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# The Role of the International Seabed Authority in the Management of the Area: A Legal Appraisal

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**Abstract**

The International Seabed Authority is an international organization created in 1982 by the United Nations Convention on the Law of the Sea and the Implementation Agreement of Part XI of the United Nations Convention on the Law of the Sea 1994 to administer the Area and the resources found therein. However, the persistent complains of the absence of an exploitation regulation in the Area for over two decades is a call for concern on the effectiveness of the International Seabed Authority in exercising its role of managing the Area. This can be observed from the granting of thirty exploration contracts till date but no exploitation contract and inadequate information on the effects of these activities in the Area. However, this paper is focused on investigating the strategies adopted by the International Seabed Authority for the management of the Area and the challenges it encounters in this regard. The paper does so through the exploitation of secondary and primary sources of information. Secondary data were collected from books, academic journals, magazines, and official publications touching the subject matter. To compliment secondary data, primary data was also used and this was done essentially through interviews, focus group discussions and questionnaires. The data collected were analyzed with the use of thematic content approach The ensuing results revealed that the strategies range from the adoption of a Strategic Plan, establishment of a Mining Code to Environmental Management Plans. Thus the findings, laid a ground for further research on this area.

**Keywords:** authority, strategies, international, management, seabed

## 1. Introduction

From the seventeenth to the mid twentieth century, the ocean was subject to the freedom of the seas doctrine. This doctrine limited national rights and jurisdiction over the ocean to a narrow area portion of the sea surrounding a nation's coastline. What was left of the ocean was declared to be free and belonging to no one. Over the years, there were events which threatened to transform the ocean into another arena for conflict and instability which include spreading pollution, competing demands for lucrative fish stocks in coastal waters and adjacent seas, growing tension between coastal nations rights to these resources and those of distant water fishermen, the increased presence of maritime powers and the prospect of a rich harvest of resources on the sea floor.[1] With all these threats, by the second half of the twentieth century, some coastal sates made demands for increased security and customs zones for the exploitation of resources, conservation of maritime resources and exclusive offshore-fishing rights. The United Nations held several conferences on the Law of the Sea and this led to the establishment of jurisdiction over certain portions of the ocean. There existed spaces within national jurisdiction which include internal waters, territorial sea, exclusive economic zone, the contiguous zone.[2] Equally there were spaces beyond national jurisdiction which consisted of the high seas and the Area. For the purpose of this work, we will be limited to the areas beyond national jurisdiction.

The high seas under Article 1 of the 1958 Convention on the High Seas states: *"The term 'high seas' means all parts of the sea that are not included in the territorial sea or in the internal waters of a State."*[3] Where the continental shelf extends beyond the limit of 200 nautical miles, the super adjacent waters and the airspace above those waters are the high seas. The principle of the freedom of the high sea proposed by Dutch Jurist Hugo Grotius as early as 1609 is that which govern the high seas.[4] When this doctrine was proposed it did not become an accepted principle of international law, not until the nineteenth century. Freedom of the high seas means that the high seas are free from national jurisdiction and there is freedom of activities there. Freedom of the high seas is now recognized as freedom to navigation, freedom of over flight, freedom to lay submarines cables and pipelines, freedom to construct artificial islands and other installations permitted under international law, freedom of fishing, freedom of scientific research and freedom to fly over the high seas. With respect to the freedom of the high seas, Article 2 of the 1958 Convention on the High Seas states that, it comprises both coastal and non coastal States.[5] The first United Nations conference on the Law of the Seas, meeting at Geneva in 1958, sought to codify the law of the high seas but was unable to resolve many issues. This was the same scenario with the second conference in Geneva, 1960 and the third conference which began in Caracas in 1973, later convening in Geneva and New York. Equally the seabed beyond national jurisdiction is considered as part of the high seas and is called the Area. The limits of the Area are the seaward limit of the continental shelf that means that it consists in at the maximum the 200 nautical miles from the baseline.

The area is governed by the principle of the common heritage of mankind which signifies that activities in the Area are to be carried out on behalf of mankind as a whole. In 1970, the United Nations General Assembly adopted the Declaration of Principles Governing the Sea-Bed and the Ocean Floor, and the Subsoil Thereof, Beyond the Limits of National Jurisdiction General Assembly which states that, *"The sea-bed and the ocean floor, and the subsoil thereof, beyond the limits of national jurisdiction (hereinafter referred to as the area) as well as the resources of the area, are the common heritage of mankind."*[6] Article 136 of the 1982 Convention equally states *"The Area and its resources are the common heritage of mankind."*[7] In addition, the Declaration of Principles Regarding the Seabed Beyond National Jurisdiction states, "the area shall be open to use exclusively for peaceful purposes by all states, whether coastal or land-locked, without discrimination, in accordance with the international regime to be established."[8] With respect to the same Area, Article 141 of the UNCLOS states, *"The Area shall be open to use exclusively for peaceful purposes by all States, whether coastal or land-locked, without discrimination and without prejudice to the provisions of this Part"*.[9] The term 'activities in the Area' is defined by Article 1 of part XI of the 1982 United Nations on the Law of the Sea Convention to mean *"all activities of exploration for, and exploitation of, the resources of the Area."*[10] Article 133 defines 'resources' to mean *"all solid, liquid or gaseous mineral resources in situ in the Area at or beneath the sea-bed, including polymetallic nodules."*[11] Polymetallic nodules which are equally called manganese nodules are small brown- black balls and usually measure 1-20 centimetres in diameters were first discovered at the end of the nineteenth century in the Arctic Ocean off Siberia. These nodules contain commercially valuable minerals, such as, nickel, cobalt and copper. There was the need for an institution to control the activities in the Area and its resources on behalf of mankind as a whole. This led to the creation of the International Seabed Authority an autonomous international organization established under the 1982 United Nations Convention on the Law of the Sea and the 1994 Agreement relating to the implementation of Part XI of the UNCLOS.

The Authority sits in Jamaica and all State parties to the LOSC are ipso facto members of the Authority (Article 156).[12] The Authority was created to organize, carryout and control the activities in the Area on behalf of mankind as a whole Article 153(1).[13] This organization was a mechanism to propagate the principle of common heritage. These activities in the Area include the exploration for and exploitation of the resources of the Area. The Seabed Disputes Chambers made clear that 'activities in the Area' include: drilling, coring, dredging, and excavation; disposal, dumping and discharge into the marine environment of sediment, waste or other effluents, and construction and operation or maintenance of installation, pipelines and other devices related to such activities. The Authority comprises of three principal organs which are the Assembly, Council and the Secretariat, Article 158(1). [14]The supreme organ of the International Seabed Authority is the Assembly, in which all State parties to the Convention are represented. All other organs of the Authority are accountable to the Assembly as provided for in Article 160(1).[15] The Assembly sets general policies, establishes budgets, and elects the 36 members of the council. The Council on its part is made up of thirty six members and serves as the executive authority of the International Seabed Authority. Each member of the council shall be elected for four years. The Council is empowered to establish the specific policies to be pursued by the Authority on any matter within the competence of the Authority. The Council oversees the implementation of the provisions of the Law of the Sea Convention and establishes provisional rules and regulations subject to approval by the Assembly. It approves contracts with private corporations and government entities for exploration and mining in specified areas of the seabed area. The Secretariat comprises of a Secretary-General and a staff as may be required by the Authority Article 166(1).[16] The Secretary-general is nominated by the Council and elected by the Assembly for a four year

term. The Secretariat shall not receive any instructions from any government or from any other source external from the Authority in the exercise of its duties. The Secretariat is an independent and neutral organ as such shall have no financial interest in any activity relating to exploration and exploitation activities in the Area Article 168.[17]

The Authority's jurisdiction is limited to the Area and is limited to matters provided by the Law of the Sea Convention and the 1994 Implementation Agreement. Thus, the powers and functions of the Authority shall be those conferred upon it by the LOSC. The Authority equally has incidental powers which are necessary for the exercise of its power and functions. The competence of the International Seabed Authority is similar to a legislative and enforcement jurisdiction. With regards to its legislative jurisdiction, Article 17 of the Annex III provides:[18]

*"The Authority shall adopt and uniformly apply rules, regulations and procedures in accordance with article 160, paragraph 2(f)(ii), and article 162, paragraph 2(o)(ii), for the exercise of its functions as set forth in Part XI on, inter alia, the following matters."*

These matters are things related to administrative procedures for prospection, exploration and exploitation in the Area. The Authority equally provides for the equitable sharing of financial and other economic benefits derived from the activities in the Area through appropriate and non-discriminatory basis.[19] More so, the Authority is expected to adopt appropriate rules, regulations and procedures for the protection of the marine environment and human life.[20] With respect to its enforcement jurisdiction, the UNCLOS gives the Authority its decision-making power to grant exploration and future exploitation contracts after evaluating a plan of work submitted by contractors. The ISA is given the authority to sanction contractors that violate their authorized contracts. The Authority can do this by suspending or terminating contracts seriously violated by contractors, under Article 18(1) of Annex III.[21] The Authority decides on the conditions for the authorization of activities in the Area. In addition, Article 18(2) authorizes the ISA to impose monetary penalties and proportionate to the seriousness of the violation.[22] The jurisdiction of the ISA is exercised over all natural and legal persons engaging in activities in the Area, irrespective of their nationalities.

However, this paper is focused on analyzing the strategies adopted by the International Seabed Authority for the management of the Area. These strategies range from the adoption of a Strategic Plan, establishment of a Mining Code to Environmental Management Plans.

## 2. Management Strategies of the ISA in the Area

### *2.1 The Adoption of a Strategic Plan*

The International Seabed Authority adopted a strategic plan which shall be used for the period 2019-2023 adopted by the Assembly at the 24th Session of the Authority on 26th July, 2018.[23] The strategic plan reflects the Authority's mandate and responsibilities as set out in UNCLOS and the 1994 Implementation Agreement. It was developed in consultation with members and observers of the International Seabed Authority as well as other relevant stakeholders through an extensive process of public consultation. [24]The adoption of the Plan reflects the commitment of the Authority to a result-based approach and to be the best and most effective organization it can be. The Plan also highlights the importance of strategic partnerships in fulfilling the International Seabed Authority's role and responsibilities.[25] The International Seabed Authority strategic Plan provides an overview of the Authority's strategic directions for the next five years and outlines its key priorities in striving to deliver optimum services to meet the needs of its members.[26] The International Seabed Authority's strategic directions include;

- Realize the role of the International Seabed Authority in a global context.
- Strengthen the regulatory framework for activities in the Area.
- Protect the marine environment.
- Promote and encourage marine scientific research in the Area.
- Build capacity for developing States.
- Ensure integrated participation by developing States.
- Ensure equitable sharing of financial and other economic benefits.
- Improve the organizational performance of the International Seabed Authority.
- Commit to transparency.[27]

In July 2019, the Assembly adopted the High Level Action Plan for 2019-2023 which identifies the actions necessary to achieve the objectives of the Strategic Plan, as well as the priorities for the period 2019-2023, in relation to the actions required of the Authority to realize its mission objectives. The High Level Action plan also

includes key performance indicators to be used to assess the performance of ISA towards achieving the strategic directions set out in the Strategic Plan.

*2.2 The Establishment of the Mining Code*

The Mining Code refers to the whole of the comprehensive set of rules, regulations and procedures issued by the International Seabed Authority to regulate prospecting, exploration and exploitation of marine minerals in the international seabed Area defined as the seabed and ocean floor and subsoil thereof beyond the limits of national jurisdiction. All rules, regulations and procedures are issued within the general legal framework established by UNCLOS, in particular its Part XI on the Area and its 1994 Agreement relating to the implementation of Part XI of UNCLOS.

*2.3 Prospecting and Exploration Regulations*

To date, the ISA has adopted three sets of Regulations on Prospecting and Exploration for Polymetallic Nodules in the Area adopted on the 13th July 2000;[28] the Regulations on Prospecting and Exploration for Polymetallic Sulphides in the Area adopted on the 7th May 2010[29] and the Regulations on Prospecting and Exploration for Cobalt-Rich Ferromanganese Crusts adopted on 27th July 2012.[30] Each set of Regulations contains broadly similar provisions with some differences to account for the distinctive characteristics of each type of deposit. While Part I defines the terms used in the Regulations, Part II specifies rules regarding prospecting. Part III describes the process of applying for an exploration contract and sets out the requirements for applications and the assessment thereof. Part IV addresses exploration contracts with the provisions closely following Annex III to the LOSC. Part V enunciates rules on the protection and preservation of the marine environment. The remaining parts of the Regulations addresses confidentiality issues, general procedures, dispute settlement, a provision excluding exploration rights over resources other than those that are the focus of the Regulations, and review options.

Importantly, the 'Contract for exploration' and the 'Standard clauses for exploration contract' are annexed to the Regulations. These basic terms apply to all contractors who obtain an exploration contract under the Regulations. Each exploration contract is 15 years and comprises three programs of activities.[31] However, some important differences between the contractors' obligations remain. Notably, the five-year program of activities, which is not publicly available, is individually developed by each contractor and annexed to the contract. [32]This program sets out the specific activities the contractor will undertake in the following 5 year period and is revised thereafter.

Regulations can be amended as specifically provided for in Article 165 (2)(g) LOSC, which requires the Legal and Technical Commission to keep the rules, regulations, and procedures under review and recommend amendments to the Council 'as it may deem necessary or desirable.' The Regulations themselves require that they be reviewed after 5 years or at any time 'if, in the light of improved knowledge or technology, it becomes apparent that the Regulations are not adequate.'[33] Amendments to the Regulations follow the same procedures as for the adoption of new regulations. Pursuant to this procedure, the Nodules Exploration Regulations were amended in 2013, to bring them in line with the more recent Exploration Regulations for sulphides and crusts, and particularly the more rigorous environmental standards set therein.[34] In order to align the three sets of Exploration Regulations, amendments were made in 2014 to the provision on application fees in the Sulphides Exploration Regulations[35] and the anti-monopoly clause in the Nodules Exploration Regulations.[36] This clearly demonstrates the flexibility incorporated into the regulatory design, to ensure the seabed mining regime develops alongside new realities in ocean sciences, mining standards, social values, and international environmental law.

Further, although not specifically provided for in the LOSC, the ISA develops non-binding recommendations in addition to its legally binding regulations. The competence to develop such recommendations rests exclusively with the Legal and Technical Commission.[37] These recommendations are not binding but they offer important guidance on what is expected of contractors. The difference is clearly stated in the standard terms for exploration contracts, which requires contractors to comply with the relevant Exploration Regulations, while only requiring them to observe, as far as reasonably practicable, any recommendations which may be issued from time to time by the Legal and Technical Commission. Once adopted by the LTC, the recommendations must be reported to the Council, although by the latter has no direct power to annul or amend recommendations. The Council may merely request modifications or withdrawal if it finds a recommendation to be inconsistent with the intent and purpose of the corresponding Regulations. These regulations supplement the regulations and at present, recommendations that have been issued by the Commission include:

(a) Recommendations for the guidance of contractors and sponsoring States relating to training Programmes under plans of work for exploration;[38]

(b) Recommendations for the guidance of contractors for the assessment of the possible environmental impacts arising from exploration for marine minerals in the Area[39] which were revised by the

Commission in March 1029;[40]

(c) Recommendations for the guidance of contracts for the reporting of actual and direct exploration expenditure;[41]

(d) Recommendations for the guidance of contractors on the content, format and structure of annual reports.[42]

*2.4 Regulation for Exploitation*

In addition to the existing instruments that form part of the Mining Code, preliminary work on the first regulations for the exploitation of seafloor minerals commenced in 2011.[43] In carrying out the considerable task of developing this comprehensive framework for the commercial-scale exploitation of minerals, the ISA issued a work plan for the formulation of the exploitation regulations[44] and commissioned a technical scoping study that provides a comparative analysis of the core features of land-based mineral mining framework. In July 2015, the Council of the International Seabed Authority began consideration of a document produced by the Legal and Technical Commission on Developing a Regulatory Framework for Deep Sea Mineral Exploitation in the Area. The draft framework for the exploitation Regulations contains a preamble which sets out the objectives and overarching principles/ purpose of the regulations and ten parts and two annexes: Part I- Introduction and use of terms and scope; Part II- Applications for approval of plans of work for exploitation in the form of contracts; Part III- Contracts for exploitation; Part IV- Protection and preservation of the marine environment; Part V- Confidentiality; Part VI- General Procedures; Part VII-Enforcement' offences and penalties; VIII- Settlement of disputes; Part IX- Other mineral resource categories and Part X- Review.[45] Further, in July 2018, the Legal and Technical Commission issued revised draft regulations on exploitation of mineral resources in the Area[46] for consideration by the Council of the International Seabed Authority, together with a commentary setting out matters on which the Commission sought the Council's guidance and identifying key matters that remained under consideration by the Commission[47] in response, the Council provided comments on the revised raft, which are annexed to the statement by the President of the Council on its works during the second part of the twenty-fourth session[48] and invited members of the Council to provide written comments on the revised draft by 30 September 2018. During the first part of its 2019 session, in March, the Commission continued to consider the draft exploitation regulations as a matter of priority. On 15 March, the Commission issued a set of revised draft regulations, together with an accompanying commentary introducing changes to the text.[49]

*2.5 The Environmental Management Plan*

The Environmental Management Plan of the International Seabed Authority consist Regional Environnemental Management Plans. Regional Environmental Management Plans (REMPs) are an essential element of the strategies that the International Seabed Authority implements to protect the marine environment. An example of the Environmental Management Plan is the Environmental Management Plan for the Clarion-Clipperton Zone. REMPs are developed to:

- Provide the relevant organs of the International Seabed Authority, as well as contractors and their sponsoring States, with proactive area-based and other management tools to support informed decision-making that balances resource development with conservation.
- Provide the International Seabed Authority with a clear and consistent mechanism to identify particular areas thought to be representative of the full range of habitats, biodiversity and ecosystem structures and functions within the relevant management are;
- Provide those areas with appropriate levels of protection; and
- Help the International Seabed Authority to meet globally agreed goals and targets, such as the Sustainable Development Goals 14 that commits nations to protecting and restoring ocean ecosystems and enhancing resilience to be able to better survive the harmful effects of climate change.[50]

***a. The Environmental Management Plan for the Clarion-Clipperton Zone***

The first REMP for the Clarion-Clipperton Zone (CCZ) was adopted by the Council in 2012,[51] on the basis of the recommendation of the Legal and Technical Commission (LTC).[52] The establishment of the CCZ-EMP represents an effective measure for the protection of the marine environment from harmful effects that may arise out of activities in the Area. It is inseparable from the context, the mandate of the Authority as a whole and the purpose for the establishment of the plan. Therefore, the participation of contractors in the establishment and implementation of the CCZ-EMP is fundamental. The rights and obligations of contractors as well as their essential contribution by means of providing resources assessment and environmental data are recognized by the organs of the Authority involved in the establishment and implementation of the plan as well as in the plan itself. The requirements for reporting data and results in a standardize manner[53] and the obligations to establish environmental baselines and conduct monitoring programs are essential for the implementation and review of a

regional environmental management plan. Further, the recommendations for guidance of contractors provide for the use of environmental baseline data for regional environmental management,[54] including the need to address molecular taxonomic standardization. Equally the CCZ-EMP includes the designation of a network of nine "Areas of Particular Environmental Interest" (APEIs). Such APEIs are protected from future exploitation of mineral resources in the Area.

In October 2019, the International Seabed Authority Secretariat convened the workshop on the CCZ biodiversity synthesis in collaboration with the Deep CCZ Project. This workshop builds on the discussion in 2016 when the Commission considered proposals from additional APEIs. The key scientific results of this workshop include:

- Biodiversity is high, variable, and still very poorly sampled across the CCZ, with many, possibly thousands of, new species to be collected and described;
- Key environmental drivers of biodiversity in the CCZ include flux of Particular Organic Carbon (POC), nodule abundance, and bottom topography, supporting the original APEI design variables;
- There are many rare species with likely limited dispersal and distribution (< 200km), and relatively few tax with wide distributions, indicating that the size of APEI is appropriate for self- sustainable populations; and
- Connectivity varies between tax, with a gradient of connectivity for some species with distance.

A habitat classification approach, based on the three major environmental drivers, was used to assess the representatives and replication of habitats in the Original APEI network. These outcomes would provide the basis for the LTC future recommendation on possible additional APEIs to improve representatives and address any spatial gaps in the current APEI network.[55]

**b. Development of REMPS in Other Regions**

In 2018, the Council took note of a preliminary strategy[56] to develop REMPs in priority regions where exploration activities currently took place. The Council agreed with the priority areas that had been identified on a preliminary basis as the Mid-Atlantic Ridge, the Indian Ocean triple junction ridge and nodule bearing province, as well as the North-West Pacific and South Atlantic for seamounts. In 2019, the Council took note of the report prepared by the Secretariat, including a program of work to implement this strategy through a series of regional workshops.

To facilitate the development of REMPs in other regions, the Secretariat prepared the REMP guidance document, which outlines the process and scientific approaches for developing REMPs. The REMP guidance document is being further developed by the LTC, as requested by the Council at Part I of 26th Session. This continued development of the REMP guidance document builds on the experiences gained through the on-going process, as well as inputs from member States and other stakeholders.

In November 2019, the ISA Secretariat convened an international workshop, to facilitate the development of an REMP for the Area of the northern Mid-Atlantic Ridge with focus on polymetallic sulphides (PMS) deposits, in collaboration with the Atlantic REMP project (sponsored by the European Union). This workshop, held in Evora (Portugal), discussed three complementary approaches: adaptive management, area-based management and qualitative modeling for assessing cumulative impacts. Such results will provide the scientific basis for the following workshop for the same region, to be held in Saint Petersburg (Russia), which will identify a range of environmental management measures for the REMP development.

*2.6 Environmental Impact Assessment*

Under article 145 of the United Nations Convention on the Law of the Sea (UNCLOS), the International Seabed Authority is responsible for taking the measures necessary to ensure effectively protection of the marine environment from the harmful effects that may arise from activities in the Area.[57] In fulfilling this mandate, the Council and the Assembly of the ISA is supported by expert advice and the recommendations from the Legal and Technical Commission. Under article 165 of the UNCLOS, the Legal and Technical Commission is empowered to prepare assessment of the environmental implications of activities in the Area and make recommendations to the Council on the protection of the marine environment, taking into account the views of recognized experts.[58]

The 1994 Agreement relating to the Implementation of Part XI of the UNCLOS reaffirms those responsibilities by stating that between the entry into force of UNCLOS and the approval of the first work plan for exploitation, the ISA shall concentrate on, inter alia, the "adoption of rules, regulations and procedures incorporating applicable standards for the protection and preservation of the marine environment".[59] Procedurally, it requires that an application for approval of a plan of work shall be accompanied by an assessment of the potential environmental impacts of the proposed activities and by a description of a program for oceanographic and baseline environmental studies in accordance with ISA rules, regulations and procedures.

Based on Part XI of the UNCLOS and the 1994 Agreement, the ISA has developed detailed and substantive provisions, regulations and recommendations related to the assessment of possible environmental impacts arising from exploration for marine minerals 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 addresses impacts on marine biodiversity on the seabed as well as in the water column above it. The ISA is also working on draft regulations for exploitation of minerals in the Area, which also include detailed and sophisticated provisions relating to EIAs. These regulations will be supplemented by a set of environmental standards and guidelines.[60]

The ISA is in the process of developing draft regulations to govern exploitation of mineral resources in the Area, which includes detailed provisions relating to EIA. Under the current draft, the ISA, sponsoring States and contractors would have the general obligation to promote accountability and transparency in the assessment, evaluation and management of environmental effects from exploitation activities. Contractors are obligated to submit an Environmental Impact Statement (EIS) to document and report the results of an EIA which must be designed to identify, predict, evaluate and mitigate the biophysical, social and other relevant effects of the proposed mining operation. Contractors would also be required to prepare an Environmental Management and Monitoring Plan (EMMP), which would be based on the EIA and EIS. The draft regulations also provide for the development of standards and guidelines', including environmental standards, which would cover environmental quality objectives, monitoring procedures and mitigation measures.

During the 25th Session, the Commission recommended that guidelines be developed for EIA, EMMP, environmental management systems and baseline data collection as matter of priority and completed by or after July 2020.[61] The Commission also decided to establish two technical working groups to support the development of several environmental guidelines and recommended processes for the development of standards and guidelines, including opportunities for stakeholder consultation and comments.[62] The Council took note of the recommendations made by the Commission, and emphasized that any standards, draft environmental goals, objectives and principles require discussion and adoption by the Council. The Council also expressed its intention to ensure the thorough and timely development of the regulations, bearing in mind that necessary standards and guidelines should be developed before the adoption of the regulations.[63]

*2.7 Creation of the Deep Data Database*

In 2019, the International Seabed Authority launched the Deep data database which will serve as the global repository of all deep seabed related data submitted by contractors and collected in the Area through their exploration activities. Currently, the database contains biological, physical and geochemical parameters of the marine ecosystems from the seafloor to the ocean surface. The deep data database also contains maps, photographs, videos, graphics and relevant publications in peer-reviewed journals received from contractors. The Geographic Information System is also part of the Deep Data's functionalities and allows visualization of contract areas, reserved areas and designated areas of particular environmental interest. As the global repository of data and information relating to activities in the Area, Deep Data is a critical tool to support the International Seabed Authority in organizing and regulating the activities in the Area; ensuring the effective management of prospecting, exploration and exploitation of deep seabed mineral resources; effectively protecting the marine environment; and equitably sharing knowledge derived from the conduct of marine scientific research in the Area for the benefits of human kind.[64] In the Secretariat started to assemble the first Central Data Repository (CDR) in 2000, succeeding the initial International Seabed Authority's database of polymetallic nodule resources of the Area, called POLYDAT. In 2003, following the Legal and Technical Commission request, the CDR was then expanded to include information on all types of mineral resources under exploration namely; polymetallic nodules, cobalt-bearing ferromanganese crusts and polymetallic sulphides. After several years of work, a new database has been developed. This database, called "ISA Deep Seabed and Ocean Database" (Deep Data) has been designed to serve as a spatial, internet-based data management system. Its main function is to host all deep-seabed activities related data and in particular, data collected by the contractors on their exploration activities as well as any other relevant environmental and resources related data for the Area.[65]

**3. Challenges Faced by the International Seabed Authority in the Management of the Area**

These challenges faced by International Seabed Authority in the Management of the Area include:

*3.1 Inadequate Measures to Protect the Marine Environment*

The LOSC provides for the development of seabed minerals and for the protection of the marine environment from the impacts of mining and tasks the Authority with striking the balance. Pursuant to Article 145 of the LOSC, the International Seabed Authority must take "necessary measures [...] to ensure effective protection for the marine environment from harmful effects which may arise" from "activities" in the Area, a term defined in the LOSC as referring to exploration and exploitation of the resources in the Area.[66] This provision grants the

ISA a broad capacity to enact protective measures as it deems necessary. Moreover, the Authority is specifically obliged to adopt rules, regulations and procedures, including "for the prevention, reduction and control of [...] interference with the ecological balance of the marine environment", particularly from harmful effects of seabed mining and "for the protection and conservation of the natural resources of the Area and the prevention of damage to the flora and fauna of the marine environment."[67] Thus, the Authority must actively develop and implement environmental protection standards and keep them under review.[68] The ISA has adopted an Environmental Management Plan which consists of Regional Environmental Management Plans towards achieving its mandate of protecting the marine environment. However, the provisions of these REMPs are not legally binding on its member states. Equally, the ISA has expressly adopted the precautionary approach in its regulatory instruments but has not clearly stated how this will be operationalised. The legal status of the Area and its resources influences every aspect of the International Seabed Authority regime, including the determination of an adequate balance between facilitating mineral mining and protecting the marine environment. Given the recent expansion of exploration activities and the imminence of large scale mineral exploitation, scientists are warning about the potential of commercial-scale seabed mining to cause severe and wide-spread environmental damage.[69] Much of the damage may be long term or irreversible and restoration may, in some areas, be impractical, owing to the very slow rate of substrate reformation after mineral deposits have been removed.[70] As the International Seabed Authority Secretary-General, Nii Allotey Odunton, emphasized in 2013, "it is imperative to ensure that adequate measures are in place for the protection of the marine environment. A prerequisite for this is the establishment of an environmental baseline against which to assess the impacts of mining on the marine environment."[71] Despite this, the Authority still has not adopted adequate measures to achieve this task and there is slow implementation of the measure already adopted. For the implementation of these measures, the ISA lacks institutional infrastructure necessary to ensure environmental compliance. Most importantly, however, measures for the protection of the marine environment are, at present, decided on an ad hoc basis, making them vulnerable especially if commercial pressure to promptly commerce the exploitation phases increases.

*3.2 Lack of Measures to Reduce the Impact of Deep Seabed Mining*

Also, the lack of measures to reduce the environmental impact of seabed mining in the existing Prospection and Exploration Regulations is another challenge to the management of the Area by the International Seabed Authority. With the lack of such measures the Area and its resources will be at great risk because with the commencement of exploitation activities in the Area, its protection is not evident or guaranteed. Deep seabed mining poses a potential risk for biodiversity loss, forced species migration, and loss of connectivity that could lead to species extinctions in the deep ocean. This places at risk genetic material that could potentially have biotechnical or pharmaceutical use in the future. There could also be ecosystem services such as fisheries, climate regulation, detoxification and nutrient cycling whose values in the high seas and Deep Ocean are not yet fully understood or quantified. Equally, deep seabed mining is expected to create environmental impacts that direct removal of the resources (nodules, sulphides and crust) which act as substrate for unique fauna which will be removed or crushed. There will also be changes to the geochemical and physical properties of the seafloor; sediment plumes created from the disturbance on the seafloor as well as from the return water that may cloud the water column or smother unmined seafloor areas; contaminant release and changes to water properties and increase in sound, vibration and light. The absence of disturbance studies on realistically large scale in space and time means that the intensity, duration and consequences of the impact of commercial mining remain unknown. There is therefore the need for appropriate measures to protect the marine environment from the adverse effects of deep seabed mining.

*3.3 Insufficient Credible Scientific Data*

Further, the acquisition of sufficient credible scientific data and information to assist in assessment of cumulative impacts to establish environmental management plans is another difficulty faced by the ISA in the management of the Area. At the 24th Annual Session of the ISA on the drafting of the Mining Code, Carl Gustaf Lundin, director of the International union for Conservation of Nature (IUCN) said "we are operating in the dark". "Our current understanding of the deep sea does not allow us to effectively protect the marine life from mining operations. And yet, exploration contracts are being granted even for those areas that host highly unique species. Exploitation of minerals using current technology could potentially destroy the rich deep-sea life forever, benefiting only a few, and disregarding future generations." With the lack of credible and sufficient data, the ISA will not be able to assess the adverse effects that exploitation operations can have on the marine environment and this might cause harm to the marine life causing a great lose for the future generations.

*3.4 High Cost of Conducting Marine Scientific Research*

In addition, the high cost of conducting marine scientific research in the Area, the need for collation, deciphering, storage and dissemination of data and information and finding ways to encourage work by contractors and the

scientific community also a poses real challenge. For the development of the Area and its resources marine scientific research must be carried out and this is an obligation imposed on the International Seabed Authority by the United Nations Convention on the Law of the Sea. Under Article 143 and 145 of the convention, in addition to its core function of encouraging the development of seabed mineral resources, the ISA also has a general responsibility to promote and encourage the conduct of marine scientific research in the Area for the benefit of mankind as a whole and to disseminate the results of such research. This implies that research and scientific knowledge should be shared widely amongst the international science community to scientists around the world can benefit from the findings. However, carrying out this research is expensive and for an organization that gets finances from contribution of its member States this is not evident.

*3.5 Ineffective Participation of the African Group*

Another very pertinent challenge faced by the International Seabed Authority is the ineffective participation of the African Continent in the activities of the Area. At the International Seabed Authority's 23rd session in August 2017, the African Minerals Development Centre based in Addis Ababa said Africa "was the only regional group not sponsoring any entity to engage in exploration activities in the Area" whereas all other regional groups in the world are already engaged in exploration activities in the Area. Thus, the African Group complained that they might be marginalized from the "new gold rush and any of its benefits." This is justified in that twenty years after exploration activities have begun in the Area with over thirty exploration permits granted by the ISA, only Africa has no single exploration permit and thus she has a very minimal participation in the activities in the Area. This is a great challenge as the African States constitute a greater portion of member States of the International Seabed Authority.

## 4. Conclusion

This paper has crystallized the different strategies adopted by the International Seabed Authority for the management of the Area. These strategies from what we have seen above range from the adoption of a Strategic Plan, establishment of a Mining Code to the Environmental Management Plans. The paper has also taken out time to examine what each of those plans entail. However, with the range of competence or powers attributed to the ISA to enable it achieve its mission, there are still substantial challenges that it faces. These challenges include; inadequate measures to protect the marine environment, ineffective participation of the African Group, high cost of conducting marine scientific research, and insufficient credible scientific data. Nevertheless, the ISA is working relentlessly towards achieving its mission. These are some recommendations we make to the ISA that might be adopted to facilitate their effectiveness in the management of the Area.

- Develop a detailed strategic vision to implement the ISA's environmental obligations during the exploration and exploitation stages would be instrumental to ensure that appropriate and systematic environmental protection measures are adopted and implemented, in order to conserve the biodiversity of the deep ocean biota and ecosystem functions while providing for rational use of mineral resources.
- Develop fair distribution mechanism aimed to ensure an equitable distribution both of benefits and marine resources use and the cost. Conservation, monitoring surveillance and sanctions should be applied to the sharing of the costs and benefits between countries and between different levels of economic development. Africa should not be left out. There should be a Participatory decision making structure in that will make it possible for all States to reveal their interest which will lead to decisions that all stakeholders can understand. Sanction mechanism should be applied at different governance level for the purpose of enforcing these mechanisms.
- Develop a mechanism to ensure that there is transparency of information by ensuring that all players have access to the relevant data related to research and development. The developed countries should share information and help Africa with the same help that will enable them benefit from the deep sea mining. And what Africa needs is technology transfer which was provided for by the UNCLOS of 1982 but was altered by the 1994 implementation agreement which favours the developed States as against developing States.
- The World Ocean Day should be given more exposure by the International Seabed Authority and its member States. This exposure should include what has been done so far to implement the UNCLOS and what still needs to be done.
- The International Seabed Authority should promote cooperation among member States and pay more attention on the developing states who are member States. The Authority should ensure the transfer of technology from the developed member States to developing member States to encourage their participation in the activities in the Area.
- The International Seabed Authority should foster cooperation with the African Continent so as to promote her effective engagement in the activities of the Area. Create Workshops and commission to

implement the strategies adopted by the International Seabed Authority towards promoting Africa's engagement in the activities of the Area. The cooperation between the International Seabed Authority and the African Minerals Development Centre (AMDC) and the African Union (AU) to promote Africa's participation in the Area and the development of Africa's Blue Economy is a great initiative but more still needs to be done. This initiative has to be backed by implementation mechanisms which can be achieved with the use of Commissions. Thus, there is the need for commissions to ensure the implementation of the strategies and policies adopted by these organizations.

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