



## **DEEP-SEABED MINING & AN INTERNATIONAL LEGAL REGIME TO REGULATE ITS ENVIROMNETAL IMPACT**

*By Pranathi Karuturi  
From Alliance University*

### **ABSTRACT**

The mineral wealth of the oceans mostly lies beyond the limits of national jurisdiction, in the deep sea-beds. The rising demand for mineral resources and the scarcity of the same on land has brought about a surge of interest in exploration and exploitation of deep-seabed mineral resources. Many states now are prowling the oceans for precious resources, metals and other archeological treasures buried inside the deep-sea beds.

The deep sea is the largest habitat for living organisms on earth and activities like deep-seabed mining and exploration disrupt the natural ecosystem that exists, due to effects like crushing of organisms falling in the path of mining vehicles, burying organisms nearby in the sediments that are stirred up by mining activities and so on. Although the seas can tolerate disturbances from time to time, the number of mining projects envisioned cover thousands of square miles of the deep seas, recovering from which seems impossible unless proper protective measures are employed for protecting the ecosystems on the deep-sea beds.

Therefore, this article addresses how the deep-seabed mining poses a great threat to the highly sensitive nature of the marine environment in the deep-seas. It discusses how that combined with the rapid growth in new technologies to facilitate mining, demands the need for a comprehensive legal regime that can fill the gaps that have emerged due of the vastly improved scientific and technological understanding of the deep-sea ecosystems. Lastly, it emphasizes on the need for a more strategic approach to be adopted for addressing the conservation and protection of the deep-sea environment from deep-seabed mining.

### **CHAPTER-I**

#### **1.1. INTRODUCTION**

The deep seabed is made up of mountain ranges, canyons, volcanic peaks, vast abyssal plains, canyons and so on, it also contains majority of the same mineral that are found on land as well as some minerals that are unique to the sea beds. The mineral wealth of the oceans mostly lie beyond the limits of national jurisdiction, in the deep sea-beds.<sup>1</sup> The rising demand for mineral resources and the scarcity of the same on land has brought about a surge of interest in exploration and exploitation of deep-seabed mineral resources.<sup>2</sup> Rich biological communities and mineral deposits in the international deep seabed area have also generated the interest of many marine scientific researchers, mining companies, deep-sea operators and so

<sup>1</sup> Eckert, Exploration of Deep Ocean Minerals: Regulatory Mechanism and United States Policy, (1974) 17 J. LAW & ECON. 143, <https://www.journals.uchicago.edu/doi/abs/10.1086/466788>, accessed on 19<sup>th</sup> September 2019.

<sup>2</sup> P. A. J. Lusty and A. G. Gunn, 'Challenges to Global Mineral Resources Security and Options for Future

Supply', (2015) 393 geological society 265, [https://www.researchgate.net/publication/270632875\\_Challenges\\_to\\_global\\_mineral\\_resource\\_security\\_and\\_options\\_for\\_future\\_supply](https://www.researchgate.net/publication/270632875_Challenges_to_global_mineral_resource_security_and_options_for_future_supply), accessed on 20<sup>th</sup> September 2019



on. Many states now are prowling the oceans for precious resources, metals and other archaeological treasures buried inside the deep-sea beds.<sup>3</sup>

The deep sea is the largest habitat for living organisms on earth and it is also the most difficult to access. However, we remain ignorant to ecosystems in the deep-seas that are being affected as a consequence of unnatural human activities in the deep-seabed. Activities like deep-seabed mining and exploration disrupt the natural ecosystem that exists, due to effects like crushing of organisms falling in the path of mining vehicles, burying organisms nearby in the sediments that are stirred up by mining activities, physical and chemical changes cause in the water from the loss of life, discharge of waste and so on.<sup>4</sup>

Although the seas can tolerate disturbances from time to time, the number of mining projects envisioned cover thousands of square miles of the deep seas, recovering from which seems impossible unless proper protective measures are employed for protecting the ecosystems on the deep-sea beds.<sup>5</sup>

## 1.2. EXISTING LEGAL SITUATION

The possibility of mining in the deep-seabed was known for a while now and it was also

one of the main driving forces behind the United Nations Convention on the Law of the Sea 1982.<sup>6</sup> This convention established a comprehensive framework for regulating the oceans, conscious of the problems that are threatening to destroy the oceans. It proposes that the resources of the seas are the Common Heritage of Mankind.<sup>7</sup> It places emphasis on the importance of preserving and protecting the marine environment as well. Part XII of this convention is entirely dedicated to calling for global and regional cooperation, monitoring and environmental assessment and developing international and national legislations for preventing, reducing and controlling the polluting of seas.<sup>8</sup>

This convention refers to the seabed floor beyond national jurisdiction as “the Area”, that is, beyond the national jurisdiction of all states and majority of the mineral vents of current interest are located in this ‘Area’.<sup>9</sup> The UNCLOS established the International Seabed Authority (ISA) in 1994 for the administration and regulation of all deep-seabed activities, while keeping environmental protection as one of its greatest priorities.<sup>10</sup> The ISA also adopted its Regulations on Protection and Exploration for Polymetallic Nodules in the Area, where rules for protecting and monitoring the marine environment in the Area. ISA’s Legal

<sup>3</sup> Ocean/Seas: Trillions of Dollars Just Lying Around, (1994) 16 INTER PRESS SERV. WL 2796568.

<sup>4</sup> Owen, ‘An Assessment of the Environmental Impact of Mining, (1977) 1 MARINE MINING 85, 91

<sup>5</sup> Micheal W. Lodge, ‘The Common Heritage of Mankind’, (2012) 4 International Journal of Marine & Coastal Law 733, <https://www.scimagojr.com/journalsearch.php?q=27789&tip=sid>, accessed on 20<sup>th</sup> September 2019.

<sup>6</sup> The United Nations Convention on the Law of the Sea 1982.

<sup>7</sup> United Nations Convention on the Law of the Sea, 1982, article 136

<sup>8</sup> United Nations Convention on the Law of the Sea, 1982, Part XII.

<sup>9</sup> United Nations Conference on Environment and Development, Marine Agenda: The Challenges of Implementation, 17 MARINE POL’Y 6 (1993), [https://www.un.org/Depts/los/consultative\\_process/documents/A21-Ch17.htm](https://www.un.org/Depts/los/consultative_process/documents/A21-Ch17.htm)

<sup>10</sup> The System for Exploitation of the "Common Heritage of Mankind" at the Caracas Conference, (1975) 69 AM. J. INT’L L. 31, <https://scholarlycommons.law.case.edu/cgi/viewcontent.cgi?article=1845&context=jil>



and Technological Commission was also set up to guide the contractors in assessing and minimizing the environmental impact arising from nodule exploration and possible exploitation.

### 1.3. RESEARCH PROBLEM

The Deep-seabed area is home to some of the largest living ecosystems on the planet. It houses millions of species of marine life, plants, fishes and various other organisms, many of which still haven't been discovered. The rising demand for mineral resources and the scarcity of the same on land has brought about a surge of interest in exploration and exploitation of deep-seabed mineral resources. The issue here is that, due to the highly sensitive nature of the marine environment of the deep-seas, mining in the area poses a huge threat. Mining activities have a severe effect on the ecosystems that inhabit the deep-seabed. That combined with the rapid growth in new technologies to facilitate mining, demands the need for a comprehensive legal regime that can fill the gaps that have emerged due of the vastly improved scientific and technological understanding of the deep-sea ecosystems. Therefore, a more strategic approach needs to be adopted for addressing the conservation and protection of the deep-sea environment.

### 1.4. RESEARCH QUESTIONS

1. Whether there exists an international regime to regulate the environmental impact of deep sea-bed mining?
2. Whether the regime regulating deep-seabed mining is comprehensive and effective enough?

### 1.5. HYPOTHESIS

There are important gaps in the international legal regime currently regulating deep seabed

mining activities and a more strategic approach needs to be taken while addressing the conservation and protection of the deep-sea marine environment from the harmful effects of these activities.

### 1.6. LITERATURE REVIEW

**Frida M Armas-Pfister, 'How Can Life in the Deep Sea Be Protected' (2009) 24 INT'L J MARINE & COASTAL L 281,** in this article the author discusses the living and non-living resources present in the Area. The author raises the issue of threat cause by the technological advancements in the field of deep-seabed mining to the existence of highly complex organisms and ecosystems that exist in these sea beds. He explains the existing legal situation for the protection of the marine environment and stresses on the reforms that be brought about.

**Aline Jaeckel, 'Strategic Environmental Planning for Deep Seabed Mining in the Area' (2019) 1 (12) J. Marpol 45,** in this paper the author discusses the environmental management strategy adopted for regulating deep seabed mining. It stresses on the role of International bodies like the International Seabed Authority's role in the same. It examines the existing regime and what might be missing in it and demonstrates that there exist a few gaps as well as overlaps in the strategies.

**Virginia A Pruitt, 'Unilateral Deep Seabed Mining and Environmental Standards: A Risky Venture' (1982) 8 Brook J Int'l L 345, t**

his article discusses the environmental risks involved in the advancement in the deep-seabed mining technology. It lays emphasis on the role of United Nations in developing a regime to protect the marine environment and



the steps that it already has taken in the same direction. It critically analyses the evolution of a convention to protect and conserve the marine environment while finding a way to utilize the abundance of resources availed on the seabed.

**James M. Mroadus, 'Seabed Materials', (1987) 235, American Association for the Advancement of Science, pp. 853,**

in this article the author discusses the impact of scientific advancements on seabed mining industry and how they have helped develop our existing knowledge on the marine ecosystems. He also explains how the advancements have helped us realise the potential of these marine resources based on their economic availability and accessibility.

### 1.7. SCOPE & OBJECTIVE

In this backdrop, the objective of this study is to understand the impact of deep-seabed mining activities on the marine environment. It studies the existing legal system regulating the conservation and protection of the ecosystems in the deep-sea. It aims at identifying the gaps and overlaps that need to be corrected in order for the regime to have more effective control over the exploitation of marine environment in the deep seas. This study is limited to the deep-seabed and does not extend to cover activities on other subsoils. It is not the intention of the study to analyse the advancement of technology or development in the mining capabilities, it is merely limited to studying their environmental impact and a method to minimize its harmful effects on the marine environment.

### 1.8. RESEARCH METHODOLOGY

<sup>11</sup> Ocean/Seas: Trillions of Dollars Just Lying Around, (1994) 16 INTER PRESS SERV. WL 2796568.

The present study is based on comparative, analytical and doctrinal approach. Also, the study has relied upon various primary and secondary sources of data which has been collected from E-books, Statutes, and Journals and other statistical data. Information obtained and collected from various sources were analysed in a qualitative way in tune with the objectives of the study for taking inference.

## CHAPTER-II

### 2. A REGIME FOR REGULATING THE IMPACT OF DEEP-SEABED MINING ON THE ENVIRONMENT

With the rise in the demand for more natural resources, the deep-sea bed is likely to be exploited as a new source of rich minerals. Many states now are prowling the oceans for precious resources, metals and other archaeological treasures buried inside the deep-sea beds.<sup>11</sup> Therefore, it is important to understand and control the impact these mining activities will have on the ecosystems in the deep seas before it is too late.

#### 2.1. Impact of Deep-seabed mining on the environment

The oceans can tolerate a certain amount of naturally occurring disturbances, but the amount of mining projects that are potentially going to take place, the damage inflicted on the deep-sea beds will be irreparable.<sup>12</sup> There may be many different methods of deep seabed mining, but the basic concept for recovery remains similar. In all the methods, a collector vehicle will land on the seafloor to collect the mineral deposits and the method used to do so will determine the amount of sediment suspended and damage caused. The

<sup>12</sup> Owen, 'An Assessment of the Environmental Impact of Mining, (1977) 1 MARINE MINING 85,



National Oceanic and Atmospheric Administration<sup>13</sup> and the International Seabed Authority have both identified a few potentially harmful activities, the exploration for commercial deposits, prototype tests for the commercial recovery mining system and metallurgical processing happening in the Area.<sup>14</sup>

### 2.1.1. Environmental impact of deep-seabed mining on the deep seas

The sediments disturbed by mining activities will take years to settle and once they do many marine organisms will be adversely affected. These sediments would reduce light filtration in the seas and affect the photosynthetic organisms and plants, and also possibly interfere with the communication system among marine animals. The bacterial activity would increase due to chemical interactions between the suspended sediment and seawater, and the increase in the bacterial content of the upper layer of the sea can decrease its oxygen level and it may also affect the surface life.<sup>15</sup> Small organisms in the ocean would ingest these particles, which would later be eaten by large organisms, where the concentration of these sediments would increase and affect the whole food chain. Concentration of metal particles in

species such as tuna are harmful to human health as well. Other effects such as crushing of organisms living in the path of the mining vehicles and burial of organisms under the redistributed sediments may be seen as well.<sup>16</sup>

### 2.1.2. Environmental Effects of Deep-Seabed Mining on Land

Once the nodules get extracted from the seabed the question of processing comes up. From the nodules extracted, generally only one-third of them are commercially useful and the rest of it is discharged as waste in the ocean and on land.<sup>17</sup> In addition to this, the processing plants would double the energy consumption in the area and would also require millions of litres of fresh water for the process.<sup>18</sup>

## **2.2. Existing Regime for Environmental Protection in the Area**

### 2.2.1. Role of United Nations Convention on the Law of the Seas 1982

The United Nations Convention on the Law of the Sea 1982 places special emphasis on the dire need to preserving and protecting the marine environment. It establishes the same through its preamble and various other provisions which facilitate the protection of marine environment.<sup>19</sup> Part XII of the

<sup>13</sup> The National Oceanic and Atmospheric Administration 1970

<sup>14</sup> Collins, 'Mineral Exploitation of the Seabed: Problems, Progress, and Alternatives' (1979) 12 NAT'L RESOURCES LAW. 599, <https://academic.oup.com/bybil/article-abstract/80/1/1/295197?redirectedFrom=fulltext>, accessed on 22<sup>nd</sup> September 2019.

<sup>15</sup> Bischoff & Rosenbauer, 'Chemical Changes in Seawater Caused by Resuspension of Deep Sea Sediments from DOMES sites', (1977) 1 MARINE MINING 283.

<sup>16</sup> Lyle Glowka, 'The Deepest of Ironies: Genetic Resources, Marine Scientific Research, and the Area,

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[https://brill.com/view/journals/ocyo/12/1/article-p154\\_.xml?lang=en](https://brill.com/view/journals/ocyo/12/1/article-p154_.xml?lang=en), accessed on 24<sup>th</sup> September 2019.

<sup>17</sup> Keith, 'Manganese Nodule. Processing in Hawaii', (1978) vol. 14 HAWAII B.J. 103,

<sup>18</sup> Trumbull, 'Energy: How Hawaii Uses the Wind, the Sun and the Sea', N. Y. Times (D9 29<sup>th</sup> March 1981) 1, <https://www.nytimes.com/1981/03/29/business/energy-how-hawaii-uses-the-wind-the-sun-and-the-sea.html>

<sup>19</sup> United Nations Convention on the Law of the Seas 1982, article 145



Convention is primarily devoted to the same cause, calling for global and regional cooperation for monitoring, environment assessment and controlling, reducing and preventing pollution affecting the oceans. It defines the function of International Seabed authority to adopt necessary measures to ensure the effective protection of marine environment from the harmful effects arising from deep-seabed mining activities.<sup>20</sup> Including measure to prevent the damages to the flora and fauna in the marine environment.

#### 2.2.2. Role of the International Seabed Authority (ISA)

The ISA is an autonomous body through which most state parties' control and organise activities in the Area. ISA acts on behalf of mankind as a whole and has function and power conferred on it by the UNCLOS.<sup>21</sup> It is responsible for developing and adopting rules and procedures for exploration and exploitation of deep-seabed minerals, while incorporating adequate standards for the protection of marine environment. Environmental protection in the deep seas in one of its highest priorities. In 2000, the ISA adopted the 'Regulation on Prospecting and Exploration for Polymetallic Nodules in the Area', which establishes a regime for exploring the seabed for

polymetallic nodules.<sup>22</sup> These regulations are binding on all parties contracting with the Authority for exploration and exploitation of minerals.

One of the bodies of the ISA is the 'Legal and Technical Commission'.<sup>23</sup> It is responsible for assessing the environmental impact of the mining activities and giving recommendations for guiding the contractors to reduce the environmental impact of their activities in the deep seas.<sup>24</sup>

In 2001, the Legal and Technical Commission adopted the 'Recommendations for the Guidance of the Contractors for the Assessment of the Possible Environmental Impacts Arising from Exploration for Polymetallic Nodules in the Area', which have to be followed by all parties contracting with the Authority.<sup>25</sup>

In the event of there being a serious threat or harm to the marine environment due to the actions of the contractors, the ISA can take immediate action in the form of temporary measures to contain, prevent or minimize the harm. It may also pass any emergency orders to adjust or suspend operation if the contractor does not comply with the regulations. Coastal states perceiving a threat

<sup>20</sup> Collins, Mineral Exploration of the Seabed: Problems, Progress, and Alternatives, (1979) 12 NAT'L RESOURCE LAW 599, <https://academic.oup.com/bybil/article-abstract/80/1/1/295197?redirectedFrom=fulltext>, accessed on 22<sup>nd</sup> September 2019.

<sup>21</sup> United Nations Convention on the Law of the Seas 1982, article 187.

<sup>22</sup> Regulation on Prospecting and Exploration for Polymetallic Nodules in the Area 2000, <https://www.isa.org.jm/mining-code/Regulations/Polymetallic%20Nodules>, accessed on 24<sup>th</sup> September 2019.

<sup>23</sup> United Nations Convention on the Law of the Seas 1982, article 165

<sup>24</sup> United Nations Convention on the Law of the Seas 1982, article 165 (d), (e), (f) and (h).

<sup>25</sup> Recommendations for the Guidance of the Contractors for the Assessment of the Possible Environmental Impacts Arising from Exploration for Polymetallic Nodules in the Area 2001, <https://www.isa.org.jm/mining-code/recommendations-guidance-contractors-assessment-possible-environmental-impacts-arising-0>, accessed on 24<sup>th</sup> September 2019.



to their own marine environment have a right to approach the Authority for assistance.<sup>26</sup>

Thereby, it can be seen that deep-seabed mining activities are primarily regulated under the United Nations Convention on the Law of the Seas 1982, with the assistance of autonomous bodies such as the International Seabed Authority.

### **CHAPTER-III**

#### **3. EFFECTIVENESS OF THE LEGAL REGIME TO PROTECT THE MARINE ENVIRONMENT IN THE DEEP-SEAS UNDER UNCLOS**

The critical need for protection of marine environment has been recognised and established in the UNCLOS and the Mining Code. However, the economic importance of exploration and exploitation activities for mineral resources has also been emphasised by the same regime. The economic advantages arising from these activities simply cannot be ignored or disregarded, as they benefit mankind as a whole and facilitate the economic development of many developing states. Activities like Marine Scientific Research can also not be ignored as the knowledge of the Area and its resources is extremely important for establishing an effective and comprehensive framework for activities in the Area.<sup>27</sup>

#### **3.1. Problem in Regulation of Living Resources of the Deep-Seabed**

Living resources consist of species of organisms that are in constant contact with the seabed and are called sedentary species under the UNCLOS.<sup>28</sup> During the time of the evolution of the Law of the Seas, the continental shelf extended way beyond the territorial waters and sovereignty rights over living resources of the continental shelf were given to coastal states.<sup>29</sup> According to the UNCLOS those rights were to be exercised for exploring and exploiting its natural resources, including sedentary species and no one could undertake such activities with the expressed consent of the coastal state.<sup>30</sup> However, the convention does not assign the same for sedentary species in the Area. It completely forgets to address such species living in the deep-sea beds of the Area. Many countries during the negotiation rounds of the UNCLOS III, suggested that sedentary species be included and covered by the regime, but the whole discussion was focused more on the economic value of the minerals under these beds rather than the need to protect these species. The whole discussion was side swept when the hydrothermal vents were discovered stating that it would be hard to identify all the sedentary species that are unique to different seabeds and the reopening of the agreement for this purpose was said to be impossible.<sup>31</sup>

<sup>26</sup> United Nations Convention on the Law of the Seas 1982, article 142

<sup>27</sup> Steven J Burton, 'Freedom of the Seas: International Law Applicable to Deep Seabed Mining Claims' (1977) 29 STAN L REV 1135, <https://heinonline.org/HOL/License>, Accessed on 21<sup>st</sup> September 2019

<sup>28</sup> R. Young, 'Sedentary Fisheries and the Convention on the Continental Shelf', (1961) 52 AJIL 629

<sup>29</sup> Carter, *The Seabed Beyond the Limits of National Jurisdiction*, (1969) 4 STAN. J. INT'L STUD. I

<sup>30</sup> Franck, Kennedy & Trinko, *An Equitable Regime for Seabed and Ocean Subsoil Resources*, (1974) 4 DEN. J. INT'L L. & POL. 161.

<sup>31</sup> Ecksrt, 'Exploration of Deep Ocean Minerals: Regulatory Mechanisms and United States Policy', (1974) 17 J. L. & ECON. 143, 174, <https://www.journals.uchicago.edu/doi/abs/10.1086/466788>, accessed on 24<sup>th</sup> September 2019.



It is never easy for scientific knowledge and its effects on laws to be understood quickly and this was no exception. However, did this omission of not expressly mentioning them in the regime mean that they are unregulated? If the status of these living resources is not clarified, many problems will arise in the protection and management of both the living and non-living resources. The whole purpose of the article 145 would also be defeated, as it would be a breach in its obligation to protect and preserve natural resources of the Area.

### 3.2. Weak Enforcement Mechanism

Though the UNCLOS provides various provisions to safeguard the marine environment of the Area, there is no effective mechanism to ensure its effectiveness. The UNCLOS merely provides for procedural regulations to protect the marine environment and no provisions for strict action in case of violation are provided for under this convention.<sup>32</sup> The Authority is only authorised to pass interim orders or take temporary measures to prevent or minimize harm. Therefore, states and corporations mining in the deep seas find it easy to deviate from follow the procedure prescribed by the ISA.

Another important point to note is that UNCLOS being an international convention is only enforceable on its members states, and there is no compulsion for non-signatory states to adhere to the procedures prescribed by the convention.

<sup>32</sup> Jan-Stefan Fritz, 'Deep Sea Anarchy: Mining at the Frontiers of International Law' (2015) 30 INT'L J MARINE & COASTAL L 445, [https://brill.com/view/journals/estu/30/3/article-p445\\_3.xml?lang=en](https://brill.com/view/journals/estu/30/3/article-p445_3.xml?lang=en), accessed on 24<sup>th</sup> September 2019.

### 3.3. The Improvements that need to be brought about in the international regime for deep-seabed mining for the protection of marine environment of the Deep-seas

Various conventions and conferences have made an effort to address the issue of prevention of danger to the deep-seabed marine environment from harmful activities such as mining. In 1972, the Stockholm Declaration set forth a principle that called for states to take all possible steps to prevent pollution of the seas by actions that are liable to create hazardous conditions and harm to marine life in the deep-seas.<sup>33</sup> The United Nations Sustainable Developmental Goals 2030 Agenda also recognised the importance of international commitments to conserve and sustainably use the oceans and have also discussed the possibility of potentially calling a freeze on deep-seabed mining in international waters, the same was supported by the Deep Sea Conservation Coalition as well.<sup>34</sup>

Keeping all these in mind the UNCLOS needs to firstly, introduce more stringent regulation on deep-seabed mining instead of merely providing procedural guidelines. Secondly, it needs to develop an effective enforcement mechanism to implement all the protective measures on the deflectors. Lastly, the convention needs to make its provisions more comprehensive and inviting so as to get more states to become its signatories, so that these environmental safeguards against deep-seabed mining can be applicable and

<sup>33</sup> Bhimsen Rao, 'India and Deep Seabed Mining', (1994) 15 World F. 22

<sup>34</sup> United Nations Sustainable Developmental Goals 2030 Agenda, <https://www.un.org/sustainabledevelopment/development-agenda/>, accessed on 24<sup>th</sup> September 2019.



enforceable against them. As some of the most developed states such as America are not a party to the convention and therefore, they are not liable to follow the standards set up the UNCLOS. They continue to explore and exploit the marine resources through deep-seabed mining without being held liable for their environmental effects.

The UNCLOS in general is a very comprehensive document, however, with the rapid development in technology advancements for deep-seabed mining, has left the convention with a few gaps that are to be filled. The Authority should encourage and take up measures such as providing economic incentives for green industrial practices and mining practices, investing in development of new mining technologies to reduce the environmental impact of deep-seabed mining, monitoring and enforcing established strategies strictly and providing punitive action for deterrence and so on.

## **CHAPTER- V**

### **CONCLUSION**

From the above discussion it can be seen that deep-seabed mining is a rapidly emerging industry, due to all the advancements in technology that make it more economic to exploit the rich source of resources. Deep-seabed mining has severe effects on the marine environment and ecosystems if it is not regulated. It poses a great threat to all the flora and fauna in the deep-seas, and in turn have a direct impact on humans as well.

The Mining Code and Part XII of the United Nations Convention on the Law of the Seas are dedicated to protecting marine environment from getting damaged by the mining activities in the deep seabed. The

International Seabed Authority is responsible for regulating and provide international standards and guidelines for contractors to follow for mining in the deep seas. The Legal and Technological Commission of the International Seabed Authority is responsible for monitoring and guiding the contractors in assessing and minimizing the environmental impact arising from nodule exploration and possible exploitation.

Mining activities in the deep seas are increasing day by day. Deep-seabed mining is well regulated by the existing legal regimes however, new discoveries that are being made every day in the oceans. These conventions were largely negotiated in the in the 1990's without the benefits of the vastly improved scientific understanding the ecosystems in the deep-seabed. Therefore, it can be said that a more strategic approach needs to be taken while addressing the conservation and protection of the deep-sea marine environment from the harmful effects of these activities.

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