliffe V., Watanabe H.K., Won Y.-J., 'Exploring the Ecology of Deep-Sea Hydrothermal Vents in a Metacommunity Framework', *Frontiers in Marine Science*, 5:49, 2018, available at: <https://www.frontiersin.org/articles/10.3389/fmars.2018.00049/full>, last accessed 20 September 2021.

<sup>12</sup> Lusty, P. A. J., Murton, B. J., *supra* n. 4, p. 301.

<sup>13</sup> Lusty, P. A. J., Murton, B. J., *supra* n. 4, p. 301.

It was only the second half of the 20<sup>th</sup> century that brought more progress towards understanding the deep sea. At this time, researchers discovered mineral rich brine in the Red Sea, black smokers, accumulations of massive sulphides, and polymetallic crusts. The original focus was limited to describing the geological structures and their development; all the while, their economic potential started to emerge. Much to the surprise of the participating researchers, it soon became apparent that life in the deep-sea not merely existed but thrived. It had evolved into greatly diverse and complex forms, from microbial communities to megafauna. Even today, each dive describes new species. The level of diversity and abundance of life forms remain unclear, and so does their genetic connectivity, ecosystem functions and recovery rates; the process of the research is still at the stage of finding individual dots rather than connecting them.<sup>14</sup> Furthermore, the progress is relatively slow. The main causes being vastness and remoteness of the studied areas, demands on research equipment and high research costs.<sup>15</sup>

Nonetheless, there is already a consensus that deep-sea communities critically contribute to biodiversity and genetic diversity and possess high levels of endemism, particularly those around isolated mountains and around active vents.<sup>16</sup> It is also agreed that deep-sea ecosystems contribute importantly to the stability of global climate (serving as sinks for carbon and methane) and provide other regulating and supporting services.<sup>17</sup>

As light from the surface penetrates to maximum depth of 2 000 meters, the upper extent of the bathypelagic zone, the water below is colder and denser. Therefore, migration of species to upper layers is low and the living communities live separated from those in the upper layers of the water column. In these communities, researchers discovered life forms whose life cycles function without elements that were previously thought essential to life: sunlight and oxygen.<sup>18</sup>

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<sup>14</sup> Ginzky and Damian point out, that there has only been one individual found for 60-90 % of the species. Ginzky, H., Damian H. P., 'Bergbau am Tiefseeboden – Standards und Verfahren für einen effektiven Schutz der Umwelt', ZUR, 2017, p. 325.

<sup>15</sup> These factors make field research extremely expensive, with some sources citing the daily costs of 100 000 USD.

<sup>16</sup> JPI Oceans, 'Long-term Impacts of Deep-Sea Mining: Results of the Mining Impact project', October 2017, p. 2.

<sup>17</sup> Singh, P., Hunter, J., 'Protection of the Marine Environment: The International and National Regulation of Deep Seabed Mining Activities', in Sharma, R., 'Environmental Issues of Deep-Sea Mining: Impacts, Consequences and Policy Perspectives', Cham, Springer, 2019, p. 472.

<sup>18</sup> One example of this is chemosynthesis, a method of converting carbon-containing molecules and nutrients into organic matter and thus sustaining life, that has been proposed at the end of 19<sup>th</sup> century by Sergei Nikolaievich Winogradsky, a Russian microbiologist, ecologist, and soil scientist. However, it was only confirmed in the 1970s thanks to the discovery of thriving colonies of Giant tube worms (*Riftia pachyptila*) and other organisms, which feed on the chemoautotrophic bacteria, available at <https://marinebio.org/oceans/deep-sea/>, last accessed 3 March 2022.

These ecosystems broadened our understanding of life and conditions in which it can thrive: perpetual darkness, extreme pressures and temperatures, and scarcity of nutrients.

The living communities of the deep are most generally divided into the 'benthos', those permanently attached to the seabed or buried underneath the surface, and the 'benthopelagic fauna', the associated swimming or drifting organisms, whose interactions with the substrate are only temporary.<sup>19</sup>

The life cycles of these creatures operate on time scales which are dramatically longer than those on land: their metabolic rates are significantly slower, as conservation of energy is key to survival.<sup>20</sup> This means that recovery rates tend to be extremely slow, with functions impacted decades after disturbance and some projected to take centuries to recover.<sup>21</sup>

## 1.2 Resources of the Area

Presently, the industry, research and regulatory activities focus on three main resource classes: polymetallic nodules, polymetallic sulphides and ferromanganese crusts (collectively known and hereinafter Minerals). While they share certain basic characteristics, they each have their *"distinct geology (i.e. processes of formation and metal tenors), environments of formation, associated ecosystems, specific technological requirements for exploration and extraction, and regulatory challenges."*<sup>22</sup>

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<sup>19</sup> This distinction is particularly relevant when considering the impact of DSBM activities resulting from particular vulnerability of the benthos to direct destruction of their habitat and sediment plumes. Gage, J. D., Tyler, P. A., 'Deep-Sea Biology: A Natural History of Organisms at the Deep-Sea Floor', Cambridge University Press, 1991, p. 57.

<sup>20</sup> JPI Oceans, 'Long-term Impacts of Deep-Sea Mining: Results of the Mining Impact project', October 2017, p. 3.

<sup>21</sup> The most significant and extensive research has been undertaken by Professor Hjalmar Thiel. His Disturbance and recolonization experiment (abbreviated as DISCOL) was conducted from 1989 on to evaluate potential impacts from mining on the deep-sea bed. In 2015, many of the ecosystem functions in the disturbance zones were not recovered and that there was little re-colonisation in general. While site-specific for the Clarion-Clipperton Zone, it has manifested the need for impact assessments on respective mining sites in the future. Summarised from Jones, D.O.B., 'Biological responses to disturbance from simulated deep-sea polymetallic nodule mining', 8 February 2017, available at:

<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0171750#pone.0171750.ref041>, last accessed 3 March 2022.

<sup>22</sup> Lusty, P. A. J., Murton, B. J., *supra* n. 4, p. 302.

### 1.2.1 Shared challenges of the resources of the Area

The shared practical challenges to all deep-sea resources can be summarised into the following groups: (i) remoteness and extreme conditions, (ii) profitability issues, (iii) conflicts of use, and (iv) state of knowledge, social acceptance and endangering potential living resources.

First, most exploration sites are farther than 1 200 km from land in the Pacific, Indian and Atlantic Oceans, and their sizes reach thousands of square kilometres.<sup>23</sup> On top of that, the recovery depths between 700 metres to 6 000 metres, complete darkness, extreme pressures exerted on mining equipment, complex current regimes and considerable distances between recovery sites and vessels present tricky technological and logistic issues. In their combination, these factors make discovery and assessment of resources, and their potential recovery extremely financially demanding.

Second, when it comes to profitability, there is still little consensus on the period of launching a commercially viable mining operation. In this respect, ISA plays a conflicted part, as it has interest in promoting activities in the Area and thus maintaining the ventures' profitability, while ensuring effective protection of the marine environment and equitable distribution of benefits<sup>24</sup>. The big challenge for ISA is thus to find a working balance within its legal framework between the interests of investors and the preservation of the marine environment.<sup>25</sup>

Third, DSBM would introduce a qualitatively new usage of the ocean and, which may conflict other uses, both present and future. The research identified conflicts with fishing (particularly deep-sea fishing around seamounts), navigation, exploration, laying underwater cables, as well as potential hindrance to activities relating to maritime genetic resources.<sup>26</sup> It is also necessary to consider the quantitative impact of multiple mining operations being started at similar time.<sup>27</sup>

Fourth, if there is one thing that all research agrees on, it is that we do not know enough about the marine environment. For example, Ginzky and Damian point out, that there has only been one individual found for 60-90 % of the species, which have been recovered from the deep sea.<sup>28</sup>

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<sup>23</sup> ISA Regulations, reg. 25 (1).

<sup>24</sup> Stated by art. 145 UNCLOS which establishes the law-making competence of ISA and confers it to adopt rules, regulations, and procedures to ensure effective prevention, reduction and control of pollution, and preservation and conservation of natural resources.

<sup>25</sup> Brown, C., 'Mining at 2,500 fathoms under the sea: Thoughts on an emerging regulatory framework', *Ocean Science Journal*, Vol. 53(2), 2018, p. 288.

<sup>26</sup> Ginzky, H., Damian H. P., *supra* n. 14, p. 325.

<sup>27</sup> *Ibid*, p. 325.

<sup>28</sup> *Ibid*, p. 326.

### 1.2.2 Resource classes of the Area

*Polymetallic nodules* (also known as 'ferromanganese nodules', 'Fe-Mn nodules', etc.) are geological structures created by slow sedimentation of iron and manganese oxides with associated metals from the water column or sediment, between 1 – 12 centimetres large, which lie scattered on top of or are buried in the upper layers of the abyssal plains' sediment.<sup>29</sup> The Nodules Regulations define them as "*one of the resources of the Area consisting of any deposit or accretion of nodules, on or just below the surface of the deep seabed, which contain manganese, nickel, cobalt and copper.*"<sup>30</sup>

Nodules are created over millions of years in a stable environment, through slow precipitations of dissolved metal compounds around a central nucleus (usually of organic origin).<sup>31</sup> Because of this, they are not a renewable resource.<sup>32</sup> Their composition varies at regional and intra-nodular scale, but all contain a wide range of metals. Of these, nickel and cobalt are the most economically interesting, with copper and manganese following suit.<sup>33</sup>

Our insight into the living communities of the abyssal plains is still limited. However, we know that they are characterised by extremely high biodiversity, low relative density and that many organisms, both micro- and macro-fauna, live on the nodules themselves.<sup>34</sup>

Exploration contracts for polymetallic nodules allocate to the Contractor an exploration area that may not exceed 150,000 km<sup>2</sup>, which the Contractor must gradually relinquish by a total of 50% over the period of eight years, to end up with no more than 75,000 km<sup>2</sup>.<sup>35</sup>

The most likely system for extracting nodules would consist of an underwater collector linked to a suction mechanism with two pipes (a sort of a gigantic underwater vacuum cleaner); the first ('riser pipe') would lift the rocks, along with the sediments and water, to the surface and onto the mining support vessel. The second ('exhaust pipe'), would discharge the tailings back into the ocean.<sup>36</sup> The depth of discharge is affirmed to be of particular importance because of

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<sup>29</sup> Lusty, P. A. J., Murton, B. J., *supra* n. 4, p. 302.

<sup>30</sup> Nodules Regulations, reg. 1 (3) d.

<sup>31</sup> Summarized from: Cuyvers, L., Berry, W., Gjerde, K., Thiele, T. and Wilhem, C., *supra* n. 5, p. 8.

<sup>32</sup> Jones, D. O. B., Amon, D. J., Chapman, Abbie S. A., 'Mining Deep-Ocean Mineral Deposits: What are the Ecological Risks?', *Elements*, Vol. 14, 2018, p. 325.

<sup>33</sup> Lusty, P. A. J., Murton, B. J., *supra* n. 4, p. 304.

<sup>34</sup> Jones, D. O. B., Amon, D. J., Chapman, Abbie S. A., *supra* n. 32, p. 324.

<sup>35</sup> Nodule Regulations, reg. 25 (1).

<sup>36</sup> Jones, D. O. B., Amon, D. J., Chapman, Abbie S. A., *supra* n. 32, p. 326.

possible biological contamination into upper water strata and the multiplying range of the spread of sediment plumes if it does not reach sufficient depth.<sup>37</sup>

The specific challenges presented by nodule extraction are the large size of directly impacted areas and habitats, indirect destruction of organisms and contamination of water through sediment disturbances and displacement.<sup>38</sup> The latter is particularly important for nodules extraction due to the stability of conditions and the fine particles constituting the sediment of the abyssal plains which spread over great distances. This would make the impacted area manifold the size of the operation area. On the other hand, there is no need to break hard rock, as extracting nodules is rather collecting than traditional on-land mining.

*Polymetallic sulphides* (also referred to as 'seafloor massive sulphides') mean "*hydrothermally formed deposits of sulphides and accompanying mineral resources in the Area.*"<sup>39</sup> They usually cover a smaller area than the other minerals (usually around 100 metres to 200 metres in diameter).<sup>40</sup> They are found in all the world's oceans near hydrothermal vents, typically at the boundaries of tectonic plates, in depths of up to 5 000 metres. Due to the dynamic life cycles of the vents, the mounds are found at a range of environments, from extremely active and hot, to extinct and cold.<sup>41</sup> They would be exploited as a source of base and precious metals such as copper, lead, zinc, gold and silver.<sup>42</sup>

The living communities are also determined by the activity of the vent: communities around with active venting possess much higher biomass than other deep-sea ecosystem, but lower biodiversity at a given location. However, over 80 % of organisms living around vent are endemic with significant differences in taxa representation between ocean basins, making each vent ecosystem practically unique.<sup>43</sup> The ambient environment of the extinct vents hosts sparse, but more diverse communities.<sup>44</sup> Furthermore, the dense living communities surrounding active vents are considered one of the greatest discoveries of the 20<sup>th</sup> century. It is also affirmed that

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<sup>37</sup> Billett, D. S. M., Jones, D. O. B., Weaver, P. P. E., 'Improving Environmental Management Practices in Deep-Sea Mining', in Sharma, Rahul, 'Environmental Issues of Deep-Sea Mining: Impacts, Consequences and Policy Perspectives', Cham, Springer, 2019, p. 415.

<sup>38</sup> The nodules are notably a habitat of its own for attached organisms living directly on them and serve as an important substrate, which supports some phases of other organisms.

<sup>39</sup> Sulphides Regulations, reg. 1 (3) d.

<sup>40</sup> Jones, D. O. B., Amon, D. J., Chapman, Abbie S. A., *supra* n. 32, p. 325.

<sup>41</sup> *Ibid*, p. 325.

<sup>42</sup> Lusty, P. A. J., Murton, B. J., *supra* n. 4, p. 303.

<sup>43</sup> Van Dover, C.L., 'Ocean policy: Hydrothermal vent ecosystems and conservation', *Oceanography* 25(1), 2012, p. 313–316, available at: <http://dx.doi.org/10.5670/oceanog.2012.36>, last accessed on 27 April 2021.

<sup>44</sup> Jones, D. O. B., Amon, D. J., Chapman, Abbie S. A., *supra* n. 32, p. 325.



the life's common ancestors lived by them and some go as far as to claim that life itself may have originated in their vicinity.<sup>45,46</sup>

Exploration contracts for massive sulphides award areas consisting of no more than 100 polymetallic sulphide blocks, with maximum size of 100 km<sup>2</sup>.<sup>47</sup> Similarly to nodule explorations, the contract for a plan of work is limited to 15 years and 75% of exploration area must be relinquished by the end of the tenth year.<sup>48</sup>

Thanks to the Solwara I project off the coast of Papua New Guinea, we have a rather good idea of the mining techniques used. They would involve three different robotic tools: one cutting machine would prepare the ground, a second cutter would mine by a continuous cutting process, and a third collecting machine would then suck the disaggregated rock into a 'riser system'.<sup>49</sup>

The greatest challenge is the complete exclusion of active vents from mining activities as the losses far outweigh the gains. On the other hand, the mining of a single extinct vent may have smaller impacts on the environment than that of the other mining classes due to their relatively small size. However, they present greater danger of chemical pollution due to the release of toxic trace elements and oxidation of the newly uncovered rock. Vents also provide important support services for other non-vent organisms; if lost, the impacts would be difficult to quantify.<sup>50</sup>

*Ferromanganese crusts* (also called 'cobalt crusts', 'cobalt-rich crusts' and 'manganese crusts') designate a group of "cobalt-rich iron/manganese hydroxide/oxide deposits that form on hard surfaces"<sup>51</sup> (seamounts and ridges) in a similar way to polymetallic nodules. Their chemical composition and thus the potential mineable elements are largely similar to polymetallic nodules. Furthermore, due to their slow sedimentation and sensitivity to water composition they may also be important to climate science as chronicles of climatic evolution spanning thousands to tens of millions of years.<sup>52</sup>

For the living communities, they "represent hard, stable habitats over a range of water depths in the open ocean."<sup>53</sup> As they are usually exposed, attached suspension feeders live directly on

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<sup>45</sup> Service, R., Our Last Common Ancestor Inhaled Hydrogen from Underwater Volcanoes, Science Mag, 25 July 2016, available at: <http://www.sciencemag.org/news/2016/07/our-last-common-ancestor-inhaledhydrogen-underwater-volcanoes>, last accessed on 25 October 2021.

<sup>46</sup> Martin, W. et al., Hydrothermal vents and the origin of life, Nature reviews, Microbiology, vol. 6, 2008, p. 808.

<sup>47</sup> ISA, Sulphides Regulations, reg. 12.

<sup>48</sup> ISA, Ibid, reg. 27 (2), 28.

<sup>49</sup> Jones, D. O. B., Amon, D. J., Chapman, Abbie S. A., *supra* n. 32, p. 326.

<sup>50</sup> Summarised from, *ibid*, p. 327.

<sup>51</sup> ISA, Crusts Regulations, reg. 1 (3) a.

<sup>52</sup> Lusty, P. A. J., Murton, B. J., *supra* n. 4, p. 303.

<sup>53</sup> *Idem*.

them and their colonies, creating dense forests (as in the case of deep-sea corals), which provide support to a wide range of associated fauna.<sup>54</sup>

Ferromanganese crust mining would probably use similar techniques and equipment to those used for polymetallic sulphides.<sup>55</sup>

Specific challenges of mining ferromanganese crusts include the need for removal of hard rock to which long-lived organisms are directly attached, high level of endemism at isolated mountains and ranges, and cumulative effect of impacts caused by other activities (such as deep-sea fishing).<sup>56</sup>

### **1.3 Deep seabed mining and its impacts on the marine environment**

It is clear than any activities in the Area mean that the marine environment will be impacted by pollution and other hazards. These sources are mainly:

- mining in the Area (from activities such as drilling, dredging, coring and excavation),
- shipboard processing immediately above a mine site (these sources include disposal, dumping and discharge of sediment, wastes or other effluents of minerals derived from that mine site into the marine environment),
- other associated activities (such as construction and operation or maintenance of installations, pipelines and other related devices),
- transportation, and
- natural disasters and other incidents.

Although impacts on and threats to the marine environment by DSBM have been object of a fast-growing body of systematic research, there is still a significant lack of information and wide knowledge gaps. A recent study, presenting an analysis of peer-reviewed scientific literature published on the topic since 2010, concluded that in only one of the 77 researched items, the scientific knowledge enables to establish environmental baselines that would allow for evidence based management and in only one of the 63 researched items, this could be affirmed with respect to our knowledge of the impacts of DSBM.<sup>57</sup> Many of the impacts thus

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<sup>54</sup> Jones, D. O. B., Amon, D. J., Chapman, Abbie S. A., *supra* n. 32, p. 327.

<sup>55</sup> *Ibid*, p. 326.

<sup>56</sup> Summarised from, *ibid*, p. 328.

<sup>57</sup> Amon, D.J. et al., 'Assessment of scientific gaps related to the effective environmental management of deep-seabed mining', *Marine Policy* vol. 138, published online 3 March 2022, available at: <https://www.sciencedirect.com/science/article/pii/S0308597X22000537?via%3Dihub>, last accessed 19 June 2022.

remain unforeseeable.<sup>58</sup> However, the researchers agree that on local scale, impacts will be severe and would lead to extinction of endemic species, whose habitat will disappear. Both the physio-chemical (abiotic) environment and the biological (biotic) environment would be influenced.

The above-mentioned activities impact the marine environment both individually and cumulatively, with cumulative impacts proving particularly difficult to assess.<sup>59</sup> Cumulative impacts are defined as "*impacts resulting from incremental changes caused by other past, present or foreseeable actions*"<sup>60</sup> and are seen as a particularly pressing issue. There is also an associated threat of reaching environmental tipping points,<sup>61</sup> as the ocean environment is under great stress due to a variety of other human activities (e.g., shipping, fishing, waste dumping, etc.) and the ongoing climate change.

The impact areas and categories can be summarized to the following, as identified by the German Environmental Impact Assessment,<sup>62</sup> the Regional Environmental Assessment of the North Atlantic Ridge<sup>63</sup> and by Lodge and Verlaan.<sup>64</sup> They include:

- mining operation (direct destruction of organisms and habitat removal),
- mining plume (sediment disturbance and plume formation and deposition, biogeochemical alteration of the sediment),
- returned water plume (release of toxic particles and/or substances into the water column),

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<sup>58</sup> Jones, D. O. B., Amon, D. J., Chapman, Abbie S. A., *supra* n. 32, p. 324.

<sup>59</sup> Assessment of cumulative impacts was first required by the European Environmental Impact Assessment (EIA) Directive (85/337/EEC, since amended by further Directives) and by the EC Habitats Directive (92/43/EEC), where they are called 'in-combination' impacts.

<sup>60</sup> ISA, Legal and Technical Commission, , 30 March 2020, ISBA/25/LTC/6, p. 6.

<sup>61</sup> Tipping points capture the situation where a small perturbation to a dynamic complex system triggers a large response. These tipping points are tricky to predict and can lead to extensive irreversible damage. Summarised from: Lenton, T. M., 'Tipping points in the climate system', *Weather*, vol. 76, issue 10, 18 August 2021, p. 325-326, available at:

<https://rmets.onlinelibrary.wiley.com/doi/full/10.1002/wea.4058#:~:text=Large%20parts%20of%20the%20climate%20system%20that%20can,their%20switch%20in%20frequency%20~1%20million%20years%20ago.,> last accessed 3 March 2022.

<sup>62</sup> Federal Institute for Geosciences and Natural Resources (BGR), Environmental Impact Assessment for the testing of a pre-prototype manganese nodule collector vehicle in the Eastern German license area (Clarion-Clipperton Zone) in the framework of the European JPI-O MiningImpact 2 research project, Report, Hannover, 2018, p. 119, 144.

<sup>63</sup> Weaver, P. P. E., Boschen-Rose, R. E., Dale, A. C., Jones, D. O. B., Billett, D. S. M., Colaço, A., Morato, T., Dunn, D.C., Priede, I. G., 'Regional Environmental Assessment of the Northern Mid-Atlantic Ridge', 2019, 229 p, published by ISA as Technical Study No. 28, available at:

[https://isa.org/jm/files/files/documents/Technical\\_Study\\_29\\_Regional\\_Environmental.pdf](https://isa.org/jm/files/files/documents/Technical_Study_29_Regional_Environmental.pdf), last accessed on 23 August 2022.

<sup>64</sup> Lodge, M. W., Verlaan, P. A., 'Deep-Sea Mining: International Regulatory Challenges and Responses', *Elements*, Vol. 14, 2018, p. 332.

- removal of overburden and waste rock (physical damage to organisms attached to sediments at and around the mining site),
- emissions to air, and
- potential noise, vibration, and light pollution (impact from the surface, through the water column and on site).

From a different perspective, we can divide these impacts into physical (destruction of habitat, introduction of noise and light, and physical impact of plume particles), chemical (alteration of chemical environment through release of toxic particles, fuel leaks, and emissions to air) and biological (destruction and displacement of organisms, biological contamination of ecosystems from mining equipment).

While the negative consequences of DSBM are as plentiful as they are severe, Lodge and Verlaan examine and summarise some inherent advantages of extracting deep seabed mineral resources, as opposed to mining on land and see them as a potential way forward in gaining raw materials. These are:

- little or no overburden to remove e.g., overlying rock, soil, vegetation cover,
- ore grades can be significantly higher than on land, meaning that less ore is required to provide the same amount of metal,
- multiple metals can be obtained from a single site due to polymetallic nature of deposits,
- no local population to be disrupted, and
- no permanent infrastructure.<sup>65</sup>

Besides these points, Sharma and Smith add contributions to marine scientific research that would not have been financed otherwise (in hitherto unexplored oceanic regions), capacity building (in new research fields), as well as developing technological spinoffs for extreme conditions.<sup>66</sup>

As manifested above, DSBM would represent a qualitatively new source of pressure on the marine environment. The areas impacted by mining would not be limited to the seabed but extend to the water column above the site and even to the surface level and the air, especially if the mining installations remain at one place for longer periods of time. Furthermore, the spatial radius of negative impacts extends well beyond the mining site, as increased

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<sup>65</sup> Lodge, M. W., Verlaan, P. A., *ibid.*, p. 332.

<sup>66</sup> Sharma, R., Smith, S., 'Deep-Sea Mining and the Environment: An Introduction', in Sharma, R., 'Environmental Issues of Deep-Sea Mining: Impacts, Consequences and Policy Perspectives', Cham, Springer, 2019, p. 17.

concentrations of plume particles above the seafloor biological environment, given that many of the organisms rely on filtration of the ocean water. While there are certain identified advantages to the venture, the threats need to be addressed by a robust environmental framework. This framework will be analysed throughout the following chapters.

## 2 Sources of the legal framework

The relevant legal framework, as a system of legal instruments that sets forth the rules, rights, and obligations of its actors, is heterogeneous in the case of the DSBM.<sup>67</sup> Its sources designate those provisions operating within the legal system on a technical level.<sup>68</sup> The nature and scope of application of its constituent parts significantly differ, and it is important to understand their relations, their overlaps and lacunas. The sources can be generally split into four dualities: (i) international and national law, (ii) legally binding (*hard law*) and non-binding (*soft law*), (iii) general and regional and (iv) primary and secondary.

In public international law, the most authoritative statement of sources of law is given by art. 38 of the Statute of the International Court of Justice. The UNCLOS is allowing for another level of 'secondary' international sources as it establishes the ISA and vests it with a mandate to issue legally binding rules, regulations and procedures to supplement the general framework.<sup>69</sup> Furthermore, UNCLOS prescribes that States Parties shall take active role and adopt supplementary legal measures within their domestic systems and cooperate with the ISA.<sup>70</sup>

The sources identified and discussed here thus are:

- i. United Nations Convention on the Law of the Sea and its related instruments,
- ii. international custom and general principles of environmental law and other international conventions,
- iii. rules, regulations, and procedures of the ISA adopted under the mandate of UNCLOS,
- iv. judicial decisions of international judiciaries, and
- v. national law and administrative measures, adopted by States Parties to UNCLOS.

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<sup>67</sup> For the sources of International environmental law, the author refers to Damohorský, M. et al., 'Právo životního prostředí', 3<sup>rd</sup> edition, C. H. Beck, 2010, p. 113-119.

<sup>68</sup> Shaw, M.N., 'Public International Law', 7<sup>th</sup> Edition, Cambridge University Press, 2014, p. 50.

<sup>69</sup> UNCLOS, arts. 145, 156.

<sup>70</sup> UNCLOS, art. 209.

## **2.1 UNCLOS: the Constitution for the Oceans**

UNCLOS is a multilateral international convention<sup>71</sup> that is legally binding on its States Parties. It lays foundations, defines key terms, and presents rights, obligations and duties relating to the Law of the Sea. It is a largely comprehensive set of rules (it contains both substantive rules and rules of procedure) and it is almost universally accepted.

### **2.1.1 The Historical Background**

The negotiations of UNCLOS took part between 1973 and 1982, at a time of heightened tension between industrialised states and developing countries, which started gaining stronger footing on the international stage, following centuries of European-lead colonialism. While the former wanted to uphold the traditional principle of the freedom of the seas and take a free-market approach, the latter favoured an egalitarian approach that emphasised the 'common heritage of mankind' principle. These differences within the First Committee (which focused on the areas beyond national jurisdictions, i.e., beyond the outer limits of the continental shelf, hereinafter ABNJ) were specific to the Part XI, which was to concern the Area, as deep seabed beyond the limits of the continental shelf was discussed in isolation from the work on the more traditional areas of the law of the sea. Neither of the sides were willing to compromise. On the one hand, knowing that their participation was vital to the success of UNCLOS, the industrial states were not prone to retreat from their positions. On the other hand, the developing states had strengths in numbers, allowing them to push their agenda through. Thus, the final draft adopted the argumentation line of the developing states.

This resulted in a Part XI that was almost unanimously rejected by the industrialised states, at the time of adoption of UNCLOS in 1982. This situation was unsustainable and endangered the functionality of the UNCLOS as a whole. As a result, a series of informal meetings was launched in 1990 by the then Secretary-General of the United Nations, Mr. Javier Pérez de Cuéllar, to revise the Part XI and make it more acceptable for ratification.<sup>72</sup> The works culminated in the adoption on 28 July 1994 of the 1994 Implementation Agreement. As a result, a vast majority of industrially developed states ratified UNCLOS during the 1990s and the early

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<sup>71</sup> The regime it establishes has reached a universal acceptance, with 168 States Parties and the European Union to date.

<sup>72</sup> Notably, the United States have not yet become a State Party and retain observer status.

2000s. The Convention itself entered into force on 16 November 1994, a year after Guyana became the necessary 60<sup>th</sup> country to ratify.<sup>73</sup>

The 1994 Implementation Agreement entered into force two years later. This document comprises 10 articles and an Annex divided into 9 sections. It modifies Part XI and Annexes II and III UNCLOS in two important ways: firstly, it states that certain provision shall not apply; secondly, it amends other provisions to favour a more market-oriented approach. Finally, UNCLOS and the 1994 Implementation Agreement must be interpreted and applied together as a single instrument and *"in case of inconsistency, the provisions of the Agreement shall prevail."*<sup>74</sup>

### **2.1.2 Key provisions within UNCLOS**

Provisions relating to DSBM are set out in the Preamble, Part I, Part XI, Part XII, Part XV and Annex III, IV and VI, and are applicable together with provisions in the 1994 Implementation Agreement as a single instrument. The provisions can be divided into categories based on their content as follows:

- i. general objectives, values and strategies,
- ii. definitions of terms,
- iii. establishment of institutions,
- iv. substantive rules on right, direct and due diligence obligations, and
- v. rules of procedure.

In its essential concept, UNCLOS partially upheld the historical approach of International Law of the Sea to divide the ocean into multiple legally distinct geographical zones. However, this approach is contrary to the nature of the marine environment, which recognizes neither zones nor borders drawn up by humans. On the contrary to the divisions, the preamble of UNCLOS affirms a much more modern viewpoint in stating that *"the problems of ocean space are closely interrelated and need to be considered as a whole."*<sup>75</sup> This clearly states the need for integrated approach in environmental matters. In relation to that, researchers note that all areas of the oceans should be given equally serious attention and treated as a shared concern.<sup>76</sup> They further

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<sup>73</sup> UNCLOS, art. 308 (1) .

<sup>74</sup> 1994 Implementation Agreement, art. 2 (1).

<sup>75</sup> UNCLOS, Preamble.

<sup>76</sup> Singh and Hunter interestingly affirm that DSBM activities, irrespective of where they take place, are a matter of 'common concern to humankind' due to the harmful effects they are likely to cause to the marine environment. This is a nod to the 'common heritage of the humankind' principle. Singh, P., Hunter, J., *supra* n. 17, p. 497.



emphasise the need for an integral approach which follows the logic of ocean ecosystems, rather than legislative convenience.<sup>77</sup>

The Preamble also proclaims the objective to protect and preserve the marine environment,<sup>78</sup> to contribute to equitable economic order<sup>79</sup> and to build on resolution 2749 (XXV) of 17 December 1970 United Nations General Assembly Resolution 2749, On declaration of principles governing the sea-bed and the ocean floor, and the subsoil thereof, beyond the limits of national jurisdiction, which established the legal regime of resources in the Area as 'common heritage as humankind'.<sup>80</sup> Lastly, it recognizes the rules and principles of general international law as applicable in matters not regulated by UNCLOS.<sup>81</sup>

Part XI, together with Annexes III and IV, UNCLOS are entirely dedicated to activities in the Area, aiming to provide a comprehensive general framework, including both substantive and procedural provisions.

Part XII, UNCLOS relates specifically to the protection of the marine environment and sets forth the rights and obligations of States Parties and other actors. These apply both within and beyond national jurisdictions of the States Parties, in line with the abovementioned proclamation of the Preamble. Their substance marks an important shift from the traditional focus on sovereignty and freedoms, towards a shared responsibility to protect and preserve the marine environment.<sup>82</sup>

On the institutional level, art. 156, UNCLOS established the ISA and annex VI., UNCLOS the International Tribunal for the Law of the Sea (hereinafter ITLOS). ITLOS features a chamber dedicated to ruling on contentious and non-contentious issues arising under PART XI, UNCLOS, the Seabed Disputes Chamber (hereinafter SDC).<sup>83</sup>

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<sup>77</sup> Verlaan, P., 'Environmental Issues of Deep-Sea Mining: A Law of the Sea Perspective', in Sharma, Rahul, 'Environmental Issues of Deep-Sea Mining: Impacts, Consequences and Policy Perspectives', Cham, Springer, 2019, p. 24-25.

<sup>78</sup> UNCLOS, Preamble, point 4.

<sup>79</sup> Ibid, point 5.

<sup>80</sup> Ibid, point 6.

<sup>81</sup> Ibid, point 8.

<sup>82</sup> Singh, P., Jaeckel, A., 'Future prospects of marine environmental governance', in M. Salomon, T. Markus (eds.), 'Handbook on Marine Environment Protection', Springer, 2018, p. 623.

<sup>83</sup> Lodge, M. W., Verlaan, P. A., *supra* n. 64, p. 333.

## 2.2 International Custom and General Legal Principles

The States – as undisputed subjects of public international law – must comply with general principles of law recognized by civilised nations and international custom. The general public international law thus contributes to the legal framework of the Area. Importantly, the principles of international environmental law are also generally applicable, however only to the extent that they are considered customary law.

Their first important source are the non-binding declarations: the 1972 Stockholm Declaration, which affirmed the need for protection of the marine environment and established the basis for Part XII of UNCLOS and the Principles of the 1992 Rio Declaration<sup>84</sup>, which helped inform interpretation and application of rules, as well as elaborate new rules and procedures (and formulated the sustainable development principle used until this day).

Principle 15 of the 1992 Rio Declaration<sup>85</sup> relating to precautionary approach is reaffirmed on many occasions through legal documents issued under the auspices of the ISA.<sup>86</sup> Importantly, the 2011 Advisory Opinion suggested a trend that the precautionary principle is moving towards becoming part of international customary law.<sup>87</sup> However to this day, many states refuse to recognise its customary quality. In light of the scientific uncertainty demonstrated in the previous chapter, the importance of applying the precautionary principle within the DSBM framework is paramount. Its principal objective is to promote adequate environmental protection through the taking of early action as a response to threats to the environment, under conditions of scientific uncertainty. While there is an extensive body of analytical research of the principle as a legal context, its inclusion in specific institutions and processes still proves tricky.<sup>88</sup> Jaeckel argues that there are *"three interlinked dimensions involved in implementing precaution: procedural elements, institutional elements, and the adoption of protective measures,"*<sup>89</sup> which all need to be properly implemented for the precautionary principle to achieve its full potential.

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<sup>84</sup> Rio Declaration on Environment and Development, A/CONF.151/26, vol.I.

<sup>85</sup> It states: *"In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation."*

<sup>86</sup> ISA, Exploration Regulations, reg. 2 (2).

<sup>87</sup> 2011 Advisory Opinion, at para 135.

<sup>88</sup> Jaeckel, A. L., *The International Seabed Authority and Marine Environmental Protection: A Case Study in Implementing the Precautionary Principle*, University of Southern Australia, 18 August 2015, p. 24.

<sup>89</sup> Jaeckel, A. L., *ibid*, p. 57.

Parallel to the development of the regulatory framework of the Area, and as part of the Intergovernmental Conference under the UNCLOS,<sup>90</sup> works are underway on an international, legally binding instrument on the conservation and sustainable use of marine biological diversity of ABNJ. It is in the drafting phase, with its Fifth Substantive Session, having taken place in August of 2022.<sup>91</sup> While the ISA closely monitors the development of this instrument, its formal relationship to the extant framework of the Area remains unclear.

### **2.3 'The Mining Code' of the International Seabed Authority**

While UNCLOS established the general legal framework for the deep seabed mining regime, it was never intended to create a comprehensive set of rules. It thus left numerous detailed provisions to be decided, and the gaps to be closed later to reflect advances in scientific research. UNCLOS establishes the ISA as the principal promoter, legislator and administrator of activities in the Area, possessing a mandate to exercise jurisdiction over activities in the Area and having the capacity to grant exclusive right over its non-living resources.<sup>92</sup> Its rule-making mandate authorises and obliges<sup>93</sup> it to adopt rules, regulations and procedures, which should eventually form a comprehensive corpus for DSBM in the Area jointly referred to as the 'Mining Code'. It should address the complete system of prospecting for, and exploration and exploitation of Minerals envisioned in UNCLOS, and remain adaptive to reflect the advances in our understanding of deep seabed environment and ecology.<sup>94</sup> Under the auspices of the ISA, rules and regulations are being developed and adopted in a multilateral process with participation of States Parties, private corporations, NGOs and other stakeholders.

The ISA builds upon the groundwork of UNCLOS. In matters of environmental protection, arts. 145 and 209 and Annex III, art. 17 (1) (b) (xii), UNCLOS, all affirm its rule-making competence in stating that *"international rules, regulations and procedures shall be established in accordance with Part XI to prevent, reduce and control pollution of the marine environment from activities in the Area."* The 1994 Implementation Agreement underlines the importance of this obligation, when it states that *"between the entry into force of the Convention and the approval of the first Plan of work for exploitation, the Authority shall concentrate on"*, inter

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<sup>90</sup> Established under UN Resolution 72/249, dated 24 December 2017.

<sup>91</sup> UN, General Assembly decision A/76/L.46 to convene a fifth session of the intergovernmental conference on an international legally binding instrument (available as A/76/L.46).

<sup>92</sup> UNCLOS, art. 137 (2).

<sup>93</sup> UNCLOS, art. 145, phrases this mandate as *"the Authority shall adopt,"* and art. 209 UNCLOS states that *"international rules, regulations and procedures shall be established [by the Authority]."*

<sup>94</sup> ISA, 'Legal Instruments: Mining Code', available at <https://www.isa.org.jm/mining-code>, last accessed 16 August 2022.

alia, "the adoption of rules, regulations and procedures for the protection and preservation of the marine environment."<sup>95</sup> Here, it is worth noting that this mandate is limited to 'activities in the Area'. Therefore, the scope of the definition of 'activities in the Area' becomes crucial in determining the scope of application of ISAs legal rules.<sup>96</sup>

The Mining Code comprises a body of diverse documents issued by the ISA. Some of these are only concerned with the internal operation of the organization, while others are applicable to the conduct of third parties in the Area. They deal with all aspects from initial prospecting phase to removal of installations used for mining.

Regulations are a core instrument to elaborating the regime of the area. They contain general (abstract) rules, which are legally binding<sup>97</sup> for the ISA, its members – with no possibility of opting out beforehand, a unique feature in the context of international law – and contractors and are adopted by decision of the Council and approved by the Assembly.<sup>98</sup> They are designed to give detail the provisions laid out by UNCLOS and the 1994 Implementation Agreement and fill out the gaps with respect to developments of knowledge of the deep seabed environment and best practices. To date, there are Regulations in effect relating to prospecting and exploration of polymetallic nodules, first adopted in 2000 and later revised and updated in 2013 (hereinafter Nodules Regulations)<sup>99</sup>; massive polymetallic sulphides, adopted in 2010 (hereinafter Sulphides Regulations)<sup>100</sup>; and ferromanganese crusts, adopted in 2012 (hereinafter Crusts Regulations)<sup>101</sup> (when referenced jointly hereinafter Exploration Regulations). Exploration Regulations are largely similar in their scope, structure, and content, but allow for the respect of the spatial and geological characteristics of the respective resource class.

As many of the Contracts were set to reach expiry during the second decade of the 21<sup>st</sup> century, in 2015, ISA moved to adopt the Decision of the Council of the International Seabed Authority relating to the procedures and criteria for the extension of an approved plan of work for exploration pursuant to section 1, paragraph 9, of the annex to the 1994 Implementation

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<sup>95</sup> 1994 Implementation Agreement, annex, sec. 1, (5) (g).

<sup>96</sup> Singh, P., Hunter, J., *supra* n. 17, p. 481.

<sup>97</sup> UNCLOS, art. 137 (2).

<sup>98</sup> UNCLOS, art. 162 (2) f (ii).

<sup>99</sup> ISA, 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, 25 July 2013, ISBA/19/A/9.

<sup>100</sup> ISA, Decision of the Assembly of the International Seabed Authority relating to the Regulations on Prospecting and Exploration for Polymetallic Sulphides in the Area, 15 November 2010, ISBA/16/A/12/Rev.1.

<sup>101</sup> ISA, 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, 22 October 2012, ISBA/18/A/11.

Agreement (ISBA/21/C/19\*), and thus gave the possibility to the Contractors to apply for an extension of their plan of work for the maximum of five years at a time.

As of this date, Regulations relating to exploitation are only in their drafting phase. This process started in 2014 with scoping studies, with LTC charged with preparing the drafts. Since then, workshops and stakeholder consultations have been organised and three working drafts were shared with the public, issued in June 2016, August 2017, and June 2018 respectively. The latest, fourth, Draft Regulations (hereinafter Draft Exploitation Regulations) (when referenced as a form of legal instrument irrespective whether Exploration Regulations or Draft Exploitation Regulations, hereinafter Regulations)<sup>102</sup> were distributed on 22 March 2019 and discussed by the Council at their 25<sup>th</sup> Session in July 2019. The comments and specific drafting suggestions to the latest Draft Regulations are available to the public and include calls for a further development of rules on environmental protection.

The application of the rules and regulations of the ISA to sponsored entities will be done by way of contract. As private entities will be among those carrying out activities in the Area, their obligations will have contractual nature and the binding and enforceable terms and conditions of these contracts will play a critical function. Therefore, all Regulations feature annexes containing contract templates and standard clauses.<sup>103</sup> It is worth noting that the obligation of the States Parties for ensuring compliance by sponsored contractors extends to their adherence with the terms of the contracts. Further to that, the terms of contracts are also considered applicable law before the Seabed Disputes Chamber of ITLOS pursuant to annex VI, art. 38 UNCLOS. However, there is uncertainty about the capacity of the ISA to enforce these rules in cases of non-compliance, in spite of a condemning decision of ITLOS.

To detail the framework and provide further guidance for Contractors, The Legal and Technical Commission issues Recommendations of technical and administrative nature, *inter alia*, on formulating rules, regulations and procedures,<sup>104</sup> the protection of the marine environment and regarding establishment of monitoring programmes.<sup>105</sup> Further to Recommendations, the Draft Exploitation Regulations introduce two new forms of legally-administrative documents: Guidelines and Standards.

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<sup>102</sup> ISA, Draft Regulations on Exploitation of Mineral Resources in the Area, ISBA/25/C/WP.1.

<sup>103</sup> Regulations, Annex II and Annex IV, Draft Exploitation Regulations, Annex IX and Annex X.

<sup>104</sup> UNCLOS, art. 162 (2) o.

<sup>105</sup> UNCLOS, art 165 (2) e, h.

## 2.4 Decisions and opinions of International Judiciaries

Decisions and opinions of international judiciaries serve to settle disputes between entities, which accepted their jurisdiction and help inform and specify definitions, notions, and identify the substance of obligations from conventions, or when customary quality of a rule is contested. The case law of the International Court of Justice (hereinafter ICJ) and ITLOS are relevant to the legal framework relating to DSBM.<sup>106</sup>

The ICJ was established already in 1945 and possesses a general jurisdictional mandate over *"all cases which parties refer to it and all matters specifically provided in the Charter of the United Nations or in treaties and conventions in force"*, as prescribed in art. 36 (1) of the Statute of the ICJ.<sup>107</sup> Its optional jurisdiction in matters of UNCLOS is established in arts. 287 and 288, UNCLOS.

ITLOS was established under Annex VI art. 1, UNCLOS and operates under Part XV and Annex VI, UNCLOS, which contains the Statute of the ITLOS. It has jurisdiction over all disputes concerning the interpretation or the application of UNCLOS, subject to the rules in arts. 297-299, UNCLOS, and in certain advisory cases.

The most important body, for the purpose of this thesis, is the SDC, dedicated to matters relating to Part XI. It was established by Annex VI art. 14, UNCLOS and—pursuant to art. 186, UNCLOS—it shall be governed, in the broadest sense, by Part XI, Section 5, Part XV and Annex VI, UNCLOS. SDC is composed of 11 judges.

Art. 187, UNCLOS determines its jurisdiction in contentious cases and art. 191, UNCLOS states that, at the request of Assembly or the Council of the ISA, it shall give advisory opinions on questions arising within the scope of their activities. Regarding the enforceability of the judgements, it is worth noting that, under Annex VI, art. 39, UNCLOS, the decisions of SDC shall be enforceable in the territories of the State Parties, *"in the same manner as judgements and orders of the highest court of the State Party, in whose territory, the enforcement is sought."*

So far, SDC has delivered one advisory opinion on 1 February 2011 upon request of ISA, relating to obligations and responsibilities of the sponsoring States (hereinafter 2011 Advisory

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<sup>106</sup> Established by Part XI, Section 5 of UNCLOS and Annex VI, art. 14 of UNCLOS as a chamber of the International Tribunal for the Law of the Sea. It consists of 11 judges selected by the Tribunal for a renewable three-year term.

<sup>107</sup> United Nations, Statute of the International Court of Justice, 18 April 1946.

Opinion)<sup>108</sup> and has not ruled on any contentious cases. The 2011 Advisory Opinion has been extremely important in informing the scope of activities in the Area and in clarifying the scope and substance of obligations, responsibilities and liabilities of the States Parties and the manner in which they may be discharged.

## **2.5 National laws and administrative measures**

National laws and regulations are necessary to create a bridge between the international obligations of UNCLOS, which are binding only States Parties thereto, and subjects of the respective 'domestic' legal systems of the States Parties. As mentioned earlier, such entities are bound by Regulations of ISA and by Contracts, but an implementation of the rules of UNCLOS into domestic law is necessary to ensure compliance and enforceability of these rules.

With respect to national sources of law, the ISA maintains a National Legislation Database, which is updated from time to time, available at its website.<sup>109</sup> In 2011, the Council of the ISA invited States Parties to share information and texts of their relevant national laws, regulations and administrative measures with the ISA Secretariat.<sup>110</sup> The Council repeated this invitation in 2017.<sup>111</sup> This information was used to create the Comparative Study of Existing National Legislation on Deep Seabed Mining. The study focuses on particular feature of 18 States Parties to UNCLOS, out of which 13 are sponsoring States.<sup>112</sup> However, while its findings may be useful, it is necessary to treat them on a non-reliance basis, as unofficial translations of the texts were used by its authors.<sup>113</sup>

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<sup>108</sup> International Tribunal for the Law of the Sea, 'Responsibilities and obligations of States with respect to activities in the Area', Advisory Opinion, 1 February 2011, ITLOS Reports 2011.

<sup>109</sup> ISA, National Legislation Database, available at: <https://www.isa.org.jm/national-legislation-database>, last accessed on 3 March 2022.

<sup>110</sup> ISA, Decision of the Council, 21 July 2011, ISBA/17/C/20, sec. 3.

<sup>111</sup> ISA, Decision of the Assembly, 18 August 2017, ISBA/23/A/13.

<sup>112</sup> ISA, Comparative Study of the Existing National Legislation on Deep Seabed Mining, at para. 16, available at: [https://www.isa.org.jm/files/files/documents/Comparative\\_Study\\_NL.pdf](https://www.isa.org.jm/files/files/documents/Comparative_Study_NL.pdf), last accessed on 13 March 2022.

<sup>113</sup> *Ibid*, at para. 19.

### 3 Subject Matter of the Legal Framework

The subject matter of the legal framework presented in Chapter 2 is determined as *activities in the Area*. Their objective is to search for potential mining sites (prospecting), analyse and delimit suitable mining deposits within a larger area (exploration) and ultimately to extract non-living resources for commercial gain (exploitation).

#### 3.1 Activities in the Area

In its general provisions, art. 1 (1) UNCLOS defines the Area as "*the seabed and ocean floor and subsoil thereof, beyond the limits of national jurisdiction.*" The definition thus establishes the Area as an ABNJ distinct from the High Seas and lists its main constituent parts. The seabed and ocean floor are used as synonyms to designate the same.<sup>114</sup> The subsoil then includes the layers of sediments on the seabed and any geological structures underneath it, such as caves. The negative definition used for delimitation (i.e., beyond the limits of national jurisdictions) means that the extent of the Area has not been precisely established and can change in the future because of borderline delimitations of the outer limits of the continental shelf. However, this causes little issues to DSBM in practice.<sup>115</sup>

Part XI, Section 2, UNCLOS lays down the guiding principles of the regime of the Area. In respect to exercising rights in the Area, UNCLOS draws on the definition and prescribes that "*no State shall claim or exercise sovereignty or sovereign rights over any part of the Area or its resources, nor shall any State or natural or juridical person appropriate any part thereof. No such claim or exercise of sovereignty shall be recognized.*"<sup>116</sup> This means that while no sovereign or other rights may be recognised to any part of the Area, Minerals recovered in compliance with UNCLOS remain alienable pursuant to art. 136 UNCLOS.<sup>117</sup>

Art. 137 (2), UNCLOS affirms that, as common heritage of humankind, all rights in the resources therein are vested in all humankind and charges ISA to act on its behalf.<sup>118</sup> As a

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<sup>114</sup> This is exemplified by the fact that some languages that do not generally distinguish between 'the sea' and 'the ocean', include only one word, such as 'der Meeresboden' in the German translation.

<sup>115</sup> As established under UNCLOS, art. 76 and Annex II. Lodge, M. W., 'The Deep Seabed', in Rothwell, D., Elferink A. O., Scott K., Stephens, T. (ed), 'The Oxford Handbook of the International Law of the Sea', Oxford University Press, 2016, p. 228.

<sup>116</sup> UNCLOS, art. 137 (1).

<sup>117</sup> UNCLOS, art. 136.

<sup>118</sup> Established for the purpose by art. 156 (1) UNCLOS. Pursuant art. 156 (2), All State Parties of UNCLOS are *ipso facto* members of the ISA.



consequence, access to activities concerning resources in the Area is only permissible via the ISA.

Art. 1 (1) (3), UNCLOS defines these activities very laconically as "*all activities of exploration for, and exploitation of, the resources of the Area.*" To elucidate on the range of the activities that engage the responsibilities and obligations of States, the SDC found it necessary to dedicate a part of the 2011 Advisory Opinion to further delimiting this notion, as the precise scope remained unclear. The 2011 Advisory Opinion clarifies many of the most important ones. It primarily seeks to strike balance between too wide a notion, which would lead to regulatory conflicts with other maritime regimes, and too narrow an understanding, which may leave activities presenting significant risks unregulated.<sup>119</sup>

Specifically, SDC concluded that the expression 'activities in the Area' includes "*recovery of minerals and their lifting to the water surface*", "*activities directly connected to them*" and "*transportation within that part of the high seas, when directly connected with extraction and lifting.*"<sup>120</sup> On the other hand SDC argues that "*processing, especially that conducted at a plant situated on land,*" and "*transportation to processing points*" do not fall within the scope of the notion.<sup>121</sup> This is particularly important, as in the view of the SDC, the functional mandate of ISA is determined by the scope of activities in the Area.

The target of these activities are the mineral resources described in Chapter 1, Section 2. From a legal perspective, resources are, pursuant art. 133, UNCLOS, "*all solid, liquid or gaseous mineral resources in situ in the Area at or beneath the seabed, including polymetallic nodules.*" Thus, only the non-living resources fall within the scope of this definition and living resources, including genetic resources, are excluded from it. It is when being recovered from the Area that they are referred to as *minerals*.<sup>122</sup> From a regulatory perspective, minerals share the caveat of being "*the only example of a global resource under global intergovernmental management by a global intergovernmental organization established (the ISA) exclusively for this purpose.*"<sup>123</sup>

The common heritage of humankind principle not only determines the rationale behind granting access and alienation rights to the minerals, but it also has an influence on the environmental status of the minerals. This can be seen in the emerging parallel principle of the 'common

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<sup>119</sup> 2011 Advisory Opinion, at paras 96-97.

<sup>120</sup> 2011 Advisory Opinion, at paras 94-95.

<sup>121</sup> 2011 Advisory Opinion, at para 96.

<sup>122</sup> UNCLOS, art 133 (b), resources, when recovered from the Area, are referred to as 'minerals'.

<sup>123</sup> Verlaan, P., *supra* n. 77, p. 25

concern of humankind', which is being used in the context of protecting marine biological diversity and climate change.<sup>124</sup>

### 3.2 Prospecting

Prospecting is defined as *"the search for deposits of resources in the Area, including estimation of the composition, sizes, and distributions of deposits of resources and their economic values, without any exclusive rights."*<sup>125</sup> It is at the inception of any potential mining site. However, it is disputed if it falls within the scope of activities in the Area. Based on its reading of art. 1 (1) (1), UNCLOS, SDC concludes that prospecting falls neither within the scope of activities in the Area, nor does it require sponsorship.<sup>126</sup> This conclusion does not fully align with the wording of Exploration Regulations, which include it in Part II, considering it a preliminary phase of Exploration and state that prospecting shall be conducted in compliance with UNCLOS and the Regulations.<sup>127</sup> However, no sponsorship is required by Exploration Regulations and no contract is entered into between ISA and the prospectors. Thus, in light of the conclusions of the Advisory Opinion, only the rights and obligations within the limits expressly stated by the Regulations would apply to prospecting.

### 3.3 Exploration

Exploration represents the second phase of DSBM activities, following prospecting and preceding exploitation. It is defined by the respective Regulations as *"the searching for deposits of polymetallic nodules in the Area with exclusive rights, the analysis of such deposits, the use and testing of recovery systems and equipment, processing facilities and transportation systems and the carrying out of studies of the environmental, technical, economic, commercial and other appropriate factors that must be taken into account in exploitation."*<sup>128</sup> From the definition, it follows that the three main activities are searching, analyses of the results and testing of mining equipment. While the first two activities do not differ much from standard oceanic research, testing includes a wide range of activities, such as the testing of technologies at the site and

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<sup>124</sup> Bowling, C., Pierson, E., Ratté, S., 'The Common Concern of Humankind: A Potential Framework for a New International Legally Binding Instrument on the Conservation and Sustainable Use of Marine Biological Diversity in the High Seas', available at: [https://www.un.org/depts/los/biodiversity/prepcom\\_files/BowlingPiersonandRatte\\_Common\\_Concern.pdf](https://www.un.org/depts/los/biodiversity/prepcom_files/BowlingPiersonandRatte_Common_Concern.pdf), last accessed on 22 April 2021.

<sup>125</sup> ISA, The Regulations, Regulation 1.

<sup>126</sup> 2011 Advisory Opinion, at para 98.

<sup>127</sup> Both the Czech Republic and Germany, whose national frameworks will be discussed in Chapter 6, have taken the way of the Regulations and include prospecting in their national authorisation procedures.

<sup>128</sup> ISA, the Regulations, reg. 1 (3) (b).

simulations of recovery, which may already have considerable impacts on the marine environment.

### **3.4 Exploitation**

Exploitation is the final phase of the Activities in the Area, which includes an establishment and operation of a mining site. It is defined under reg. 1 (1), Exploration Regulations for each respective Resource class as *"the recovery for commercial purposes and the extraction of minerals therefrom, including the construction and operation of mining, processing and transportation systems, for the production and marketing of metals."* However, this definition will likely be expanded once the Draft Exploitation Regulations are adopted to include further exploration, preparation phases and also decommissioning and closure of the mining site. The current Draft Exploitation Regulations include their own definition in their Schedule, stating that exploitation means *"the recovery for commercial purposes of Resources in the Area with exclusive rights and the extraction of Minerals therefrom, including the construction and operation of mining, processing and transportation systems in the Area, for the production and marketing of metals, as well as the decommissioning and closure of mining operations."*<sup>129</sup> Re-establishing the definition with a broadened scope to specifically include processing and transportation systems and closure of operations is a welcome step to prevent possibilities of 'grey areas' where the applicability of the obligations set forth by and enforceable under the signed contract may be disputed.

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<sup>129</sup> ISA, Draft Exploitation Regulations, Schedule, p. 115.

## 4 Key Actors of DSBM and their Obligations

The sources this thesis discussed in Chapter 2 create a framework for the activities in the Area, as defined in Chapter 3. There remains to identify the main actors of DSBM, assigns them roles within that legal framework, and establishes their respective rights and obligations. These key actors are (i) States (as *States Parties* and *sponsoring States*), (ii) the ISA and (iii) all entities carrying out activities in the Area, including prospecting (*Contractors*).

The Enterprise, a special corporation designated to carry out mining operations on behalf of the ISA, may become an important fourth actor in DSBM. According to the original idea of UNCLOS, the Enterprise was to become the commercial arm of the ISA, sharing its benefits equitably. However, it hasn't been established so far.

### 4.1 States

States play multiple roles under the current legal framework, of which the two most important will be discussed. Firstly, they become—upon ratification—States Parties to UNCLOS. Secondly, by means of an autonomous decision on sponsorship of an entity, they may take on the role of 'sponsoring States'.

#### 4.1.1 States as States Parties

States possess an undisputed legal personality under public international law and can become party to conventions based on their sovereign decision to sign and ratify, and, as a result, to be subject to the rules they set forth, as their primary addressees. Thus, they take on the rights and obligations prescribed by such international convention and are bound by them based on the *pacta sunt servanda* principle.

With respect to status matters, the States Parties of UNCLOS become upon ratification *ipso facto* members of the ISA pursuant to art. 156 (2), UNCLOS. Further to that, all States Parties are obliged to accept the jurisdictions of SDC and ITLOS under art. 287 (3), UNCLOS "*in the extent and in matters provided for in Part XI, section 5 UNCLOS.*"

Under UNCLOS, States Parties have a "*mandatory, unqualified and exemption-free*"<sup>130</sup> obligation to "*protect and preserve marine environment*".<sup>131</sup> It is an obligation which entails:

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<sup>130</sup> Verlaan, P, 'Deep-Seabed Mining', in Salomon, M., Markus, T. (eds), 'Handbook on Environmental Protection', Cham, Springer, 2018, p. 845.

<sup>131</sup> UNCLOS, art. 192.

- i. adoption of all appropriate rules and measures, which shall be at least as effective as the rules adopted by ISA,
- ii. maintenance of a level of vigilance in their enforcement, and
- iii. the exercise of administrative control *vis-à-vis* public and private operators, such as monitoring of activities undertaken by such operators, to safeguard the rights of the other party.<sup>132</sup>

The obligation '*to ensure*' conformity of activities undertaken in the Area arises from art. 139 (1), UNCLOS. The provision uses a non-exclusive personal jurisdiction to ensure control of States Parties over these entities. They may be state enterprises or national and juridical persons, whether they possess the nationality of the State Parties or are effectively controlled by them or by their nationals. The States Parties also have an additional obligation to assist ISA to ensure conformity by taking all necessary measures under art. 153 (4), UNCLOS.

Apart from ensuring compliance of entities under their jurisdiction, the adoption of national legislation and administrative measures has a secondary function. The States Parties are motivated to adopt and to keep them effective, as they represent a condition for the discharge of their liability under art. 139 (2) UNCLOS, as discussed in detail in later in Section 4.1.3.

Under art. 209 (2), UNCLOS, "*the States Parties shall adopt laws and regulations on the national level to prevent, reduce and control pollution of the marine environment from activities in the Area undertaken by entities under their jurisdiction.*" This provision also sets a standard for the national laws in that they shall not be less effective than the international rules adopted pursuant to art. 209 (1), UNCLOS. More stringent laws and regulations relating to, *inter alia*, the environment are explicitly permissible and deemed consistent with Part XI under Annex III art. 17 (3), UNCLOS.

Further to that, the States Parties are also held to introduce administrative measures under Annex III, art. 4 (4). These may include the establishment of institutions to administer applications to the ISA, monitoring procedures for active supervision of the activities of the entities under their jurisdiction, sanction mechanisms, and provide for the co-ordination between the sponsoring State and ISA

Given the differences in legal systems, neither UNCLOS, nor the 2011 Advisory Opinion prescribe their scope, extent or contents. However, SDC warns that the discretion is not

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<sup>132</sup> UNCLOS, art. 209 (2) and Paper Mills Case, at para 197.

absolute. The States Parties are primarily obliged to act in good faith, reasonably and non-arbitrarily and to ensure that the obligations of the Contractors are enforceable.<sup>133</sup> The previously cited Annex III art. 4 (4), UNCLOS states that the measures must be reasonably appropriate within the framework of the legal system to ensure compliance. States Parties must also ensure that, within their domestic legal system, decisions of ITLOS and SDC are enforceable.<sup>134</sup>

Regarding their temporal aspect, the 2011 Advisory Opinion advises the States that they keep all legislative and administrative measures in force throughout 'sponsorship period' and kept under review.<sup>135</sup>

#### **4.1.2 Activities in the Area under State sponsorship**

The notions of '*sponsoring State*' and '*sponsorship*', introduced by art. 153 (2) (b), UNCLOS, are central for the transfer of legal obligations and distribution of responsibility and liability in case of failure to fulfil these obligations, whether direct or due diligence in nature. It is relevant where state enterprises or natural and juridical persons ('*sponsored entities*') wish to carry out activities in the Area.<sup>136</sup> This provision and Annex III, art. 4, UNCLOS require them to meet two conditions before they can apply for a contract with the ISA. First, they must be either nationals of a State Party or under the effective control of a State Party or its nationals, to provide the link in jurisdictional matters.<sup>137</sup> Second, it is required that they be '*sponsored by such States*', therefrom the term sponsoring States.

The Advisory Opinion notes that "*no provision of UNCLOS imposes an obligation on a Party to sponsor an entity that holds its nationality.*"<sup>138</sup> The decision to sponsor is thus a specific act that depends on the will of the State Party. This conclusion follows the fact that sponsoring an entity requires legal capacity and presents exposure to risks that some States may not be able to

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<sup>133</sup> 2011 Advisory Opinion, at para. 230.

<sup>134</sup> UNCLOS, Annex VI, art. 39.

<sup>135</sup> In this context, SDC speaks of objective consideration of options, manner that is reasonable, relevant and conducive to the benefit of mankind as a whole and acting in good faith. 2011 Advisory Opinion, at paras. 222, 228, 230.

<sup>136</sup> They can simply be described as 'non-state entities'. Oppositely, the notion of sponsorship is not relevant to activities carried out by States, as they are directly bound by UNCLOS and related instruments. 2011 Advisory Opinion, at para. 79.

<sup>137</sup> French, D., 'From the Depths: Rich Pickings of Principles of Sustainable Development and General International Law on the Ocean Floor—the Seabed Disputes Chamber's 2011 Advisory Opinion', *The International Journal of Marine and Coastal Law*, vol. 26, 2011, p. 539.

<sup>138</sup> 2011 Advisory Opinion, at para 78.

afford.<sup>139</sup> The extent of these requirements is further discussed in relation to obligations of sponsoring States.

State sponsorship is required throughout the whole period of exploration contracts.<sup>140</sup> In case a sponsoring State terminates its sponsorship, it has an obligation to promptly notify the Secretary General in writing and provide its reasons. The termination shall become effective six months after the date of receipt unless otherwise state. During this period, the Contractor has time to obtain another sponsor. However, any obligations accrued during the sponsorship last even after the termination has taken effect.

This approach is set to assure that subjects of national legal systems comply with the regime set out by UNCLOS.<sup>141</sup> Only State Parties to UNCLOS, with an undisputed international legal personality are legally bound by the obligations it lays down. It is by creating this link that breaches of obligations by entities directly involved in the activities become attributable to a subject of international law. While restricted to the *sui generis* regime of the Area, the relationship between the '*sponsor*' and the '*sponsored entity*' has been lauded as an inventive way to get private entities under control of international law.<sup>142</sup>

While ISA and the sponsored entity (Contractor) are going to be the contracting Parties, the sponsoring State's role in this scheme will be just as important. For the monitoring and sanction mechanisms to function, the sponsoring States will have to act beyond legislating and adopting administrative measures prior to taking on a sponsorship. They will have to take an active role during the exploration and exploitation phases as well. This by maintaining robust administrative mechanisms and by enforcing the contractual obligations pursuant to domestic law in case of a breach.<sup>143</sup>

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<sup>139</sup> French, D., *supra* n. 137, p. 529.

<sup>140</sup> ISA, Regulations, reg. 29 (1).

<sup>141</sup> 2011 Advisory Opinion, at para 75.

<sup>142</sup> French, D., *supra* n. 137, p. 530.

<sup>143</sup> Singh & Hunter, *supra* n. 106, p. 482.

### 4.1.3 Responsibilities and obligations of sponsoring States in light of the 2011 Advisory Opinion

For the States, sponsoring an entity entails taking on responsibilities and potential liabilities.<sup>144</sup> In case of small developing nations, as was the case with Nauru and Tonga, their lack of capacities means that they must engage the global private sector to undertake the activities.<sup>145</sup> Proposing that ISA seeks an advisory opinion from the SDC, Nauru argued that for small developing states, sponsoring an entity could mean engaging liabilities and costs that would far exceed their financial capabilities and effectively rules them out of participating in DSBM, in the case these risks cannot be mitigated.<sup>146</sup> The aim of the plea was to seek guidance on the content and scope of responsibilities and obligations that may engage liability, the scope of this liability and the measure appropriate to discharge it. The Authority recognised the need for clarification and sought an Advisory Opinion with SDC, which was delivered on 1 February 2011.

In its Advisory Opinion, the SDC identified the primary obligations as:

- i. *'to ensure'* that activities in the Area carried out by States Parties, or its nationals be carried out in conformity with UNCLOS and related instrument and the rules issued by ISA,<sup>147</sup>
- ii. to assist ISA by taking all measures necessary *'to ensure'* compliance with UNCLOS and related instrument and the rules issued by ISA in accordance with art. 139, UNCLOS,<sup>148</sup>
- iii. that sponsoring States *'ensure'*, within their legal systems, that a contractor so sponsored shall carry out activities in the Area in conformity with the terms of its contract and its obligations under UNCLOS.<sup>149</sup>

The States Parties fulfil these obligations by exercising their power over entities of their nationality and under their control.<sup>150</sup> However, they are not held to achieve the desired result (obligation *'of result'*). The nature of this obligation is of *'due diligence'* or *'of conduct'* and thus they must rather *"deploy adequate means, exercise best possible efforts, do the utmost, to obtain*

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<sup>144</sup> UNCLOS, art. 139 (2).

<sup>145</sup> ISA, Proposal to seek an advisory opinion from the Seabed Disputes Chamber of the International Tribunal for the Law of the Sea on matters regarding sponsoring State responsibility and liability, ISBA/16/C/6, para. 1.

<sup>146</sup> ISA, *ibid*, para. 1.

<sup>147</sup> UNCLOS, art. 139 (1).

<sup>148</sup> *Ibid*, art. 153 (4).

<sup>149</sup> *Ibid*, Annex III, art. 4 (4).

<sup>150</sup> 2011 Advisory Opinion, at para. 108.



it.<sup>151</sup> Using the Pulp Mills on the River Uruguay case, SDC argues that such obligation includes not only *"the adoption of appropriate rules and measures, but also a certain level of vigilance in their enforcement and the exercise of administrative control applicable to public and private operators."*<sup>152</sup> The chamber further argues, that the content of the obligation is a variable concept that may change over time and in relation to the risks involved in the activity and that *"the standard of due diligence has to be more severe for the riskier activities."*<sup>153</sup> Specifically, the standard of due diligence that may be sufficient for prospecting or gathering baseline data would surely not stand during commercial resource recovery.

Aside from the obligations to ensure a certain behaviour from the Contractor, the sponsoring States have a set of independent obligations, characterised as *'direct obligations'*.<sup>154</sup> The Advisory Opinion affirms that *"compliance with these obligations can also be seen as a relevant factor in meeting the due diligence 'obligation to ensure' and that the said obligations are in most cases couched as obligations to ensure compliance with a specific rule."*<sup>155</sup> This means, that the obligations are subject to change, as new rules and regulations are adopted by ISA.

SDC identified the following main direct obligations:

- i. to assist ISA in the exercise of control over activities in the Area,<sup>156</sup>
- ii. to apply precautionary approach,<sup>157</sup>
- iii. to apply best environmental practices (BATs),<sup>158</sup>
- iv. to take measures to ensure the provision of guarantees in the event of an emergency order by ISA for protection of the marine environment,<sup>159</sup>
- v. to make available a recourse for compensation in respect of damage caused by pollution,<sup>160</sup> and
- vi. to conduct environmental impact assessments.<sup>161</sup>

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<sup>151</sup> *Ibid*, at para. 110.

<sup>152</sup> *Ibid*, at para. 115, citing *Pulp Mills on the River Uruguay case*, at para. 197.

<sup>153</sup> *Ibid*, at para. 117.

<sup>154</sup> *Ibid*, at para. 121.

<sup>155</sup> *Ibid*, at para. 123.

<sup>156</sup> UNCLOS, art. 153 (4).

<sup>157</sup> ISA, Nodules Regulations, reg. 31 (2), Sulphides Regulations and Crusts Regulations, reg. 33 (2).

<sup>158</sup> *Idem*.

<sup>159</sup> ISA, Nodules Regulations, reg. 33 (8), Sulphides Regulations and Crusts Regulations, reg. 35 (8).

<sup>160</sup> UNCLOS, art. 235 (2).

<sup>161</sup> ISA, Nodules Regulations, reg. 31 (6), Sulphides Regulations and Crusts Regulations, reg. 33 (6). Previously, 1994 Agreement, Annex, sec. 1 (7) established the obligation to conduct an EIA as a due diligence obligation for the state. However, the Regulations changed this to a direct obligation of the sponsoring State. In the view of SDC,

In this respect, the 2011 Advisory Opinion was a key stepping stone on the way to ensuring protection of the marine environment, since it fully embraced the legal obligation of a Sponsoring State to apply a precautionary approach, as well as best environmental practices and to ensure that a prior environmental impact assessment is conducted.<sup>162</sup>

Furthermore, SDC held that all of the sponsoring States are subject to the primary and direct obligations and rejected that developing states benefit from preferential treatment, stating that other provisions to the benefit of developing states in Part XI, UNCLOS are sufficient to respect the objectives of UNCLOS, with respect to granting equitable access to the Minerals.<sup>163</sup> It added that if such standard of application was not upheld, private operators may opt for sponsoring States '*of convenience*', which would endanger uniform application of the highest standards of protection of the marine environment.<sup>164</sup>

#### **4.1.4 Liability of the sponsoring State as interpreted by the 2011 Advisory Opinion**

The liability regime under UNCLOS and related instruments is relevant to the protection of the marine environment in three aspects:

- i. how liability is engaged (an on the contrary, how it can be discharged),
- ii. what constitutes a *damage*, and
- iii. the quantum and form of its compensation.

First, SDC concluded that the sponsoring State's liability arises if the sponsoring State has failed to carry out its own Primary and direct obligations and damage has occurred because of this failure to carry out its own responsibilities (a causal link requirement). In other words, for liability to be engaged, a causal link between the failure of the State and the damage caused must be proven (as opposed to a strict liability, liability without fault). The sponsoring State is thus not automatically liable for the failure of the sponsored Contractor to meet its obligations.<sup>165</sup>

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this obligation now goes beyond the scope of application of specific provisions of the Regulations, as there is relevant case-law of the International Court of Justice suggesting that it has gained customary quality. 2011 Advisory Opinion, at paras. 147-150.

<sup>162</sup> Poisel, T., Deep Seabed Mining: Implications of Seabed Disputes Chamber's Advisory Opinion, Australian International Law Journal, p. 223-224.

<sup>163</sup> 2011 Advisory Opinion, at para. 158.

<sup>164</sup> *Ibid*, at para. 159.

<sup>165</sup> 2011 Advisory Opinion, at paras. 173, 182.

Second, SDC claims that while *"neither the Convention nor the relevant Regulations specify what constitutes compensable damage, a 'damage' includes not only damage to the Area and its resources, but also damage to the marine environment (environmental damage)."*

Third, SDC affirms that under customary international law, there is an obligation for a State to provide for a *"full compensation or restitudo in integrum,"*<sup>166</sup> and that the *"the form of reparation will depend on both the actual damage and the technical feasibility of restoring the situation to the status quo ante."*<sup>167</sup> It is also important to note that liability of the sponsoring State and the contractor lasts even after the expiration of an exploration contract.<sup>168</sup>

While it is laudable that the damage includes environmental damage, the liability mechanisms raises doubts about its material effectiveness. SDC identified two important gaps in the liability, where no compensation may be provided.<sup>169</sup> This firstly concerns the situation, where a Contractor incurs liability and is under a duty to provide compensation, but is unable to meet its liability (due to insufficient funds) to do so in full. Meanwhile, the sponsoring State is not liable under art. 139 (2), UNCLOS, because it has fully discharged its due diligence obligations. Secondly, the same arises if the sponsoring State fails to discharge its obligations, but its failure is not causally linked to the damage. The SDC suggested that, under such circumstances, the ISA should consider the establishment of a fund to compensate for the ecological damage.<sup>170</sup>

## 4.2 International Seabed Authority

The ISA is an autonomous international intergovernmental organisation with an international legal personality established under art. 156 (1), UNCLOS and the 1994 Implementation Agreement. All States Parties to UNCLOS are its members *ipso facto* pursuant to art. 156 (2), UNCLOS. It came into existence on 16<sup>th</sup> November 1994, with the entry into force of UNCLOS. Its main functions are, as stated by art. 157 (1), UNCLOS, to *"organize and control activities in the Area, particularly with a view to administering the resources of the Area."* In practice, ISA acts as both the legislator and administrator of the resources. It is the ISA, who through its organs, develops the regulatory framework for activities in the Area, and who consequently decides over who may carry out these activities and controls that they be carried out in

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<sup>166</sup> *Ibid*, at para. 194.

<sup>167</sup> *Ibid*, at para. 197.

<sup>168</sup> *Ibid*, at para. 198.

<sup>169</sup> *Ibid*, at para. 203.

<sup>170</sup> Such compensation fund is considered by the Authority and should be implemented in the Draft Exploitation Regulations, as further discussed in Chapter 5, Section 6.

compliance with its rules. Thus ISA performs the role of the gate-keeper and ultimate guarantor of environmental soundness of the activities, performing this obligation on behalf of all humankind.<sup>171</sup> On top of that, its secondary functions include promoting marine scientific research in the Area, transfer and sharing of knowledge towards developing countries, protection of human life and promoting international cooperation.<sup>172</sup>

#### **4.2.1 Organs of the ISA: Seeking institutional balance and equitable representation**

The relevant provisions of Part XI, UNCLOS establish the institutional framework of ISA by designating its organs and delimiting their competence and mutual relationships. The currently functioning organs of the ISA are:

- i. the Assembly, which consists of all members of ISA, i.e., the States Parties and the European Union;
- ii. the Council, with limited membership elected by groups,
- iii. two subsidiary organs of the Council—the Finance Committee and the Legal and Technical Commission (hereinafter LTC), which consist of individual experts;
- iv. the Secretariat, which fulfils administrative functions of ISA, headquartered in Kingston, Jamaica and presided by the Secretary-General.

*The Assembly* is the supreme organ of ISA. It has the power to establish general policy and elects the members of the Council and the Secretary-General. It also approves the rules, regulations and procedures relating to the prospecting, exploration and exploitation, in the form of Regulations that had been provisionally adopted by a decision of the Council, while taking into account the recommendations of the Council. If the Assembly decides not to follow these recommendations, it shall return the matter to the Council for reconsideration.<sup>173</sup> The considerations of the Assembly are binding on the Council in their future recommendations.

*The Council* works as the executive organ of the ISA and its central role is to supervise and coordinate the implementation of Part XI and the matters within the competence of ISA. It consists of 36 members divided into five groups, depending on the status of the State.<sup>174</sup>

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<sup>171</sup> UNCLOS, art. 157 (1).

<sup>172</sup> UNCLOS, arts. 143, 144, 146.

<sup>173</sup> The 1994 Agreement, annex sec. (3) (4).

<sup>174</sup> These groups are designated by the letters of the Latin alphabet as follows: A (the major consumers), B (the major investors), C (the land-based producers), D (developing states with special interests), E (equitable geographical distribution).

These groups in turn form four decision-making Chambers, with the developing States, forming the fourth Chamber together. The Assembly elects the members for four-year terms on a bi-annual basis, with half of the members being elected each time.

In its work, The Council must abide by the general line policy set out by the Assembly<sup>175</sup> and by recommendations of the Legal and Technical Commission and the Finance Committee, but it has extensive powers over a range of matters set out in art. 162 (1) (2) UNCLOS. On environmental matters, the most important of these are:

- i. issuing decisions on the adoption of Regulations, subject to subsequent approval of the Assembly,
- ii. issuing decisions on the approval of the Plans of work for exploration and exploitation, while taking into account the recommendations of the LTC, and
- iii. the control over activities exercised in the Area, including decisions on the issuance of emergency orders to prevent serious harm to the marine environment arising out of activities in the Area, upon recommendation of the LTC.<sup>176</sup>

The provisions of Part XI UNCLOS admit that some decisions of substance may be decided by qualified majority<sup>177</sup> while those in art. 161 (8) (d) UNCLOS, including on the adoption of rules, regulations and procedures relating to the conduct of activities and amendments to Part XI must be agreed on unanimously. Furthermore, Annex sec. 3 of the 1994 Implementation Agreement, in general terms, urges that all decisions be taken by consensus. In practice, the organs of the ISA respect this rule.<sup>178</sup>

*The LTC* is an expert organ of the Council, whose members are, pursuant art. 163 (2) (6) UNCLOS, elected in their personal capacity by the Council for a once renewable 5-year term, upon the nomination of the States Parties. They are required to have qualifications in fields *"such as those 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."*<sup>179</sup> The Authority thereby includes an important

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<sup>175</sup> Currently set forth by the Strategic plan of the Authority and High-Level Action Plan, as discussed later.

<sup>176</sup> Such recommendations shall be taken up by the Council on a priority basis. UNCLOS, art. 165 (2) (k).

<sup>177</sup> 1994 Implementation Agreement, annex sec. 3 (5). specifies that *'decisions on questions of substance, except where the Convention provides for decisions by consensus in the Council, shall be taken by a two-thirds majority of members present and voting, provided that such decisions are not opposed by a majority in any one of the chambers referred to in paragraph 9.'*

<sup>178</sup> Lodge, M. W., 'The Legal Regime for the Deep Seabed under Part XI of the United Nations Convention on the Law of the Sea', available at [https://legal.un.org/avl/lis/Lodge\\_LS.html](https://legal.un.org/avl/lis/Lodge_LS.html), last accessed 11 January 2022.

<sup>179</sup> UNCLOS, art. 165 (1).

scientific element into its decision-making process. Art. 163 (2) UNCLOS states that LTC shall have 15 members, however this number has been steadily risen, at the discretion of the Council, to 30 for the 2017-2022 term.<sup>180</sup>

The importance of the LTC in the workings of ISA with respect to environmental matters cannot be overstated, as it is the body that makes recommendations to the Council on a wide range of issues pursuant art. 165 (2) UNCLOS. Therefore, LTC act as a guarantor of informed decision-making with respect to the environment, as it, through its recommendations to the Council it:

- i. formulates and submits rules, regulations and procedures relating to the conduct of activities in the Area (the Mining Code),
- ii. is responsible for reviewing all proposed Plans of work for activities in the Area.<sup>181</sup>

Therefore, the LTC drafts all documents for the Council's consideration, prior to being approved by its or the Assembly's decision. Therefore, while all final decisions are taken by either the Assembly or the Council, it is the recommendations of the LTC that pre-determine the course of the action.

The LTC's responsibilities extend beyond the rule-making and permitting phase, as it also has a general responsibility of supervising the activities undertaken in the Area and reporting them to the Council, as it makes recommendations regarding establishment of monitoring programmes, reviews reports and coordinates their implementation.<sup>182</sup> Based on the recommendations of the LTC, where mining activities may cause serious harm, the ISA, by decision of Council, has the right to:

- i. set-aside areas where mining will not be permitted;
- ii. deny a new application for a contract to conduct seabed mineral activities;
- iii. suspend, alter or even terminate operations; and
- iv. hold the contractor and its sponsoring state liable for any environmental harm if it ensues.<sup>183</sup>

The LTC is also a key player in cases of emergency, as mentioned above. It issues recommendations to the Council to take binding decisions on emergency measures, which may

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<sup>180</sup> This number has gradually increased to reach, as of the 2017-2022 term, 30 members. ISA, Legal and Technical Commission, available at: <https://www.isa.org.jm/authority/legal-and-technical-commission>, last accessed 13 January 2021.

<sup>181</sup> UNCLOS, arts. 165 (e)-(h) and 215.

<sup>182</sup> UNCLOS, art. 165 (2) h.

<sup>183</sup> UNCLOS, arts. 162 (2) w, x and 165 (2) k, l and Annex III art. 18.

include suspending operations to prevent serious harm to the marine environment.<sup>184</sup> The LTC may also issue recommendations for the Council's decision to commence legal proceedings before the SDC of the ITLOS, in case of violation of rules.<sup>185</sup>

It clearly follows that the LTC, particularly the expertise and impartiality of its members and its working capacities, will be vital to the protection of the marine environment. This fact raises concerns considering the transparency of the appointment process and the capacity of LTC to duly accomplish its tasks.<sup>186</sup>

#### **4.2.2 ISA's Environmental Mandate as Legislator**

As discussed earlier, ensuring effective protection for the marine environment from harmful effects that may arise from activities in the Area receives general attention in UNCLOS and the 1994 Agreement. The Convention thus requires ISA to *"adopt rules, regulations and procedures designed to prevent, reduce and control pollution and other hazards to the marine environment, having the potential to interfere with the ecological balance of the marine environment, and keep them under periodic review in order to reflect progress in scientific knowledge."*<sup>187</sup>

With respect to marine environment, ISA is primarily obligated to protect and conserve the natural resources of the Area, preventing damage to the flora and fauna of the marine environment, pursuant to art. 145 UNCLOS. This obligation is further affirmed by Part XII, UNCLOS, Annex, sec. 1 (5) (g) 1994 Agreement, which provides that creating a regulatory framework prior to the approval of the first plan of work should receive particular attention and priority.

The environmental rules, regulations and procedures shall pursue the following key environmental objectives stated in arts. 145, 146 and Annex III, art. 17 (2) (f) UNCLOS:

- i. the prevention, reduction and control of pollution and other hazards to the marine environment, and of interference with its the ecological balance, which may result directly from various activities in the Area or from shipboard processing of minerals immediately above a mine site,

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<sup>184</sup> UNCLOS, art. 162 (2) k.

<sup>185</sup> *Ibid*, art. 162 (2) i, j.

<sup>186</sup> Casson, L. et al., 'Deep Trouble: The murky world of the deep sea mining industry', published by Greenpeace International, December 2020, p. 28.

<sup>187</sup> UNCLOS, art. 145.

- ii. the protection and conservation of the natural resources of the Area, and
- iii. the prevention of damage to the flora and fauna of the marine environment
- iv. the protection of human life.

ISA's future Regulations will also be determine the standards as to how '*harmful effects*' and '*serious harm*' are defined and applied. Such standards will in turn inform national laws and regulations, for such rules are to be '*no less effective than*' international rules, standards, recommended practices and procedures.<sup>188</sup>

Closely related to the purely legal instrument are three legally-administrative instruments employed by the ISA: Recommendations and – in the future for the exploitation phase – Standards and Guidelines.

Firstly, Recommendations are an instrument of administrative and technical nature, issued by the LTC pursuant to authorization by the Regulations.<sup>189</sup> Their objective is to expand on the rules relating to the protection of the marine environment. While not legally binding, they must be observed '*as far as reasonably practicable*' by the Contractors as a contractual obligation, as part of their due diligence obligations.<sup>190</sup> The Recommendations are designed to retain a high level of flexibility and are reviewed and amended regularly in order to adapt to the progress of scientific knowledge.<sup>191</sup> They also need to assure that the Contractor may undertake the activities with respect to particularities of the contract area and the resource class.<sup>192</sup> Second, they must be regularly amended to reflect the state of scientific knowledge and thus inform the best available technologies (BET) and best environmental practices (BEP).

The Draft Exploitation Regulations introduce two further types of documents to be legally-administrative instruments: Standards, featuring technical and other standards and protocols, including performance and process requirements, which shall be legally binding on ISA and Contractors and regularly updated every 5 years;<sup>193</sup> and Guidelines, documents that provide guidance on technical and administrative matters.<sup>194</sup> From environmental perspective, the Standards will be particularly important since they should relate to, *inter alia*, conservation of

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<sup>188</sup> UNCLOS, art. 208.

<sup>189</sup> ISA, Nodules Regulations, reg. 39, Sulphides Regulations, reg. 41, Crusts Regulations, reg. 41.

<sup>190</sup> ISA, Nodules Regulations, reg. 32, Sulphides Regulations, reg. 34, Crusts Regulations, reg. 34, the Regulations, Annex 4, Section 13 (2) (e).

<sup>191</sup> ISA, Legal and Technical Commission, 'Recommendations for the guidance of contractors for the assessment of the possible environmental impacts arising from exploration for marine minerals in the Area' (hereinafter Environmental Impact Recommendations), 30 March 2020, ISBA/25/LTC/6/Rev.1, art. I (7).

<sup>192</sup> Billett, D. S. M., Jones, D. O. B., Weaverp, P. P. E., *supra* n. 37, p. 404.

<sup>193</sup> ISA, Draft Exploitation Regulations, reg. 94 (1) (b,c).

<sup>194</sup> *Ibid*, reg. 95.



the resources and protection of the marine environment. The Draft Exploitation Regulations specifically prescribe that environmental Standards shall include *"Environmental quality objectives, including on biodiversity status, plume density and extent, and sedimentation rates; Monitoring procedures; and Mitigation measures."*<sup>195</sup> According to the information available on the ISA website, a number of environmental Standards and Guidelines are currently being developed and consulted with the stakeholders on bi-annual basis.

Aside from setting out binding rules of general nature in the form of Regulations and non-binding rules in the form of Recommendations, Standards and Guidelines, ISA also employs a broad range of other environmental tools (protective measures) in order to achieve effective protection of the environment. These are the topic of the Chapter 5 of this thesis.

Aside from that, the ISA is an important platform for gathering knowledge through workshops and promoting the sharing of research and scientific data it collects. While of no formal legal status, the ISA Technical Studies *"include papers related to the work of the Authority and manuals aimed at facilitating the implementation of the United Nations Convention on the Law of the Sea for its various actors, as well as scientific studies."*<sup>196</sup> So far, thirty one Technical Studies have been issued, following workshops organised by the ISA and presenting findings of researchers from a range of fields. They present detailed information on topics, such as *"the latest types of instruments and equipment, sample collection procedures, treatment and preservation techniques, quality control, data processing methods, statistical analyses and reporting."*<sup>197</sup>

ISA also acts as a supporting platform for numerous initiatives, such as the maintenance of the DeepData Database, an internet based data management system of data collected from the Contractors.<sup>198</sup> It also initiated and launched in 2022 the Sustainable Sea Knowledge Initiative to promote understanding of the deep sea. Its main objective is to develop knowledge of deep sea biodiversity and its systemisation through *"genomic and image libraries, combined with artificial intelligence and app-based field tools."*<sup>199</sup>

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<sup>195</sup> *Ibid*, reg. 45.

<sup>196</sup> ISA, <https://www.isa.org.jm/publications>, last accessed on 4 March 2022.

<sup>197</sup> Billett, D. S. M., Jones, D. O. B., Weaverp, P. P. E., *supra* n. 37, p. 412.

<sup>198</sup> ISA, DeepData Database, available at <https://www.isa.org.jm/deepdata>, last accessed 18 February 2022.

<sup>199</sup> ISA, Sustainable Knowledge Initiative, launched on 29 June 2022 as part of the 2022 United Nations Sea Conference, available at: <https://isa.org.jm/event/isa-side-event-unoc2022-sski-launch-advancing-scientific-understanding-deepsea-ecosystems-in-the-area>, last accessed 22 August 2022.

Lastly, the ISA also takes on voluntary engagements within the broader environmental agenda. It pledged to promote a set of seven commitments to advance the 2030 Agenda for Sustainable Development, specifically Sustainable Development Goal 14, which aims to conservation and sustainable use of the oceans, seas and marine resources for sustainable development.<sup>200</sup>

#### 4.2.3 Limitations of mandate of the ISA

A major weakness in ISA's position as the '*Custodian of the deep seabed*' is that its mandate over deep seabed mining is limited. These limitations are territorial and material in nature. Firstly, the mandate of the ISA applies only to activities undertaken in the Area. This is seen as problematic as, "*in the context of deep-sea mining, the scope of the ISA's marine environmental responsibilities extends to 'the coastline', i.e., well beyond the Area and far into waters within national jurisdiction,*" and must include "*prevention, reduction and control of interference with the ecological balance of the marine environment as a whole.*"<sup>201</sup> The delimitation of the ocean into legally separate zones creates a situation, in which mining of the same resources with the same techniques is governed by different rules on the sole grounds of delimitation of the ocean zones, i.e., only marine environment in the ABNJ is given protection under the mandate of ISA, while it has no authority over activities to the outer limits of the continental shelf. Comparative research has shown that the national regimes applicable to DSM differ greatly and that some are much more restraining than others.<sup>202</sup> These differences may lead investors to focus their interest on the zones with the most liberal rules, rather than those most suitable to reasonably sustainable mining.

Secondly, in view of the 2011 Advisory Opinion the mandate of ISA concerns only activities relating to non-living resources at the mining site and in its proximity.<sup>203</sup> Thus, ISA has no mandate over non-living resources, even if those are present directly at mining sites. On top of that, mining leads to other activities over which ISA has only disputable a mandate and which also fall under the scope of other regimes, such as on-board processing of materials.<sup>204</sup> This interpretation of the ISA's mandate has been criticised as it creates '*grey zones*', potentially

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<sup>200</sup> ISA, Voluntary Commitments to Support Implementation of SDG14, available at: <https://www.isa.org.jm/isa-voluntary-commitments>, last accessed 3 March 2022.

<sup>201</sup> Verlaan, P., *supra* n. 77, p. 25.

<sup>202</sup> ISA, Comparative Study on the Existing Legislation on Deep Seabed Mining, unedited advance text, available at: [https://www.isa.org.jm/files/files/documents/Comparative\\_Study\\_NL.pdf](https://www.isa.org.jm/files/files/documents/Comparative_Study_NL.pdf), last accessed on 3 March 2022.

<sup>203</sup> UNCLOS, art. 1 (1) 3 + Annex III art. 17 (2) f.

<sup>204</sup> For example, pollution caused by ships is regulated by the International Convention for the Prevention of Pollution from Ships (MARPOL 73/78).

leading to conflicts and uncertainty over applicability of rules and competences, or lacunas therein, of organisations, and thus hindering the conservation efforts.

Furthermore, there are activities that are completely outside the ISA mandate, such as shipping. While an Agreement on Cooperation was drafted and signed in 2016 between ISA and the International Maritime Organisation, the formal basis of cooperation has not been established and both organisation remain reluctant to formally limit the scope of their activities.

Limitations of mandate of the ISA lead to fragmentation, which has in turn been identified as the core challenge to ocean governance.<sup>205</sup> The integration of the framework of DSBM of the Area with other parallel legal frameworks will be a major challenge progressing towards commercial exploitation.

### 4.3 Contractors

Exploration and exploitation of resources in the Area may only be carried out by a qualified entity under a contract issued by the ISA, which grants exclusive but temporary rights to a mining operator, called the Contractor.<sup>206</sup> The notion of a Contractor encompasses a range of entities that directly carry out the activities in the Area. Firstly, it is worth repeating that under art. 153 (2) (b), UNCLOS, Contractors may be:

- i. States Parties,
- ii. state enterprises, or
- iii. natural or juridical persons, who possess the nationality of States Parties, or are directly controlled by them or their nationals.

Regardless of its status, any entity different from States Parties themselves wishing to undertake activities in the Area must be sponsored by a State Party.<sup>207</sup> Of the 31 contracts that the ISA has entered into so far, 22 have been concluded with state governments, state enterprises or private companies under effective control or with close ties to a State Party, while the remaining nine contracts are granted to privately owned, often multinational companies. These companies are often seen seeking the sponsorship of a country, with which they had no prior ties. The most prominent case is that of DeepGreen Metals Inc., a company incorporated in British Columbia, Canada, which entered into contracts through its subsidiaries in Nauru (Nauru Ocean Resources

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<sup>205</sup> Singh, P., Jaeckel, A., *supra* n. 82, p. 625.

<sup>206</sup> ISA Regulations, reg. 26.

<sup>207</sup> *Idem*.

Inc.), Tonga (Tonga Offshore Mining Limited) and Kiribati (Marawa Research and Exploration Ltd.).<sup>208</sup> As Greenpeace demonstrate in their report, the corporate structures behind the private sector contractors, which often present (at least by name) as having a genuine tie to the sponsoring State, are very complex and lack transparency. In this respect, it is worth noting that under Annex IV, sec. 20.1, Exploration Regulations, Contractors shall promptly notify ISA in case their control changes. The ISA should ensure that this obligation is not only complied to, but that it is transparently communicated to the public. However, this has so far not been the case.<sup>209</sup>

As to the legal status of the Contractors, they can be described as the ultimate addressees of rules surrounding DSBM. They are also bound by the DSBM framework through their Contract under the *pacta sunt servanda* principle. The contract, according to the standard term set out in Annex IV, Exploration Regulations transposes the obligation to observe the rules set out in Exploration Regulations, Part XI, UNCLOS and the 1994 Implementation Agreement, and other rules of international law not incompatible with UNCLOS.<sup>210</sup> It further states that they are obliged to observe Recommendations '*as far as reasonably practicable*'.<sup>211</sup> The Environmental Management Plan for the Clarion-Clipperton Zone also addresses the Contractors and charges them with a set of supplementary obligations, *inter alia*, developing their site-specific environmental management plans while observing the principles of ISO 14001.<sup>212</sup> Contractors may also be party to proceedings before the SDC and must comply with its decisions. Finally, as per having a link to a State Party due to sponsorship, they are also subject to domestic legislative and administrative measures of their sponsoring State. During the exploitation phase, they are also expected to be subject to environmental Guidelines and Standards, currently under development in the ISA.

#### **4.3.1 Contractors as they carry out activities in the Area**

As described above, activities in the Area are carried out by Contractors in three distinct phases, each with its own substantive rules and procedures. They are (i) prospecting (at this phase as Prospectors, since no formal Contract is concluded), (ii) exploration and (iii) exploitations (as Contractors). So far, legally binding regulations have only been adopted for the first two phases. During all phases, Contractors must apply the precautionary approach and best environmental

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<sup>208</sup> Casson, L. et al., *supra* n. 186, p. 9.

<sup>209</sup> *Ibid*, p. 18.

<sup>210</sup> The Regulations, Annex IV, sec. 13.2.

<sup>211</sup> The Regulations, Annex IV, sec. 13.2 (e).

<sup>212</sup> REMP for the CCZ, art. 41 (a).

practices. Their general obligation to protect the marine environment from harmful effects which may arise from activities in the Area arises from Regulation 33, Exploration Regulations. There is therefore a direct obligation requiring contractors to provide their baseline data, from which potential cumulative impacts can be assessed. The specific environmental obligations and procedures the Contractors must comply with are described in this Section.

The procedural aspects of prospecting begin with potential Prospector submitting a written notification to ISA in the form prescribed in Annex I, Exploration Regulations and address it to the Secretary-General of ISA. Secretary-General acknowledges in writing the receipt reviews its conformity to the requirements within 45 days of receipt. (purely administrative and lack of transparency) If he find the application conforming, he records the particulars and informs the prospector that notification has been recorded. Provided that the application doesn't conform to the requirements, the applicant has the possibility of submitting an amended version. The Secretary-General has, again, 45 days to react to the amended application. Upon the conclusion of this procedure, the Prospector has an obligation to inform the Secretary-General of any changes to the information contained therein.

It is important to point out the purely administrative nature of this procedure, as no substantive review is undertaken by the Secretariat. The review also suffers from an important lack of transparency, as the information contained in the notification is confidential and any part of it may only be released with the written consent of the prospector.<sup>213</sup> However, this has posed little to no issues in practice, as potential for environmental damage during prospecting is very limited.

During prospecting, Prospectors oblige themselves to comply with substantive environmental obligations by submitting a written undertaking agreeing to conduct prospecting in accordance with UNCLOS and the Regulations.<sup>214</sup> Most generally, they undertake to apply the precautionary approach as far as reasonably possible and best environmental practices. Doing so, they further undertake to take all necessary measures to prevent, reduce and control pollution and other hazards to the marine environment and interference with marine research activities. Already during prospecting phase, the Prospectors must establish a monitoring program and evaluate impacts of their activities on the marine environment and in this are obliged to cooperate with ISA.<sup>215</sup> Environmental and other data must be reported to the ISA on an annual

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<sup>213</sup> ISA, The Regulations, reg. 4 (5).

<sup>214</sup> ISA, the Regulations, reg. 2 (1).

<sup>215</sup> *Ibid*, reg. 5 (2).

basis in the form of a report. The Prospectors must finally satisfy notification obligations to the ISA. Regulation 5 (3), the Regulations states an obligation to immediately notify the Secretary-General in writing in the case of any incidents, which may cause serious harm to the marine environment.

The main contribution of this phase towards protection of the marine environment is that valuable scientific data is gathered and reported to ISA. This is made possible due to an exception on confidentiality of data, included in Regulation 7 (1), the Regulations, which stipulates that data relating to the protection and preservation of the marine environment shall not be considered confidential.

Before starting the next phase, exploration, a Contractor must file an application for approval of a plan of work for exploration to obtain a contract with the ISA. Its conditions and contents are provided for in detail in Part III, Exploration Regulations and its standard form is prescribed in Annex II, Exploration Regulations. Besides any country specific requirements, the application must be accompanied by a certificate of sponsorship from a sponsoring State or multiple sponsoring States (i.e., a State Party to UNCLOS), a proof of the applicants financial and technical capacities and a written undertakings, in which they, *inter alia*, accept the control of ISA and assure that they will act in good faith.<sup>216</sup>

With respect to environmental issues, potential contractors must submit:

- i. description of the programme for oceanographic and environmental baselines studies that allows an assessment of potential environmental impacts of the proposed exploration activities;
- ii. preliminary assessment of the possible impact of the proposed exploration activities on the environment;
- iii. description of proposed measures for the prevention, reduction and control of pollution and other hazards, as well as possible impacts, to the marine environment.<sup>217</sup>

This data enables the LTC to assess the potential environmental impacts of the proposed exploration activities on the marine environment having scientific data to back their decisions.

The completed application including its annexes is to be submitted to ISA, to the attention of the Secretary-General, who acknowledges it in writing within 30 days of its receipt<sup>218</sup> and

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<sup>216</sup> *Ibid*, regs. 11, 12 and 14.

<sup>217</sup> *Ibid*, reg. 18 (b-d) and Annex II 24 (b-d).

<sup>218</sup> *Ibid*, reg. 20 (a).

notifies the members of ISA, providing information of a general nature which are not confidential regarding the application.<sup>219</sup> Secretary-General then notifies the members of the LTC and places the consideration of the application as an item on the agenda for their next meeting.<sup>220</sup>

LTC examines the Application in order in which they were received<sup>221</sup> and, in relation to the environment, determines whether the proposed plan of work for exploration, *inter alia*, provides for effective protection and preservation of the marine environment including, but not restricted to, impact on biodiversity. In their deliberation, they "*shall also have regard to the principles, policies and objectives relating to activities in the Area as provided for in Part XI and annex III of the Convention and the Agreement.*"<sup>222</sup> If the proposed plan of works satisfies all requirements, the Commission shall recommend its approval to the council. In case the LTC concludes that the application does not comply with Exploration Regulations, it shall notify, via the Secretary-General, the Applicant in writing of its reasons and they may amend their application.

The 1994 Implementation Agreement introduced an important modification regarding the Council's voting on the approval of Plans of work for exploration and exploitation, based on Recommendations of the Legal and Technical Commission.<sup>223</sup> Pursuant to this modification, the discretion of the Council has been limited such that it shall approve the plan of work, unless a two-thirds majority of the members present and voting and a majority in each of the four voting chambers vote to reject the plan of work. This has drastically limited the possibility of rejecting a plan of work that the Legal and Technical Commission recommended for approval, as two voting members in groups A and B are sufficient for its approval. On the one hand, this can be seen as a positive trend, because the processes within the ISA are promoting the importance of scientific decision-making. On the other, it places the majority of power and responsibility for the decision into the hands of the LTC.

This raises several important issues. Firstly, it becomes even more important to raise transparency of the appointment process and impartiality of the members of the LTC given their key role in the evaluation of the adequacy of baseline data and impact assessments and that the

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<sup>219</sup> *Ibid*, reg. 20 (c).

<sup>220</sup> *Ibid*, reg. 21 (1).

<sup>221</sup> *Ibid*, reg. 21 (2).

<sup>222</sup> *Ibid*, 21 (9).

<sup>223</sup> *Ibid*, reg. 22, 1994 Implementation Agreement, Annex sec. 3 (11) (a), (12).

deliberation of the LTC takes place in a closed session.<sup>224</sup> Secondly, it is paramount that critical areas of expertise are duly represented. As noted by the Greenpeace report from 2020, only three of its current members hold an expertise in marine biology and ecology.<sup>225</sup> Finally, it is vital that the number of the members is maintained appropriate to the workload the LTC must process. Alarming, with its current 30 members, the workload is deemed significantly beyond the capacity of the LTC, with some sources claiming that only one or two working days can be presumably allocated to considerations of an incoming application.<sup>226</sup>

Once exploration the application process is complete, a contract between the Contractor and ISA is signed. Upon signing, the Contractor obtains temporary exclusive right to explore in the set exploration area and ISA is obliged to ensure that no other entity carries out exploration therein. Furthermore, the Contractors have the right of priority when submitting for exploitation within their exploration area. Under the contract, Contractors have multiple important environmental obligations. As of the day of the signing, they must to provide a financial and technical guarantee to the Council.

Contractors must take all necessary measures to prevent, reduce and control pollution and other hazards to the marine environment arising from its activities in the Area as far as reasonably possible, applying precautionary approach and BEP.<sup>227</sup>

Pursuant to its obligations under Part XI of UNCLOS and the 1994 Implementation Agreement, the ISA has developed rules related to the assessment of possible environmental impacts arising from exploration for resources in the Area which define the sort of activities that require Environmental Impact Assessments (EIAs), the form and content of such EIAs when required, as well as guidance on baseline studies, monitoring and reporting. This guidance was issued by the LTC (hereinafter EIA Recommendations),<sup>228</sup> and addresses impacts on marine biodiversity on the seabed as well as in the water column above it.

The obligation to carry out an EIA can thus be seen in two modalities. Firstly, as mentioned above, the Regulations require that the Contractor carries out an assessment of the potential

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<sup>224</sup> Jaeckel, A. L., *supra* n. 88, p. 201.

<sup>225</sup> Casson, L. et al., *supra* n. 186, p. 28.

<sup>226</sup> Jaeckel, A. L., *supra* n. 88, p. 201.

<sup>227</sup> ISA, Regulations, reg. 31 (5)

<sup>228</sup> ISA, Legal and Technical Commission, 'Recommendations for the guidance of contractors for the assessment of the possible environmental impacts arising from exploration for marine minerals in the Area', ISBA/25/LTC/6.



environmental impacts of the proposed activities and that this assessment be joint to the application for approval of a plan of work.

Secondly, Contractors may also be required to carry out an EIA at any time during the exploration phase. Par. 33, Recommendations states that activities listed therein require prior environmental assessment, which include *inter alia* "the use of sediment disturbance systems, testing of mining equipment and sampling on a large scale."

Contractors are further required to gather environmental baseline data against which to assess the likely effects of their activities on the marine environment, while taking into account recommendations of LTC and apply them as far as reasonably possible and to devise and, in cooperation with the ISA and the respective sponsoring State, establish monitoring programs, which may include the establishment of Impact reference zones (IRAs), i.e., areas to be used for assessing the effect of activities in the Area on the marine environment and which are representative of the environmental characteristics of the Area, and Preservation reference zones (PRZs), i.e., areas in which no mining shall occur to ensure representative and stable biota of the seabed in order to assess any changes in the biodiversity of the marine environment.<sup>229</sup> The contractors must also report annually to the Secretary-General of ISA on the implementation and results of their monitoring programmes and submit environmental baseline data.<sup>230</sup>

Furthermore, in the case of emergency, Contractors are obliged to promptly report any incident and comply with any emergency orders for immediate measures or other emergency measures to be taken in order to remove the threat of or existing harm to the marine environment.<sup>231</sup>

#### **4.3.2 Brief look at the Exploitations Regulations in their drafting phase**

Since Exploitation Regulations are only at their drafting phase, this section will be limited only to general remarks and an introduction of the key obligations relating to the protection of the marine environment. The most obvious change is that unlike there being a specific Regulations issued for each mineral class, the Exploitation Regulations for all mineral classes are set to be comprised in a single document.

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<sup>229</sup> ISA, Regulations, reg. 32 (1,2)

<sup>230</sup> *Ibid*, reg. 34

<sup>231</sup> *Ibid*, reg. 33 (6,7).

The material obligations relating to the preservation of the marine environment are set out in Part IV, Draft Regulations of Exploitation. They can be generally split into general obligations, that address all key actors (i.e., States, ISA and the Contractors) and specific obligations.

The general obligations that all key actors must observe are:

- i. to apply precautionary approach to assessment and management of risk of harm;
- ii. to apply BATs and BEPs;
- iii. to integrate Best Available Scientific Evidence in environmental decision-making with respect to risk assessment, management, response measures; and
- iv. to assure timely release of data and allow stakeholder participation.<sup>232</sup>

The specific environmental obligations addressed to the Contractors are the following concern three main axes: environmental assessment, management and reporting of data, and pollution and waste control. Firstly, prior to submitting an application for an exploitation contract, the Contractor is held to prepare and submit an Environmental Impact Statement (EIS).<sup>233</sup> The general outline of the EIS is described in Annex IV, Draft Exploitation Regulations and requires, *inter alia*, that it includes an executive summary, accessible to non-technical readers, of the main conclusions and information provided to facilitate understanding of the nature of the activity by Stakeholders.<sup>234</sup> The EIS reports the results of the Environmental Impact Assessment (EIA) in accordance with the Regulations in the form prescribed by Annex IV. includes environmental risk assessment, based on the results of EIA. in accordance with objectives of the relevant REMP, Guidelines, Good Industry Practice (GIP), Best Available Scientific Evidence, BEPs and BATs.

Secondly, the Contractors shall implement and maintain an Environmental Management System (EMS),<sup>235</sup> which must take account of applicable Guidelines and meet mandatory standard requirements, namely it must be capable of cost-effective independent auditing, permit effective reporting to ISA, and put in place an Environmental Monitoring and Management Plan (EMMP), which is capable of delivering site-specific environmental objectives.<sup>236</sup> EMMP's objective is to manage and confirm that environmental effects and to meet environmental quality objectives and standards. The EMMP must cover aspects prescribed in

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<sup>232</sup> ISA, Draft Exploitation Regulations, reg. 44.

<sup>233</sup> *Ibid*, reg. 47.

<sup>234</sup> *Ibid*, Annex IV, 1 (c).

<sup>235</sup> *Ibid*, reg. 46.

<sup>236</sup> *Ibid*, reg. 48.

annex VII, including commitments and procedures on how mitigation measures will be implemented, their effectiveness monitored, on management responses and on reporting mechanisms, and shall be based on the EIA and the EIS, operate in accordance with the relevant REMP and be prepared in accordance with applicable Guidelines, and relevant principles.

Thirdly, the Draft Exploitation Regulations require that during Exploitation, Contractors behave in accordance with the applicable Standards and Guidelines, with respect to, *inter alia*, pollution, waste disposal and mitigation measures, establish and eventually carry out a Closure Plan and maintain the currency and adequacy of their Emergency Response and Contingency Plan and the resources and procedures necessary for its prompt execution.

Lastly, the Draft Regulations also prescribe the establishment of an Environmental Compensation Fund by ISA, in order to "*facilitate the financing and development of protection measures, promotion of research, education and training and restoration and rehabilitation of the Area*"<sup>237</sup> and to address the identified gaps in liability,<sup>238239</sup> where the costs may not be recoverable from a Contractor or sponsoring State.<sup>240</sup> The ISA dedicated its Technical Study No. 27<sup>241</sup> to analysing the potential contribution of an ECF and its inclusion in the Draft Exploitation Regulations.

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<sup>237</sup> *Ibid*, reg. 54-56.

<sup>238</sup> 2011 Advisory Opinion., at para. 209.

<sup>239</sup> Poisel, T., *supra* n. 162, p. 222.

<sup>240</sup> ISA, Draft Exploitation Regulations, reg. 54-56.

<sup>241</sup> ISA, Study on an Environmental Compensation Fund for activities in the Area, published as ISA Technical Study No. 27, 2021.

## 5 Environmental Measures Employed by the ISA

Under art. 145, UNCLOS, the ISA has an obligation to ensure effective protection for the marine environment. Aside from legal instruments, as described in previous chapters, the ISA also employs other associated measures and approaches, which have a character of instruments of environmental policy. Rather than prescribing specific legal rights and obligations, these instruments clarify how ISA intends to interpret and apply these rules, prescribe general values and objectives with respect to the development of activities in the Area. Therefore, it is critical that these measures are consistent with the rules, regulations and procedures and link to their provisions to empower them.

The current toolkit of the ISA's environmental policy framework includes:

- i. conceptual instruments: Strategic Plan, High Level Action Plan and Regional Environmental Management Plans;
- ii. environmental assessments: Regional Environmental Assessments;
- iii. spatial protection mechanisms: Areas of Particular Environmental Interest, Areas in Need of Protection, Sites in Need of Protection, Sites/Areas in Need of Precaution, Impact Reference Zones and Preservation Reference Zones; and
- iv. financial tools: Environmental Compensation Fund set to be established in the exploitation phase.

This chapter will describe certain policy instruments and protections mechanism, which are characteristic for the regime of the Area, from the most general to the specific. As the Environmental Compensation Fund is not currently employed, it shall not be further discussed within this chapter.

### 5.1 Strategic Planning of the ISA

For the design and successful functioning of any environmental regulatory framework, strategic environmental planning and management is of paramount importance.<sup>242</sup> Conceptual tools determine the general direction and provide a unified basis for pursuing individual policies and strategic axes. They may also contribute to inform application and interpretation of rules, e.g., by helping to evidence the purpose of the provisions or to identify public interest.<sup>243</sup> In order to

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<sup>242</sup> Singh, P., Jaeckel, A., *supra* n. 82, p. 624.

<sup>243</sup> Damohorský, M. et al., *supra* n. 66, p. 40.

delimit overarching environmental strategy of ISA, the Assembly requested the Secretary-General to submit to a draft strategic plan for its consideration at the next session.

*The Strategic Plan* of ISA was thus adopted by decision of the Assembly in 2018<sup>244</sup> for a 4-year period from 2019 to 2023 at its 24<sup>th</sup> session (hereinafter Strategic Plan).<sup>245</sup> Within the Strategic Plan, ISA aims to determine for itself and its organs a long-term plan defining the strategic directions and aims with respect to transition from exploration to exploitation. It embodies the vision of the ISA for the implementation of Part XI and other provisions relating to the Area under the UNCLOS and the 1994 Implementation Agreement. The Strategic Plan particularly emphasizes evolutionary approach to developing protection mechanisms.<sup>246</sup>

The Strategic Plan contains guiding principles<sup>247</sup> and strategic directions<sup>248</sup>, which should guide ISA's pursuit during its four-year term to achieve the outlined outcomes.<sup>249</sup> The Strategic Plan also affirms the dedication of ISA to contribute to the achievement of Sustainable Development Goals and summarises the linkage of its contents to these in its Appendix I.

The most important part of the Strategic Plan from the point of view of this these is the Strategic direction 3, dedicated specifically to protection of the marine environment.<sup>250</sup> It set five axes of activity that ISA and its organs should follow in order to achieve the outcomes. They are:

- i. the development of environmental regulatory framework, based on precautionary principle and BAT;
- ii. the development of regional environmental assessments and management plans for all mineral provinces in the Area;
- iii. the ensuring of public access to environmental information and participation by stakeholders;
- iv. the development of scientifically and statistically robust monitoring programmes and methodologies to assess the potential risk for activities in the Area; and
- v. the development of appropriate regulations, procedures, monitoring programmes and methodologies to prevent, reduce and control pollution and other hazards to the marine

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<sup>244</sup> ISA, Decision of the Assembly of the International Seabed Authority relating to the strategic plan of the Authority for the period 2019–2023, 27 July 2018, ISBA/24/A/10.

<sup>245</sup> ISA, Decision of the Assembly relating to the final report on the first periodic review of the international regime of the Area pursuant to article 154 of the United Nations Convention on the Law of the Sea, 23 August 2017, ISBA/23/A/13.

<sup>246</sup> 1994 Implementation Agreement, annex, sec 1 (3).

<sup>247</sup> ISA, Strategic Plan, annex, sec. I (4).

<sup>248</sup> *Ibid*, annex, sec. IV.

<sup>249</sup> *Ibid*, annex, sec. V.

<sup>250</sup> *Ibid*, sec. IV (28).

environment, as well as interference with the ecological balance of the marine environment, prevent damage to the flora and fauna of the marine environment.

*The High Level Action Plan* was adopted by the Assembly's decision in 2019, following the adoption of the Strategic Plan, as Annex II to the Decision of the Assembly of the International Seabed Authority relating to the implementation of the strategic plan for ISA for the period 2019–2023.<sup>251</sup> It expands on and gives concrete substance to strategic directions of the Strategic Plan.

HLAP addresses the ISA's organs with specific high-level actions to take in order to achieve the Strategic directions set out in Annex, by linking the works of the respective organs to the general strategy and providing performance indicators and a time frame for their undertaking.<sup>252</sup> This way the very general directions set out in the Strategic Plan become measurable as there are specific anchors to evaluate their due and timely completion.

*Regional Environmental Management Plans* (hereinafter REMP) for all zones of interest for DSBM projects shall be developed by ISA, pursuant to Strategic direction 3.2, Strategic Plan and the HLAP, the ISA shall focus on developing and adopting, i.e., zones in which an exploration area has been granted. At its 24<sup>th</sup> session in 2018, the Secretary-General presented a report to the General Assembly which aims to "*facilitate the process of development of REMPs.*"<sup>253</sup> As opposed to the first two documents, REMPs are addressed not only to the ISA and its organs, but directly to States and Contractors. Their main objective is to provide the Contractors as well as the sponsoring States with "*proactive environmental management measures and tools to support informed decision-making and promote sustainable resource development.*"<sup>254</sup>

REMPs provide regional scale guidance which should inform the development of environmental management systems—including internal environmental management plans, environmental impact and risk assessments, and management and monitoring plans—on the scale of Contractor entities as well as individual mining operations. REMPs would do so by providing conservation objectives, background data, standardised review processes and

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<sup>251</sup> ISA, Decision of the Assembly of the International Seabed Authority relating to the implementation of the strategic plan for the Authority for the period 2019–2023, 24 July 2019, ISBA/25/A/15.

<sup>252</sup> ISA, Strategic Plan, Preamble, para. 2.

<sup>253</sup> ISA, Secretary-General, Preliminary strategy for the development of regional environmental management plans for the Area, Report of the Secretary-General, 16 January 2018, ISBA/24/C/3.

<sup>254</sup> ISA, 'Guidance to facilitate the development of Regional Environmental Management Plans (REMPs)', updated as of November 2019, available at: <https://www.isa.org.jm/minerals/environmental-management-plan-clarion-clipperton-zone>, last accessed 28 August 2022.

established opportunities for collaboration.<sup>255</sup> Therefore, they can be regarded as ISA's core instrument to set the tone for practice during the exploitation phase.

The first REMP was adopted by the decision of the Council already in 2012<sup>256</sup> on the recommendation of the LTC<sup>257</sup> for the CCZ. This REMP was particularly important as it is the first place where ISA defined its guiding principles for environmental management,<sup>258</sup> but also its vision, goals, strategic aims and operational and management objectives for the entire region, contract areas and delimited the areas of particular environmental interest (hereinafter APEIs).

The REMP for CCZ affirms the engagement to transparency as one of its guiding principles and provides a standard in that *"the Authority shall enable public participation in environmental decision-making procedures in accordance with the Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters, 1998 (hereinafter Aarhus Convention), and its own rules and procedures."*<sup>259</sup> Applying the standards of the Aarhus Convention to access of information concerning activities in the Area, would be an important step towards achieving greater transparency and accountability.

This should include environmental information from Contractors, obtained from environmental assessment and reports of monitoring programs submitted to ISA. The access of public to relevant information about the environment has been recognised as a vital part of ensuring environmental protection. In case of DSBM, there is a broad stakeholder base which includes States parties, sponsoring States, flag States, coastal States, State enterprises, private investors, other users of the marine environment and interested global and regional intergovernmental organizations and non-governmental organizations and activist groups.

Pursuant to par. 46, REMP for CCZ, stating that the REMP shall be subject to a periodic external review, the Secretariat of ISA convened a workshop, which took place in October 2019.

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<sup>255</sup> ISA, *ibid*, p. 14.

<sup>256</sup> ISA, Decision of the Council relating to an environmental management plan for the Clarion-Clipperton Zone, 26 July 2012, ISBA/18/C/22.

<sup>257</sup> ISA, LTC, Environmental Management Plan for the Clarion-Clipperton Zone, 13 July 2011, ISBA/17/LTC/7.

<sup>258</sup> These are common heritage of humankind, precautionary approach, protection and preservation of the environment, prior environmental impact assessment, conservation, sustainable use of biodiversity, and transparency. ISA, Environmental Management Plan for the Clarion-Clipperton Zone, ISBA/17/LTC/7, para 13 (a-f).

<sup>259</sup> Pursuant to Strategic direction 3.3., Strategic Plan, the ISA shall aim to ensure public access to environmental information and participation of stakeholders.

Currently, REMPs for the Mid-Atlantic Ridge, Indian Ocean and Northwest Pacific Ocean are being developed under the auspices of ISA. The development of the REMP is close to its completion following a series of three dedicated workshops and stakeholder input. The LTC is currently considering the revised draft of the REMP (hereinafter Draft REMP for MAR),<sup>260</sup> prior to submitting it for the consideration of the Council.<sup>261</sup>

## 5.2 Environmental Assessment

In order to gain regional perspective of the marine environment, it is necessary to understand physical processes and ecosystem distribution on the scale of the entire basins rather than merely within the respective zones of interest. Thus, Regional Environmental Assessments (hereinafter REAs) take a broad look at the environment and compile technical and scientific information from areas, which extend to multiple times the size of current exploration zones.<sup>262</sup> Similarly to REMPs, they shall be developed, under the over-arching environmental strategy of ISA, with respect to all mineral provinces, where exploration and exploitation activities are taking place.<sup>263</sup> So far, however, only one REA for Mid-Atlantic Ridge with focus on polymetallic sulphide deposits has been developed and published by the ISA.

REAs basic principle is to collect environmental data from across the region and systemise them for publishing, encompassing areas of geology, ocean physiology and biology.<sup>264</sup> The published data serves to support the ISA's development of REMPs and the Contractors when compiling their own site-specific EIAs. REAs are meant to be 'living documents', updated periodically to reflect the newest scientific discoveries.<sup>265</sup>

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<sup>260</sup> ISA, Draft regional environmental management plan for the Area of the northern Mid-Atlantic Ridge (MAR) with a focus on polymetallic sulphide deposits, published on 14 April 2022, available at: <https://isa.org.jm/files/files/documents/Draft-REMP-for-nMAR-for-consultation.pdf>, last accessed on 30 August 2022.

<sup>261</sup> ISA, Submissions received with respect to the stakeholder comments on draft REMP, available at: <https://isa.org.jm/submissions-received-respect-stakeholder-comments-draft-rem-p>, last accessed 27 August 2022.

<sup>262</sup> Weaver, P. P. E., Boschen-Rose, R. E., Dale, A. C., Jones, D., Billet, D. S. M, Colaço, A., Morato, T., Dunn, D.C., Priede, I. G., *supra* n. 63, p. 17.

<sup>263</sup> Strategic Plan, Strategic Direction 2.2.

<sup>264</sup> Weaver, P. P.E., Boschen-Rose, R. E., Dale, A. C., Jones, D., Billet, D. S. M, Colaço, A., Morato, T., Dunn, D.C., Priede, I. G., *supra* n. 63, p. 15.

<sup>265</sup> *Ibid*, p. 16.



### **5.3 Spatial based protection**

Protection of marine environment according to best-practice and evidence-based management involves use of spatial protection instruments that rely on *"the protection of areas thought to be representative of the full range of habitats, biodiversity and ecosystem structure and function within the management area."*<sup>266</sup> Spatial measures of protection are particularly aiming to protect the representative habitats in order to preserve the ecosystems attached thereto. To achieve this the ISA implemented two separate tools of spatial protection, outside the contract areas and within them.

#### **5.3.1 Areas of Particular Environmental Interest, Areas in Need of Protection, Sites in Need of Protection and Sites/Areas in Need of Precaution**

This section describes spatial management measures, which are determined within the REMPs and are therefore specific to a resource class and region. They include Areas of Particular Environmental Interest (hereinafter APEIs), Areas in Need of Protection (hereinafter AINPs), Sites in Need of Protection (hereinafter SINPs) and Sites/Areas in Need of Precaution (hereinafter S/A Precaution). All these zones, as opposed to IRFs and PRZs, are located almost always outside contract areas.

The APEIs are zones closed to mining, with their core region areas of 200 x 200 kilometres surrounded by a buffer area of 100 kilometres, determined by ISA under the respective REMP for polymetallic sulphides. In the ideal scenario, the respective REMPs should delimit these areas only keeping in mind the best interest of the marine environment and the scientific conclusions of REAs or EIAs, irrespective of the particular interests of potential miners. However, this was not the case with the first nine APEIs, which were established under the REMP for CCZ and cover approximately 160,000 square kilometres.<sup>267</sup> They were established only after the majority of contract areas had been granted and are thus conveniently located around them.

In order to improve the delimitation and to satisfy the requirements for review of the APEIs, ISA convened a workshop dedicated to the CCZ REMP in October 2019. Among its conclusions directed at the LTC were that, while the size of the core regions of APEIs remains appropriate, the 6 habitat types characterized by high nodule abundance are poorly represented

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<sup>266</sup> ISA, Environmental Management Plan for the Clarion-Clipperton Zone, ISBA/17/LTC/7, para 21.

<sup>267</sup> ISA, Decision of the Council relating to an environmental management plan for the Clarion-Clipperton Zone, 26 July 2012, ISBA/18/C/22, Annex.

within the APEI network. The workshop further concluded that the habitats could be better protected by placing additional APEIs in the easternmost, central and western CCZ. Going forward, the workshop recommended that climate change sensitivity should also be considered and that the presence of high densities of fossils in the eastern CCZ warrants measures for fossil protection in the Environmental Management Plan.<sup>268</sup> Based on this information, LTC formulated recommendations of further actions, which were adopted by decision of Council in December 2021. As consequence, four additional APEIs were added to enhance the existing network.<sup>269</sup>

The Draft REMP for MAR introduces three new types of area-base measures. These are designed to respect the different characteristics and needs of the seamounts and vent ecosystems. They differ on spatial scale (distinction between *areas* and *sites*) and level of protection (distinction between *in need of protection* and *in need of precaution*).

AINPS are "*large-scale areas of ecological importance due to 286 their uniqueness and/or biodiversity.*"<sup>270</sup> They are determined based on scientific criteria, such as uniqueness and rarity, biological diversity or based on their special importance for connectivity. These areas, which shall be protected as an integrated system, shall be guarded from both direct and indirect impacts of resource extraction.<sup>271</sup> Both the LTC and the Secretariat shall be responsible for their management, with possibility of implementing additional zoning schemes and joint research efforts, within ISA's mandate to promote collaborative monitoring and marine scientific research. Within the current Draft REMP for MAR, three AINPs are identified.<sup>272</sup>

SINPs are largely similar as to AINPs in their determination and level of protection.<sup>273</sup> However, as they aim to protect fine-scale sites comprising valuable ecosystem around active hydrothermal vents, those, which have been identified so far are located with existing contract areas.<sup>274</sup> This also means that Contractors will be largely responsible for their management, including their delimitation through detailed mapping.<sup>275</sup> The Draft REMP for MAR identifies

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<sup>268</sup> ISA, Deep CCZ Biodiversity Synthesis Workshop, Workshop Report, 2019, p. 16-17.

<sup>269</sup> ISA, Decision of the Council of the International Seabed Authority relating to the review of the environmental management plan for the Clarion-Clipperton Zone, ISBA/26/C/58.

<sup>270</sup> ISA, Draft REMP for MAR, sec. 33.

<sup>271</sup> *Ibid*, sec 36 (a,b).

<sup>272</sup> *Ibid*, sec. 35.

<sup>273</sup> *Ibid*, secs. 37, 39.

<sup>274</sup> *Ibid*, sec. 38.

<sup>275</sup> *Ibid*, sec. 40.

eleven active vent ecosystems protected within SINPs, whose existence has been confirmed, but it is expected that this number will rise as new vents are discovered and described.<sup>276</sup>

Finally, S/A Precaution are areas or sites, where high conservation value is predicted, but has not been ascertained.<sup>277</sup> Therefore, S/A benefit from a qualified precaution status, which urges Contractors to extend additional surveying efforts, describe them and report the relevant data to ISA. The ISA shall then decide, whether to classify these areas or sites as AINPs or SINPs and include them in their future review of the REMP, or whether precaution status may be removed.<sup>278</sup> S/A Precaution thus represents a tool, which exemplifies the use of the precautionary approach in practice and which should inspire future REMPs to also introduce spatial management tools based on qualified precaution status.

### **5.3.2 Impact Reference Zones and Preservation Reference Zones**

On the other hand, Impact Reference Zones (hereinafter IRZs) and Preservation Reference Zones (hereinafter PRZs) are zones set up by the Contractors within particular explorations areas granted to them under a contracts with ISA, serving primarily as monitoring reference and control sites.<sup>279</sup> Therefore, their intended purpose is that they should be temporary, i.e., relocated and updated from time to time to reflect move alongside the active mining sites, particularly in the case of nodule exploration and extraction.

Both IRZs and PRZs are defined in the Regulations and only limited guidance is provided in the Environmental Impact Recommendations.<sup>280</sup> As such, they are part of the Contractor's obligation as an integral part of the monitoring and evaluation obligations. Proposals for their designation must be part of their programs for monitoring and evaluation impacts of DSBM on the marine environment, and they are put in place "*on the requirement of the Council.*"<sup>281</sup> However, the Regulations do not state any requirements as to the time of their establishment during the exploration phase and the Environmental Impact Recommendations are of not help in this respect either. Therefore, they appear to be isolated within the protection mechanisms framework, suggesting that their ultimate objectives are not fully understood.

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<sup>276</sup> *Ibid*, secs. 38, 41.

<sup>277</sup> *Ibid*, sec. 43.

<sup>278</sup> *Ibid*, secs. 42, 44, 45.

<sup>279</sup> ISA, Nodules Regulations, reg. 31 (6), Sulphides Regulations and Crusts Regulations, reg. 33 (6).

<sup>280</sup> Environmental Impact Recommendations, sec. 26 (d), 53.

<sup>281</sup> ISA, Nodules Regulations, reg. 31 (6), Sulphides Regulations and Crusts Regulations, reg. 33 (6).

However, the basic difference between these zones is clear from their definitions. On the one hand, IRZs are defined as *"areas to be used for assessing the effect of activities in the Area on the marine environment and which are representative of the environmental characteristics of the Area."* It can thus be deduced that they shall be delimited at close proximity of the site where an activity is taking place in an environment, whose characteristics are similar to the site. Useful observation can thus be gathered by comparison of the original state and their developments as the relevant activity is carried out. This would further suggest that IRZs can only be meaningfully employed if they are set up with sufficient advance, as to gather enough baseline data to make the comparison relevant.

On the other hand, PRZs are defined as *"areas in which no mining shall occur to ensure representative and stable biota of the seabed in order to assess any changes in the biodiversity of the marine environment."* Thus the criteria for their delimitation should rather focus on the representativeness of its environment of the full diversity of the relevant ecosystems and should be far enough from the site as to not be impacted by any direct or indirect impacts, including past impacts. PRZs should thus be larger to cover all representative habitats and biota and can be set in a more permanent basis than the IRZs, which will need to follow along the site. The benefit of PRZs would then lie in comparing the evolution of the environmental condition of the PRZ to that of the IRZ.

Finally, both IRZs and PRZs should be designed with respect to the resource class. From this, it follows, that any future Recommendations should respect the different objectives of the two instruments and should give specific guidance for each resource class. Given the above described complexities, it is more than advisable that such guidance should be sufficiently detailed and include conservation markers and timelines.

## 6 National Legislations

As discussed in Chapter 4 Section 1, the States must play an active role during the entire process of activities in the Area. The 2011 Advisory Opinion helped identify the primary and due diligence obligations that the States must comply with, in order to prevent liabilities and the threat of litigation in front of SDC. The due diligence obligations and the standard of their performance relating to national measures provide an anchor to analysing how two specific States, Germany and the Czech Republic, decided to discharge these obligations and are key to draw conclusions as to how successful these efforts were.

The primary function of national legislations is to transpose the international rules into domestic legal order in order to ensure their enforceability and in turn the compliance of Contractors with their obligations while carrying out activities in the Area. According to Art. 139 (2) UNCLOS, States Parties bear the responsibility to ensure that activities in the Area are carried in conformity with Part XI. The states must thus exercise power vis-à-vis all entities under their sponsorship by, *inter alia*, adopting laws and regulations and taking administrative measures. The form, scope and specific contents of these measures will always depend on the specific legal system of the State Party.<sup>282</sup> The secondary function (and oftentimes the primary motivation for the States) of a duly constructed national framework is to exempt the respective State from liability for damage.

The 2011 Advisory Opinion qualifies the manner in which the States should act in adopting national legislation and administrative measures in stating that:

*"The sponsoring State does not have an absolute discretion with respect to the action it is required to take under Annex III, article 4, paragraph 4, of the Convention. In the sphere of the obligation to assist the Authority acting on behalf of mankind as a whole, while deciding what measures are reasonably appropriate, the sponsoring State must take into account, objectively, the relevant options in a manner that is reasonable, relevant and conducive to the benefit of mankind as a whole. It must act in good faith, especially when its action is likely to affect prejudicially the interests of mankind as a whole. The need to act in good faith is also underlined in articles 157, paragraph 4, and 300 of the Convention. Reasonableness and non-arbitrariness must remain the hallmarks of any action taken by the sponsoring State. Any failure*

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<sup>282</sup> 2011 Advisory Opinion, at para. 229.

*on the part of the sponsoring State to act reasonably may be challenged before this Chamber under article 187 (b) (i) of the Convention.*"<sup>283</sup>

From this, it is possible to derive the following observations. When implementing national measures, the State Parties have an obligation to act in good faith, reasonably and in a non-arbitrary manner. Further to that, the measures must be enforceable and, with respect to the protection of the marine environment, they must not be less stringent than those adopted by ISA or less effective than international rules, regulations and procedures.<sup>284</sup>

That being said, it is worth repeating that the adoption of legislative and administrative measures is only one of the multiple direct obligations that States Parties have under UNCLOS.

Ultimately, it is going to be the SDC of the ITLOS who will judge the whether the implemented measures are adequate with respect to Art. 139 (2) UNCLOS. Therefore, a clearer understanding is likely to emerge from the future case law of the SDC ruling on contentious cases pursuant to art. 187 UNCLOS.

Both Germany and the Czech Republic presented in this Chapter 6 are sponsoring States under UNCLOS and, through their respective sponsored entities, have actively partaken in prospecting and exploration within their contract areas.

## **6.1 Federal Republic of Germany: adoption of Seabed Mining Act of June 1995**

The involvement of the Federal Republic of Germany in activities in the Area dated back to the late 1960s, when several state-controlled entities formed a joined venture, with the view of developing nodules deposits in the Pacific Ocean.<sup>285</sup> However, these early efforts did not lead to the occurrence of any material activities, before Germany ratified UNCLOS (in German *Der Seerechtsübereinkommen der Vereinten Nationen vom 10.12.1982*) on 14 October 1994. Under the current international regime, Germany is a sponsoring State, since an agreement on exploration for polymetallic nodules in the CCZ was entered into on 19 July 2006,<sup>286</sup> by the ISA and the German Federal Institute for Geosciences and Resources (in German *Bundesanstalt für Geowissenschaften and Rohstoffe*, hereinafter BGR), which acts on behalf of the German

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<sup>283</sup> *Ibid*, at para. 230.

<sup>284</sup> *Ibid*, at para. 242.

<sup>285</sup> Poisel, T., *supra* n. 162, p. 227.

<sup>286</sup> Information on the Contract and its public version available at: <https://isa.org.jm/index.php/exploration-contracts/federal-institute-geosciences-and-natural-resources-germany>, last accessed 20 July 2022.

Federal Government, for an initial period of 15 years, with the exploration contract being renewed in 2021 for another 5-year period.<sup>287</sup> Another contract was entered into between the BGR and ISA on 6 May 2015 for exploration for polymetallic sulphides in Central Indian Ocean.<sup>288</sup> In general, Germany has been active in pursuing exploration activities and even got to the stage of testing a nodule collector in the German exploration area within the CCZ.

To ensure compliance with the primary and direct obligations under UNCLOS the 1994 Implementation Agreement, the Federal Republic of Germany adopted the Seabed Mining Act of 6 June 1995 (in German *Gesetz zur Regelung des Meeresbodenbergbaus*, hereinafter MbergG).<sup>289</sup> This Act has since been amended on multiple occasions, most importantly in 2006, following ISA's decision of approval of a Plan of Work, submitted for exploration by BGR.<sup>290</sup>

Furthermore, pursuant to secs. 1 (3), 7 (1) and 8 (5), MbergG, the German Federal Government and Federal Ministry of Economics and Technology are expressly authorised to enact secondary legislation in the form of ordinances (in German *Rechtsverordnung*) that apply to prospectors and contractors. This allows the Federal Government to set its own stricter standards for engaging in activities in the Area, building on the rules and regulations of ISA. However, the German authorities have not acted on this option yet, apart from adopting the translated, but substantively unchanged, texts of the ISA Regulations in the form of an ordinance.<sup>291</sup> This can be seen as somewhat of a missed opportunity to expand on the MbergG with more specific regulation and reinforce the German Contractors' environmental obligations.

The statute defines its purpose in sec. 1 (1) as, *inter alia*, "*ensuring the protection of the marine environment and regulating supervision of prospecting and activities in the Area.*" Therefore, an engagement to ensure the protection of the marine environment is expressly declared.

To ensure orderly undertaking of activities by its sponsored entities and their high standard, the regime of MbergG for granting access to contractors that is both strict and complex. Secs. 3 and

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<sup>287</sup> The Parliament of the Federal Republic of Germany, 19th Term, 'Kleine anfrage: Aktuelle Entwicklungen in der Forschung zu Risiken und Nutzen von Tiefseebergbau', Drucksache 19/30249, 15 June 2021, p. 2, available at: [https://www.bmwk.de/Redaktion/DE/Parlamentarische-Anfragen/2021/06/19-30249.pdf?\\_\\_blob=publicationFile&v=8](https://www.bmwk.de/Redaktion/DE/Parlamentarische-Anfragen/2021/06/19-30249.pdf?__blob=publicationFile&v=8), last accessed 30 August 2022.

<sup>288</sup> Information on the Contract and its public version available at: <https://isa.org.jm/index.php/exploration-contracts/federal-institute-geosciences-and-natural-resources-federal-republic-germany>, last accessed 20 July 2022.

<sup>289</sup> German Act on Regulation of Seabed Mining in the version published on 6 June 1995 (Federal Law Gazette I, p. 778, 782), as last amended by Ordinance of 19 June 2020 (Federal Law Gazette I, p. 1328), sec. 1 (1) (1).

<sup>290</sup> Poisel, T., *supra* n. 162, p. 227.

<sup>291</sup> Published in the German Law Gazette 2014, Part II No 21, as Ordinances of the Federal Government published on 24 September 2014.

4 MbergG establish the procedure and the competent administrative bodies, stating that prospection and exploration activities in the Area shall be supervised by the State Authority for Mining, Energy and Geology (in German *Landesamt für Bergbau, Energie and Geologie in Niedersachsen*, hereinafter LBEG).<sup>292</sup> Before commencing any prospecting activities, applicants must satisfy the notification procedure with the Secretary-General of the ISA and report the registration to the LBEG.<sup>293</sup> All German persons wishing to engage in activities in the Area must obtain approval from the LBEG and sign a contract with ISA.<sup>294</sup> During the national approval process, expert opinion on matters relating to maritime traffic and environmental protection is obtained from the Federal Maritime and Hydrographic Agency in Hamburg (*Bundesamt für Seeschifffahrt und Hydrographie*, hereinafter BSH). The BSH should, in turn, seek for a mutual agreement in opinion on environmental matters with the German Environment Agency in Dessau (in German *Umweltbundesamt*, hereinafter UBA).<sup>295</sup> Apart from fulfilling the conditions prescribed by the international law, sec. 4 (6) (2) MbergG adds conditions that the applicant must demonstrate reliability, provide a guarantee that the activities will be undertaken in an orderly manner, provide proof of financial funding and demonstrate that the activities can be carried out on a commercial basis. Once the application is approved by the LBEG, it is passed to the Federal Ministry for Economic Affairs and Energy (in German *Bundesministerium für Wirtschaft und Energie*) who submits relevant documents on behalf of the German Government to ISA.<sup>296</sup>

LBEG maintains its control over the Contractor's activities even after the initial approval and that way, it can adapt the conditions to new developments. Pursuant to sec. 4 (9) MbergG, "*where necessary to attain objectives set out in sec. 1, approval can be made subject to conditions,*" and "*conditions can also be imposed subsequently.*" These conditions may include completing an EIA prior to testing of mining technology during exploration, as was the case in 2018, when an EIA was undertaken as a condition precedent to allow testing of a pre-prototype manganese nodule collector vehicle.<sup>297</sup> However, as noted by Poisel, the LBEG is not expressly required to apply precautionary approach in their assessment of the applications by the MbergG. In this way, it could be said that the requirement fall short of the obligations under reg. 31 (2),

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<sup>292</sup> MbergG, sec. 2 (7), sec. 3.

<sup>293</sup> *Ibid*, sec. 4 (1).

<sup>294</sup> *Ibid*, sec. 4 (2).

<sup>295</sup> *Ibid*, sec. 4 (4).

<sup>296</sup> *Ibid*, sec. 4 (10).

<sup>297</sup> Federal Institute for Geosciences and Natural Resources, Report of Approval of Testing a Pre-Prototype Manganese Nodule Collector Vehicle by LBEG, issued 17 December 2018, available at: [https://www.isa.org.jm/files/files/documents/germany\\_0\\_0.pdf](https://www.isa.org.jm/files/files/documents/germany_0_0.pdf), last accessed 3 March 2022.



Nodules Regulations and reg. 33 (2) Sulphides Regulations and Crusts Regulations. Thus it would be recommendable that such provision is introduced into sec. 4, MbergG and could also include express requirement to apply BEP.<sup>298</sup>

Aside from this shortcoming, Poisel also notes on shortcomings relating to measures to ensure provision of guarantee under reg. 32 (7), Nodules Regulations and reg. 35 (8) Sulphides Regulations and Crusts Regulations and to make available *prompt* and *adequate* compensation of damage caused by pollution to the marine environment under art. 235 (2) UNCLOS.<sup>299</sup>

The MbergG also includes provisions on control, with which it charges the LBEG and authorises the LBEG to undertake a wide range of control activities, including request of additional information necessary for the performance of its duties, inspections and examination of operating records and other documents, and conduction of on-site inspections.<sup>300</sup> The agents of the LBEG may enter facilities and seize objects during their inspections, pursuant to sec. 8 (3), MbergG.

The MbergG also states sanctions for administrative offences and crimes committed under the act. Administrative offences include, *inter alia*, a breach of any obligations of the Contractor's obligations stated in the Regulations and its non-compliance with its contractual obligations.<sup>301</sup> However, the maximum penalty for administrative offence is rather low, amounting to 50 000 Euro.<sup>302</sup> The criminal provision of the MbergG qualifies certain administrative offence under sec. 11 as crimes, provided that they are caused (i) intentionally or through negligent conduct which leads to danger, and (ii) endangers the life or health of another person, a population of animals or plants or property of another person of significant value.<sup>303</sup> Thus, environmental offences may be punished as crimes, with penalty of up to 5 years of imprisonment or a fine. Sec. 12 (3) further states that a stricter penalty may be applied, in the case that the punishable act constitutes a crime under secs. 324, 326, 330 or 330a of the German Penal Code.<sup>304</sup>

In adopting the MbergG, Germany has taken an important step to ensure compliance under art. 139 (2), UNCLOS. Furthermore, the act has been updated on several occasions and includes the involvement of relevant administrative bodies and the express authorization to the executive

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<sup>298</sup> Poisel, T., *supra* n. 162, p. 231.

<sup>299</sup> *Ibid*, p. 231-232.

<sup>300</sup> MbergG, sec. 8 (1,2).

<sup>301</sup> *Ibid*, sec. 11 (1) 6.

<sup>302</sup> *Ibid*, sec. 11 (2).

<sup>303</sup> *Ibid*, sec. 12 (1,2).

<sup>304</sup> *Ibid*, sec. 12 (3). German Criminal Code in the version published on 13 November 1998 (Federal Law Gazette I, p. 3322), as last amended by Article 2 of the Act of 19 June 2019 (Federal Law Gazette I, p. 844).

to issue secondary legislation in the form of ordinances. While certain shortcomings have been identified and the amendment of the German Seabed Act is advisable, the German implementation of its international obligations can set a high standard and inspiration for other countries, particularly those with similar legal systems.

## **6.2 Czech Republic: adoption of Seabed Mining Act no. 150/2000 Coll.**

The Czech Republic ratified UNCLOS (in Czech *Úmluva Organizace Spojených národů o mořském právu*) on 21 June 1996 and published it in the Collection of International Conventions via Communication of the Ministry of Foreign Affairs no. 240/1996, on the conclusion of the United Nations Convention of the Law of the Sea. The Communication contains an unofficial translation of the text of UNCLOS into Czech. The Convention came into effect on 21 July 1996 pursuant to art. 308 (2) UNCLOS.

Under the current regime of the Area, the Czech Republic is a sponsoring State. The Czech Republic has been an active actor in DSBM since 1987 (then as part of Czechoslovakia), as member of a joint venture under the Interoceanmetal Joint Organisation (hereinafter IOM), an entity governed by Polish law and established under Intergovernmental Agreement dated 27 April 1987. Its present members are Bulgaria, Cuba, the Czech Republic, Poland, the Russian Federation and Slovakia. The venture has targeted exploitation of polymetallic nodules in the CCZ since its inception. In 1992, IOM became a Pioneer Investor after it was awarded a Certificate of Registration for a pioneer area of 150,000 km<sup>2</sup> and, on 29 March 2001, it entered into a contract with ISA for an exploration area of 75,000 km<sup>2</sup>.<sup>305</sup> In 2016, this contract was extended for another five years and was set to expire on 28 March 2021. In 2021, the contract was again extended for another 5-year period.<sup>306</sup> In spite of this, the future prospects of the venture are very uncertain, given the current geopolitical situation and very tense diplomatic relations between its members.

The Czech Government charged the Ministry of Economy (the predecessor of the Ministry of Industry and Commerce, in Czech *Ministertvo průmyslu a obchodu*, hereinafter Ministry), pursuant to Government Resolution no. 640, dated 9 November 1994, with preparing a legislative act that would transform the obligations of the Czech Republic under UNCLOS and 1994 Implementation Agreement into its domestic legal order. The act, adopted by the Czech

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<sup>305</sup> Available at: <https://www.isa.org.jm/index.php/exploration-contracts/interocanmetal-joint-organization>, last accessed 25 August 2022.

<sup>306</sup> Available at: <https://iom.gov.pl/category/news/>, last accessed 25 August 2022.

Parliament and signed by the President, was published in the Czech Collection of Laws on 18 May 2000 as Act no. 158/2000 Coll., on Prospecting, Exploration for and Exploitation of Mineral Resources from the Seabed beyond Limits of National Jurisdiction and the Security of Activities Relating to Petrol and Gas in the Sea, as amended (in Czech *zákon č. 158/2000 Sb., o vyhledávání, průzkumu, a těžbě nerostných zdrojů z mořského dna a o bezpečnosti činnosti v odvětví ropy a zemního plynu v moři*, hereinafter Czech Seabed Act).

While the Czech Seabed Act has been amended multiple times, most recently by the Act no. 183/2017 Coll. in relation to the adoption of the new act on administrative sanctions, none of the amendments have brought about its material evolution. In particular, no amendment or secondary legislative act has been issued in reaction to the three sets of ISA Regulations.

The Czech Seabed Act states its subject matter in sec. 1 (1) as *"the rights and obligations of natural persons with their domicile on the Czech Republic and juridical persons with their registered office in the Czech Republic, while they prospect and explore for and exploit mineral resources from the seabed and the ocean floor and the subsoil thereof, beyond the national jurisdictions, and the exercise of related state administration (meaning state supervision and administrative measures)."*

This definition of persons the Act applies to does not fully align with the scope of personal jurisdiction laid out in art. 139 (1, 3) UNCLOS, as, it narrows the scope of eligible juridical persons, by excluding juridical persons that are under effective control of the Czech State or of Czech nationals, but whose registered office is outside the Czech territory. However, this is unlikely to cause any issues, considering that the Czech Seabed Act contains a specific provisions relating to the participation of these person in international ventures or consortiums.<sup>307</sup>

As opposed to the German Seabed Act, the Czech Seabed Act expressly states the subsidiary application of international conventions and, where there are no such provisions, the general principles of public international law. This should also include principles relating to the environment.<sup>308</sup>

When it comes to its institutional dimension, the Czech Seabed Act expressly counts on engaging two administrative bodies, the Ministry and the Ministry of Foreign Affairs (in Czech *Ministerstvo zahraničních věcí*). However, the Czech Seabed Act contains no express

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<sup>307</sup> Czech Seabed Act, secs. 10 (3), 22.

<sup>308</sup> *Ibid*, sec. 20.

authorisation for the Ministry to issue secondary legislative acts. On top of that, no involvement of the Ministry of Environment or other governmental environmental agencies is provided for. In this respect, the Czech legislator may use the German framework as a source of inspiration to engage the Ministry of Environment (in Czech *Ministerstvo životního prostředí*) and other relevant governmental agencies, in particular the Czech Inspectorate of the Environment (in Czech *Česká inspekce životního prostředí*) and the Czech Mining Office (in Czech *Český báňský úřad*).

The submission of notification for prospecting is conditioned on the national level by the issuance of a certificate of expertise by the Ministry. This process includes an expert examination, under the auspices of the Ministry, which includes providing proof of relevant education or practice and evidencing knowledge of the international legal framework.<sup>309</sup>

The commencement of the application procedure for exploration and exploitation, which are treated jointly as activities, is conditioned by the issuance of a preliminary agreement by the Ministry (in Czech *předchozí souhlas*).<sup>310</sup> This procedure has the potential to importantly contribute to ensuring that the Czech national framework satisfies the conditions of UNCLOS, however, in its present state, it misses on multiple opportunities. Firstly, it should involve the Ministry for the Environment and other relevant expert bodies, as exemplified above, to materially assess that the application satisfies the environmental demands of the international framework. Secondly, as in the case of Germany, it should expressly state the obligation to apply the precautionary principle and BEPs during the assessment of the application for the preliminary approval. Thirdly, the application should require that the potential Contractor shall abide by not only the binding rules, regulations and procedures of ISA, but also to abide by non-binding instruments, such as Recommendations, as far as reasonably practicable. Finally, it is unsatisfactory that the conditions for a preliminary approval for exploration should remain the same as for exploitation. In these respects, I strongly recommend that the Czech legislator considers amending this provision.

With respect to control mechanism, the construction is very similar to that of the German Seabed Act, including the competencies of the agents carrying out the controls, with subsidiary application of the Czech Act no. 255/2012 Coll., Act on Control (Czech *zákon č. 255/2012 Sb.*,

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<sup>309</sup> *Ibid*, secs. 4-7.

<sup>310</sup> *Ibid*, sec. 9 (2).

*zákon o kontrole*).<sup>311</sup> On the other hand, the control should also be conducted by the Ministry, whose agents may not be fully competent, as to their environmental and technical expertise.<sup>312</sup>

Finally, sanction provisions only specifically mention administrative offences committed under the Czech Seabed Act. While the maximum penalty is very high, amounting to 100 000 000 Czech crowns, it is only applicable for conducting activities in the Area without a contract with ISA.<sup>313</sup> Therefore, the highest possible sanction for improper conduct once a contract is obtained amounts to 10 000 000 Czech crowns.<sup>314</sup>

Adopting the Czech Seabed Mining Act was a good first step to achieve compliance with requirements under the international framework of the Area. However, it has not been followed any material activity since its adoption, particularly on institutional and administrative level. I would thus argue that the Czech Republic has not duly discharged its due diligence obligation, particularly with respect to its membership in IOM and, in the case that this failure would lead to damage caused by IOM's activities in the Area, it would likely bear joint and several liability with the other members of IOM who failed to do so under art. 139 (2) UNCLOS.

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<sup>311</sup> *Ibid*, sec.16.

<sup>312</sup> *Ibid*, sec. 15 d.

<sup>313</sup> *Ibid*, sec. 18 (1) b, 2.

<sup>314</sup> *Ibid*, sec. 18 2.

## 7 Conclusion

All mining operations, regardless of their size and location, significantly affect the environment at the mining sites, in their surroundings and have consequences for connected environments on a far larger spatial scale. In the case of DSBM, these impacts are expected to be severe, unpredictable and largely irreversible on human-life time scales and would impact the entire water column up to the surface and above. The world's oceans are already under great levels of stress (both qualitative and quantitative) and the living communities in the vicinity of planned extraction sites are highly sensitive and vulnerable to disturbances. While there have been dedicated effort to expand our knowledge of the deep sea environment, there remains a high level of uncertainty, which is unlikely to be significantly lowered over the next decade. This is why a strong and enforceable legal framework and robust decision making procedures, based on sound scientific information, are seen as a paramount pre-requisite to ensure that DSBM will not have unacceptable environmental consequences.

The spinal cord of the current regime of the Area is constituted by UNCLOS, a legally binding instrument with near-universal acceptance, and the 1994 Implementation Agreement. To expand on this general framework, UNCLOS establishes the ISA and vests with the task to administer the resources on behalf of humankind, in line with the common heritage of humankind principle. The ISA organizes and controls activities in the Area and has a mandate to adopt rules, regulations and procedures of its own relating to *inter alia* the protection of the marine environment. These form a corpus, which is collectively referred to as the Mining Code.

The Mining Code aims to address the complete system of prospecting, exploration and exploitation envisioned in UNCLOS. It currently includes three sets of legally binding Exploration Regulations, concerning the three primary resources of interest in the Area: polymetallic nodules, ferromanganese crusts and polymetallic sulphides. The Exploration Regulations all contain provisions on environmental obligations, procedures and operational principles, which expand on the general framework of UNCLOS and the 1994 Implementation Agreement. Exploitation Regulations are currently, jointly as one document for all resource classes, under development and their current drafts include additional environmental management mechanisms, such as the obligation to establish and keep in place an effective Environmental Management System.

The international framework is further interpreted and informed by decisions and opinions delivered by international judiciaries, the ICJ and the SDC of the ITLOS. The importance of

the 2011 Advisory Opinion cannot be overstated. It has greatly contributed to clarifying the scope and substance of the primary and direct obligations of the sponsoring States and endorsed certain important environmental safeguards, i.e., an obligation to apply precautionary approach, best environmental practices and to ensure that an EIA is prepared prior to commencing activities in the Area. On top of that, it importantly remarked on a trend to consider the precautionary principle as part of customary international law. It has further affirmed that developing States shall be held to substantially the same standards with respect to environmental protection. This latter may prove particularly important to prevent the use of 'sponsoring States of convenience', holding all States Parties to apply the highest standard of protection.

All States Parties to UNCLOS have an obligation to adopt laws and regulations and take administrative measures on the national level to ensure compliance of their sponsored entities carrying out activities in the Area. Only due discharge of their obligations to take all necessary and appropriate measures to prevent damage to the Area leads to exemption from liability for damage, which should motivate State Parties to take action. While the form of these measures isn't prescribed due to inherent differences of the respective legal systems and largely depends on policy choice, the States Parties do not have absolute discretion. As was demonstrated on the cases of the Czech Republic and Germany, fully discharging the obligations under the international legal regime of the Area is a legally complex task that requires engagement of legislators and the administrative apparatus. It is undebatable that sponsoring States shall be required to go beyond formal steps to achieve compliance and that they shall submit the measures they put in place to ongoing reflection and review.

All legal rules contained in the sources described above must be applied and interpreted in line with the guiding principles of environmental law. In environmental matters, the precautionary principle and mind-set has been identified as playing a key role. It is vital that it is thoroughly applied by all key actors. Other identified applicable principles include best available techniques and best environmental practices, the obligation to carry out an environmental impact assessment, transparency and access to environmental information and ecosystem approach.

This thesis demonstrates that ISA has a central role to play as both the legislator and administrator of the Area. To succeed in these roles, its mandate must be clearly delimited and capacities expanded to meet the requirements of its increasing workload. As commercial mining

approaches, it must have the resources necessary to ensure the enforcement of its rules and ensure effective sanctions are imposed in case of non-compliance.

Apart from adopting and maintaining a framework of purely legal instruments, a comprehensive overarching policy framework for environmental management must be devised prior to first commercial mining operation. It must satisfy the extensive marine environmental protection requirements of UNCLOS, while taking into account relevant aspects of the Sustainable Development Goals and other international environmental targets. The framework should be adaptive, practical and technically feasible and contain measurable preservation objectives. Such framework will have to deliver on its goals, despite the considerable scientific uncertainty. Finally, ISA should continuously critically assess the soundness and viability of DSBM as a whole, in vision of alternatives.

Open and engaged collaboration between the industry, governments, the International Seabed Authority, NGOs and researchers is a vital prerequisite for future development and functioning of the framework. The process of developing the framework and its implementation must be transparent and allow for input of the broad stakeholder base, ensuring that developing States and representatives of civil society and non-governmental organisations can meaningfully participate and promote their interests and concerns. To achieve this, the absolute majority of information shared by the Contractors should be made accessible, with confidential information being kept at the strictly necessary minimum. The Authority should also emphasize reporting quality standards, so that relevant public actors can derive meaningful conclusions from the reported data.

In order for the DSBM framework to function, States Parties to UNCLOS must work in good faith as collaborative partners with the ISA. The challenge for ISA is to spearhead this process and encourage good practice of all actors. This is a critical point for the entire functioning of the framework. The States Parties should be engaged to focus should not merely on discharging their obligations and preventing potential risks of liabilities for themselves, but to take an active role in the review and enforcement of these rules, ensuring that all risks are properly assessed and reported prior to authorising any operation and monitor compliance throughout the whole life-cycle of any operation.

In case commercial mining becomes reality, ensuring the success of the DSBM framework will become an integral part of a broader effort to prevent further depletion of our Planet's oceans. However remote these mysterious and dark environments may appear, their loss would have



far reaching and unpredictable consequences on a global scale. Thus DSBM should be treated as shared concern to all humans and should only be undertaken with the highest level of caution.

## 8 List of Main Abbreviations

ABNJ	Areas beyond national jurisdictions
AINP	Areas in Need of Protection
APEI	Area of Particular Environmental Interest
BAT	Best available technology
BEP	Best Environmental Practices
CCZ	Clarion-Clipperton Fracture Zone
DSBM	Deep seabed mining
EEZ	Exclusive Economic Zone
EIA	Environmental Impact Assessment
HLAP	High Level Action Plan
ICJ	International Court of Justice
ISA	International Seabed Authority
IRZ	Impact Reference Zone
ITLOS	International Tribunal for the Law of the Sea
LTC	Legal and Technical Commission
MRA	Mid-Atlantic Ridge
PRZ	Protection Reference Zone
REA	Regional Environmental Assessment
REMP	Regional Environmental Management Plan
S/A Precaution	Sites/Areas in Need of Precaution
SDC	Seabed Disputes Chamber
SINP	Sites in Need of Protection
UNCLOS	The United Nations Convention on the Law of the Sea

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## 10 Abstrakt

### **Hlubokomořská těžba v Oblasti: Aspekty práva životního prostředí právního režimu**

Práce se zaměřuje na právní úpravu hlubokomořské těžby v prostorách mimo národní jurisdikce, souhrnně označovaných jako Oblast, jejímž předmětem je ochrana životního prostředí. Hlubokomořská těžba z mořského dna (DSBM) je možnou budoucí metodou komerční těžby neobnovitelných zdrojů, kovů a vzácných zemin, souhrnně označovaných jako Nerosty, prováděné v hloubkách mezi jedním a šesti kilometry pod hladinou oceánu. Jako každá těžební činnost by tyto činnosti měly dopad na okolní ekosystémy a oceánské prostředí jako celek, které je již nyní pod značným tlakem z jiných lidských činností.

Pro účinnou ochranu mořského prostředí je proto nezbytná propracovaná právní úprava, aby bylo možné předejít nezvratným a nepřijatelným následkům, včetně ztrát genetických zdrojů, biologické rozmanitosti a dalšího ohrožení klimatické stability. Rozmanitý soubor pravidel, který současně upravuje DBSM, se utvářel během posledních 50 let pod vlivem různých zájmových skupin a nejnovějších vědeckých poznatků a technologického vývoje. Jeho páteř tvoří Úmluva Organizace spojených národů o mořském právu (Úmluva) a Prováděcí dohoda z roku 1994. Ustanovení Části XI, Úmluvy zakládají zvláštní autonomní mezinárodní organizaci, Mezinárodní úřad pro mořské dno (Úřad), jejímiž členy jsou *ipso facto* všechny smluvní strany Úmluvy a dávají jí mandát vyvíjet pravidla, předpisy a postupy, přijímat další nezbytná opatření, vykonávat správu a kontrolovat jejich dodržování s cílem zajistit účinnou ochranu mořského prostředí.

Úmluva dále zavazuje státy, které jsou smluvní stranou úmluvy, aby přijaly v rámci svých právních rádu předpisy a správní opatření, která zaručí dodržování pravidel entitami, kterým poskytly svoji záštitu. Tyto entity mohou vykonávat činnosti v Oblasti pouze na základě návržení smluvní stranou Úmluvy a po uzavření smlouvy s Úřadem, ve které se zavazují dodržovat povinnosti stanovené v předpisech Úřadu.

Právní režim dosud vznikl v jedinečném kontextu, kdy je tvořen dříve než k těžební činnosti vůbec došlo. Tato mezera se však nyní postupně uzavírá, jelikož klíčové dokumenty týkající se komerční fáze těžby jsou stále ve fázi přípravy.

Klíčová slova: hlubokomořská těžba, Oblast, neobnovitelné zdroje, neživé zdroje Oblasti, mezinárodní právo životního prostředí, Úřad pro mořské dno, ochrana životního prostředí oceánů, mezinárodní prostory

## 11 Abstract

### **Deep Seabed Mining in the Area: Environmental Aspects of the Legal Framework**

The thesis focuses on the environmental aspects of regulation of deep-seabed mining in areas outside national jurisdictions, collectively referred to as the Area. Deep Seabed Mining (DSBM) is a potential future method of commercial extraction of non-renewable resources, metals and rare earths, collectively referred to as Minerals, conducted at depths between one and six kilometres below the ocean surface. Like all other mining operations, these activities would affect the surrounding ecosystems and the ocean environment as a whole, which is already under considerable pressure from other human activities.

Effective protection of the marine environment therefore requires sophisticated legislative and policy framework to avoid irreversible and unacceptable consequences, including loss of genetic resources, biodiversity and deepening threats to climate stability. The diverse set of rules that govern the DBSM has been shaped over the last 50 years by various interest groups and under the influence of the latest scientific knowledge and technological developments. Its backbone are the United Nations Convention on the Law of the Sea (UNCLOS) and the 1994 Implementation Agreement. The provisions of Part XI of UNCLOS establish a specialised autonomous international organization, the International Seabed Authority (ISA), whose members are *ipso facto* all Parties to UNCLOS, and give it the mandate to develop rules, regulations and procedures, to take other necessary measures, and to administer and monitor compliance with them in order to ensure effective protection of the marine environment.

The Convention further obliges States Parties to adopt regulations and administrative measures within their legal systems to ensure compliance with the rules by the entities under their sponsorship. These entities may carry out activities in the Area only under sponsorship by a State Party to UNCLOS and after concluding a contract with ISA in which they undertake to comply with the obligations set out in ISA's regulations.

The legal regime has been developing in a unique context, where it is formed before first mining activities have occurred. However, this gap is now closing as key documents relating to the commercial phase of mining are still being drafted.

Key words: deep seabed mining, the Area, non-renewable resources, non-living resources of the Area, international environmental law, International Seabed Authority, protection of ocean environment, Areas beyond national jurisdictions