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Whose benefit? A comparative perspective for the ISA

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ABSTRACT

This article provides a critical evaluation of the International Seabed Authority's (ISA) management of Deep Sea Mining (DSM) activities in the undersea area lying beyond sovereign territory. By juxtaposing the ISA's nascent regulatory framework against one of the world's most successful resource management regimes in Norway, we can clearly see how the ISA is unable to pursue the sort of strategic ownership that is necessary to secure the rents generated from these natural resources; rents which rightfully belong to the common heritage of mankind. In particular, we suggest that the ISA should: secure a better balance of institutional power across its policy, regulatory and operational roles; develop a more explicit policy for protecting the public's interest (both current and future generations) as the owner of these resources; play a more active role in assembling and managing the access it allocates to these resources; and begin the discussion about how best to manage the wealth generated by these resources in a way that can ensure its just distribution.

1. Introduction

The world faces a plethora of opportunities as new technologies provide access to vast and previously unregulated expanses of resource-rich territory. Nowhere is this more evident than in the race to pursue Deep Sea Mining (DSM) on the world's ocean floor that stretches beyond the reach of sovereign territory. This offshore area belongs to us all, in common, and is managed by the International Seabed Authority (ISA) on our behalf [1, preamble, Articles 136 & 137]. Several countries and companies are now competing for access to these mineral resources and the ISA has already approved and allocated exploration contracts in the area.

The technological challenges to accessing these resources are formidable, but they are small compared to the political challenges that follow in their wake. At the core of these political challenges lie contesting accounts of the role of (resource) ownership, the source of value in natural resources, and how that value should be distributed. Until these differences are resolved, the ISA will not be able to pursue the sort of strategic management that is necessary to secure the rents generated from these natural resources; rents which rightfully belong to the "Common Heritage of Mankind" [1, preamble].¹

While the formal responsibility for resolving these political challenges lies with the ISA, its attention has been mostly focused on other tasks, such as the need to price access to these resources in a way that will not deter potential investors² and to manage the resource in a manner that is environmentally sustainable. The same sort of regulatory myopia is evident in the scientific literature. While there is a vibrant literature on the regulation of DSM, in this journal and others, its focus has been trained on technical and environmental issues, from the perspectives of law, engineering and biology. The voices of other stakeholders (in particular, those that can represent "humankind", both current and future generations), and the management experiences of countries, have received much less attention.³ We have acknowledged the importance of securing an environmentally sustainable and business-friendly management regime, while ignoring the need for a regime that is politically sustainable.

The ISA lacks a framework for protecting our common economic interests, and the sort of political discussions that must sustain it. Although DSM companies will likely be allowed to exploit these mineral resources, the ISA has not yet established a clear contractual framework, fiscal regime and/or the mechanisms for redistributing the mineral wealth extracted and sold. Without these policies and frameworks, it

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E-mail addresses: jonathon.moses@ntnu.no (J.W. Moses), maggi.brigham@ruralis.no (A.M. Brigham).¹ There are a number of recent papers addressing the challenge of securing this Common Heritage of Mankind, or CHM. See [2–5].² See [6, slide 2] as well as the African Group's reaction to this myopic focus [7, p.4].³ One important exception is [8], which explicitly compares components of national management regimes.

will be impossible to exert the sort of strategic ownership that is required of political authority to protect our common interest, in the form of a social benefit.

We believe the diplomatic and academic discussions can be enhanced by referencing the experiences of countries that have successfully managed this political challenge within national jurisdictions. Toward that end, we juxtapose the current ISA regime against Norway's regime for managing natural resources in petroleum. We recognize that many of the challenges facing the ISA are more complex than those facing any one country, as it is much more difficult to secure political consensus across the manifold interests represented in an international body such as the ISA. Nevertheless, we believe it fruitful to contrast these two regimes, in hopes of improving the global approach to managing our common resources.

2. The nascent ISA regime

The current regulatory regime covering "the Area" under the high seas in international territory rests on two larger political agreements: the 1982 UN Convention on the Law of the Sea [1], or UNCLOS, and its 1994 Implementation Agreement [9].⁴ The details of this regime are governed by three sets of regulations that cover three different deep-sea resources: the regulations for prospecting and exploring polymetallic nodules, sulphides, and cobalt-rich ferromanganese crusts [11–13]. These regulations aim to balance the desires of the mining industry (and its supporting states) with the need to regulate the Area in a way that can secure "the benefit of mankind as a whole" [1, preamble].

This regime recognizes the ISA's legitimate stewardship over the Area's mineral resources and allocates access to these resources in a way that is designed to protect the interests of poorer and less developed member states. Some of this protection takes the form of a divided or parallel contractual regime (a so-called "Parallel System"), where each potential exploitation site is separated into two equally valuable/viable areas, and where one of these two areas is placed at the disposal of the global community, operationalized as developing states and the Enterprise (see below).⁵ The result of this Parallel System will be a patchwork of contracts, most (if not all) of which will be exploited by private companies and their sponsoring states [2,14], from which the international community can hope to secure some (as-yet undefined) royalty or "tax"⁶ placed on the collection/extraction process.

To date, the ISA has approved 30 contracts for exploration, involving 22 different countries (12 of which are from developing states) and covering more than 1.3 million square kilometers of the seabed. But the ISA has *not yet* allocated any contracts to exploit these resources. Toward that end, the ISA is in the process of developing an exploitation regime that promises a "holistic regulatory framework for the exploitation of the resources in the Area" [15]. The original intent was to draft regulations that could be adopted in 2020, but the COVID-pandemic has delayed the ISA's progress, and its current status lies in limbo.

In short, the global community stands at the edge of a regulatory precipice. The ISA is under immense pressure to create detailed

regulations for the exploitation of our common mineral resources. The ISA has already allocated exploration contracts, and firms hope to leverage these contracts into exploitation rights. The problem is that the ISA has made precious little progress in deciding on how to secure the common social benefit as owners/custodians of these resources, and/or how to distribute the resulting benefits in a manner that is consistent with "the benefit of mankind as a whole," including future generations.

This lack of progress on these important political issues has been acknowledged by the current Secretary-General of the ISA, Michael Lodge, in a co-authored piece from 2017:

"...the LOSC [Law of the Sea Convention] requires the ISA to develop rules, regulations and procedures for the equitable sharing, for the benefit of mankind as a whole, of any payments received from DSM contractors. However, exactly what this means and how it is to be accomplished have yet to be determined. As the ISA grapples with this challenge, a number of issues will need to be addressed. These include: (i) the principles to be used in determining the "claims" that different entities or groups (current or future) will have on the pool of resources that are generated, and (ii) the mechanisms to be used for distributing available funds, including whether distribution should be in the form of direct payments to States or funded projects" [16, p. 431].

In short, and as we shall see, the ISA lacks a clear strategy for tackling its three most important tasks as governor of these natural resources. First, the ISA lacks a clear *policy* with regard to how it will manage and develop its resources for the benefit of current and future generations (and distribute the rewards accordingly). Second, the ISA lacks a clear strategy for *regulating* the exploitation of these resources (not only with regard to protecting the environment and human safety, but also for developing common infrastructures and incentivizing increased efficiencies; and (especially) with regard to developing the fiscal and concessionary regimes needed to secure the common benefit). Finally, the ISA lacks a clear *commercial/operational strategy* for bringing these resources to market (i.e., the role of the Enterprise).

Worse yet, the current discussion has been dominated by industrial interests and concerns, along with those of competing land-based suppliers (and their state sponsors), albeit tempered by a rising chorus of environmental concerns [17–19]. There is remarkably little academic work that directly addresses the challenges of economic management (but see [20]), even though some of the States Parties groups at the ISA have begun to voice concerns [7,21]. Remarkably, the main contributor to discussions about a potential fiscal regime has been a consulting group with strong ties to the engineering and automotive industry (The Materials Systems Laboratory at MIT); and the bulk of its regulatory attention seem to be aimed at ensuring sufficient returns to attract investors.⁷ We hope that the discussion might be broadened by considering how nation states have successfully governed their natural resources, on behalf of their people. These national examples provide insights as to how the ISA might manage our common global resources, on behalf of the global population.

⁴ For a useful introduction to the history of these agreements, see [10].

⁵ [1, Annex III, Articles 8 & 9]. More specifically, the regulations differ across mineral types. The Nodules Exploration Regulation requires all applicants (other than those applying for a reserved area) to contribute a reserve area (Regulations 15–18 in [11]), while the Sulphides and Crust Exploration Regulations (Regulation 16 in both [12,13]) offer a choice between providing a reserve area, or offering an equity interest in a joint venture arrangement.

⁶ As the ISA is not a government, it cannot formally impose "taxes". This poses a number of problems, as the ISA is forced to pursue other (non-tax) means to secure the public take (or lean on nation states to help fill the void). To the extent that the ISA is forced to rely on royalties alone, the financial regime will be insufficiently progressive, and will need to be awkwardly large if it is not to undermine the competitiveness of land-based producers. See [7, pp.7–8; and 8, pp.46–7].

⁷ The Materials Systems Laboratory (MSL) is quite explicit about its interests and affiliation: "The Materials Systems Laboratory is a research group at MIT that studies the strategic implications of materials and materials processing choices. MSL resides within the MIT School of Engineering. A major portion of our work is carried out in cooperation with the automotive industry, examining structural materials, assembly issues, and electronics and powertrain issues, but we are also notable for our work on projects of interest to the electronics and photonics industries, including electronics recycling, opto-electronic devices. We are also engaged in work with bio-polymers and supply chain studies" [22]. The ISA announcement of the MIT report, and links to some of the presentations are available at [23]. An overview can be found in [6], while a critical response to the MIT report, from the African Group, is found in [21].

3. The Norwegian regime

How do countries manage their natural resources? While our regulatory gaze is often limited to issues of access and environmental protection, this is only one part of a state's regulatory responsibility. Another, and related, regulatory responsibility concerns maximizing the public/government take, or minimizing the loss of potential inheritance, without scaring off potential operators/investors. In particular, one of the primary objectives of any management regime is to secure the entire rent that lies in the resource and is facilitated by that regime.

Natural resources can produce rents. A resource rent is an *extraordinary* value derived from exploiting a natural resource, after accounting for all costs and the provision of normal returns (including profit). In short, the rent is a sort of super-profit that remains after the costs of harvesting the resource and the normal returns to investors and workers have been paid.⁸ These rents are partly the result of significant demand for a particular resource, relatively scarce in nature (and often non-reproducible). But scarcity is also the result of regulatory regimes designed to secure the safe and orderly harvest of those resources. In effect, management regimes restrict access to scarce resources, and provide producers with an exclusive privilege, akin to a monopoly right. Under such restricted conditions, firms are able to secure enormous rents because they are protected from competition.

Hence, the rent we associate with natural resources is partly a function of *natural* scarcity and partly the result of the regulatory regime that creates a form of *artificial* scarcity [24–27]. Securing this rent, on behalf of its owners, should be the primary objective of any management regime. In most countries, these natural resources belong to the people, and are managed on their behalf by their representatives in government. In the Area, the rightful owner of these subsea resources is humankind, to be managed on our behalf by the ISA.

Different countries have experimented with different means to secure this rent, and some of these experiments are clearly more successful than others (see, e.g., the many contributions in [28]). Among these, perhaps the most successful regime can be found in Norway, where the management of that country's significant petroleum resources has made it one of the richest, happiest, and most desirable places to live on earth.⁹ We do not have enough space to elaborate upon the details of the Norwegian petroleum management regime, but we can offer an outline of its most notable characteristics (for details see [30–33]). While we focus on petroleum management in Norway, this regime was originally developed to manage the country's hydroelectric resources and it travels easily to other fields of resource management [27].

The Norwegian management regime builds partly on the country's long history of natural resource management, and partly on its careful study of other (national) management regimes. For this reason, the Norwegian regime shares many common features with management regimes in other countries. Still, it is notable in at least four distinct ways.

The first is an explicit recognition that *the resources belong to the people* (both current and future generations) and must be managed on their behalf. In Norway, this democratic anchoring takes the form of the so-called “10 Oil Commandments”,¹⁰ which were used to guide subsequent policy decisions in a more democratic direction. Among other things, these “Commandments” included limits on the area to be exploited; requirements to develop national competencies and economic benefit; and the need to maintain strong political (democratic) control

⁸ This understanding is traced back to David Ricardo [24]. See [25] for elaboration.

⁹ For most of the last decade, Norway has ranked near the very top of the UNDP's Human Development Index; (<http://hdr.undp.org/en/data>); the Economist Intelligence Unit's “Where to be Born” Index [29]; and the UN's World Happiness Report (<https://worldhappiness.report>).

¹⁰ For an English translation, see [30, p.74].

over developments.

One way of ensuring this public control is to secure adequate information (and data)—as well as the knowledge and experience necessary to analyze and employ that information—in a way that can best serve the long-term interests of the country. While this information and expertise are necessary to manage the resource effectively, having this information also strengthens the government's hand in negotiations with powerful commercial interests. In particular, the Norwegian Petroleum Directorate was responsible for mapping, collecting and processing all the information and geological material coming in from the field, and they were not easily deterred by claims about “proprietary” information. By collecting, keeping, and sharing the data, the Norwegian authorities developed a more informed, autonomous and efficient policy.

The second notable characteristic of the Norwegian resource management model is a recognition of the need to create an institutional balance of power, so that no single institution can abuse its power, or be prone to capture by powerful commercial interests. Moses and Letnes [30] refer to this as the Norwegian tripartite model, and trace its roots back to Farouk Al-Kasim [34]. The tripartite model explicitly recognizes the state's need to fulfill three central tasks: to produce a *policy* that benefits the owners of the resource; to *regulate* the industry in a way that ensures it is exploited in a just, sustainable, and efficient manner; and to secure the *operational expertise* needed to bring that resource to market. To avoid capture, these responsibilities are allocated to independent and relatively autonomous institutions.¹¹ But each of these competencies is reliant upon the other (after all, one cannot produce robust policy in the absence of good knowledge about what is technically and economically viable). Hence the need to balance institutional power in a way that is akin to Montesquieu's balance of power, familiar to political scientists.

The third notable characteristic of the Norwegian regulatory regime is the way it has allocated licenses/concessions. For our current needs, there are two particularly relevant elements of this license regime. The first is a regime that provides strict temporal limits to use/extract/control. Recognizing that the relative balance of power in negotiations between owners and operators will change over time (an Obsolescing Bargaining Mechanism, or OBM),¹² the Norwegian concession regime generates limited concessions, with the rights of control/ extraction/use reverting back to the state after a defined period of time (so-called “*hjemfallsrett*”).

In addition, the government plays an active role in assembling the license partners, or joint ventures. Unlike most other states, it is the Norwegian authorities—not the firms themselves—that assemble these joint ventures.¹³ While international firms can signal their interest in a potential field, and highlight their explicit strengths and competencies, the actual make-up of the resulting consortia (and licenses) is determined by Norway's regulatory authorities. Through this regime, Norway created licensing groups that tied international experience to local firms

¹¹ In particular, policy authority lies with the Department of Petroleum and Energy; regulatory authority lies with the Petroleum Directorate and the Petroleum Safety Authority (but also in other ministries, with more specialized competencies—e.g., the Departments of Environment, Labor, etc.); and operational expertise was first located in Statoil (now Equinor), the National Oil Company (NOC). Of course, it is also possible to rely on the private sector to provide operational expertise, but in doing so the political authorities lose access to important information/expertise.

¹² The OBM is originally associated with Raymond Vernon [35] but see also pp. 63–7 in [30]. It refers to the changing balance of power between multinational corporations and host governments over the lifetime of a contractual relationship, anticipating and facilitating the renegotiation of contract terms.

¹³ The particular processes and requirements have changed over time, and there is now more than one licensing regime being practiced in Norway. See [30] for details. Our description here is a generalized one of the period most similar to the one facing the ISA: the early development of Norway's offshore resources and competencies.

and public ownership/control. In this way, Norwegians became joint owners of the licenses,¹⁴ its interests carried.¹⁵ At the same time, Norwegian operational expertise was expanded by ensuring that Statoil (the Norwegian National Oil Company, or NOC) would receive a significant (usually a majority) share in each license, with specific requirements that international firms would “show it the ropes”.

This licensing model is especially important for two reasons. First, it allowed Norway to force international companies to share their operational competencies with its NOC (Statoil) and other Norwegian companies. Once Statoil had developed sufficient competence, international oil companies were no longer able to threaten exit when they became dissatisfied with the terms of any particular agreement. In short, having access to its own operator created a more level bargaining table. Second, and more importantly, this licensing regime allowed the Norwegian government to become a major stakeholder in the country’s offshore activities—and this role has secured it enormous wealth, and continued influence over developments. While the Norwegian government remains a majority shareholder in Statoil (now Equinor), it makes relatively little money from this ownership (although it has gained important knowledge and experience). In 2021, only about 7.6% of the government’s projected petroleum revenues will be generated by dividends from Equinor; most of these revenues (76.2%) will come from its ownership in offshore licenses; another 8.4% will come from taxing offshore activity (at a very high rate—roughly a 78% corporate incomes tax); and the remaining 7.7% will come in the form of environmental taxes and area fees [36].

The fourth and final notable component of Norway’s management regime is perhaps its most famous: the creation, over time, of an enormous petroleum investment fund, the Government Pension Fund, Global (GPF). This fund has attracted much attention for its size (the world’s largest sovereign wealth fund) and its influence (it is governed by an ethics board, which provides specific investment guidelines), but its most important task has been to minimize the threat of Dutch Disease¹⁶ on the Norwegian economy [32,33]. For our purpose, however, the most relevant aspects of the GPF are two in number: the way it provides ethical guiderails as to how that money should be invested; and the role it plays in providing a steady flow of investment income for distribution, while ensuring that future generations also benefit from the sale of non-renewable resources, by inheriting the equivalent wealth in the fund.

In effect, the Norwegian government recognizes that its petroleum resources are the national equivalent to the “family jewels”—they are the country’s “natural assets”, capable of delivering a “natural dividend” [25]. But it also recognizes these assets are non-renewable, so that their consumption occurs at the expense of future generations. In an attempt to compensate for selling “the family jewels”, Norway reinvests the rents from its petroleum in more reproducible forms of capital. In this way, the GPF hopes to produce returns for future generations, long after the resource has been depleted.

¹⁴ Originally this ownership was controlled by Statoil, which was authorized to develop its own operational competence. Over time, however, this ownership was transferred to another (and less known) Norwegian NOC: Petoro, which represents Norwegian ownership interests in these licenses, but does not have any operational experience/competence. See <https://www.petoro.no/home>.

¹⁵ An interest is “carried” when a partner (e.g., the state, or a state-owned firm) in the exploration or development phase of a contract pays a proportion of costs and expenses that is disproportionately lower than its formal share. Typically, the government’s costs are carried through the exploration phase, at which point the government takes up (or “backs in”) its contractual obligations (costs) as partner and receives its share of rewards (profit).

¹⁶ The term, “Dutch Disease” was coined by *The Economist* [37] and refers to the negative economic consequence, mostly a real appreciation of the national currency, that arise from large increases in a country’s income. It was named after Dutch experiences from discovering natural gas in the 1950s.

4. Comparative insights

It is not altogether straightforward to compare the Norwegian regime with the challenges facing the ISA. While we think the Norwegian case can provide insight, we are aware of the danger of analytical over-reach. For this reason, we start by drawing the reader’s attention to two important caveats.

First, there are significant differences in managing a natural resource in a national context (such as in Norway), compared to an international one (as in the ISA). Because the ISA is not a nation state, it lacks many of the tools, institutions and contexts that are useful in securing national outcomes and a shared strategic vision. These differences are manifold, but consider just two examples: (1) the UN/ISA lacks a business taxation infrastructure [8, pp. 47–8]; and (2) the ISA will need to manage a much more heterodox group of stakeholders and is responsible for a much larger, and more varied, geological terrain than any single nation state.

We recognize that it is extremely difficult for the ISA to secure major changes to the way it manages our common resources. Policy is always the result of political consensus-building and compromise, and there are significant institutional and political constraints, the result of long-standing diplomatic negotiations, which limit the range of possibilities available. The 1994 Implementation Agreement is particularly important in this regard,¹⁷ as the resulting compromise secured ratification and brought UNCLOS into force. This Agreement removed some of the most controversial elements in the 1982 Convention (e.g., the requirement for compulsory transfer of technology and subsidizing the Enterprise), and introduced a more market-friendly approach with the hope of providing a more stable investment environment, while encouraging contract terms that should be fair to both the seabed mining sector and the international community [10, p.2]. While these changes are not unreasonable, they clearly undermine the role that developing states were supposed to play in the Area regime [39].

Second, the challenges to managing a newly emerging industry (such as DSM) are likely to be greater than those associated with a more mature resource-based industry (such as petroleum), where much of the information and expertise is readily available. There are great uncertainties and risks associated with exploiting mineral resources in environmentally sensitive, very deep, marine environments. But we hasten to note that the Norwegian petroleum industry developed in a context that required significant technological innovation and development (given the challenging working environment in the North Sea), and it was the inability to use “off the shelf” solutions that sparked the development of a Norwegian offshore supply industry [17, pp. 151–2; 159–62].

Keeping these caveats in mind, we still think the Norwegian approach provides useful insights into how the ISA might approach similar challenges. As it is not clear that such alternatives were even considered by the ISA, we offer them as a series of comparative insights. We introduce each of these insights with reference to the four notable characteristics mentioned above but start with the second: the imbalance of power in the ISA’s main institutional framework.

4.1. An imbalance of power

In contrast to the clear division of powers found in the tripartite model, the policy, regulatory and operational responsibilities of the ISA lie in a tangle. In effect, regulatory decisions seem to be setting policy, rather than the other way. The result is a concentration of power in the office of the Secretary-General, and a reduction in the number of potential entry points for expert input [40, p.1]. This institutional

¹⁷ For example, the 1994 Agreement provided an effective veto to industrialized states, in that any three states in either four-member chamber (in the Council) can block substantial decisions for which consensus is not required. See [38, p. 690].

arrangement makes it easier for private interests to capture and influence the decision-making process and makes it more difficult for political authority to secure the information and expertise it needs to regulate the resource in the global interest.

In theory, the formal distribution of power in the ISA is as follows: policy authority lies with the Assembly; regulatory authority lies with the Council, but has been delegated to the Legal and Technical Commissions, or LTC; and commercial authority lies with the Enterprise [41]. In practice, however, the Enterprise remains in-operational, and its functions have been delegated to the Secretariat. Most disconcertingly, the policy and regulatory authorities seem to have collapsed into three sets of regulations that have been adopted by the Council, and approved by the Assembly [11–13].¹⁸

Compared to the Norwegian regime, ISA policymakers have been handicapped by the absence of independent operational and regulatory institutions. Without independent sources of information and expertise, the Assembly needs to rely upon information provided by a commercial sector, whose interests are often in conflict with its own. Consequently, one can expect the Assembly's scope for policy autonomy to be locked in a Weberian cage, where the (substantively rational) goals of the global community are easily hijacked by the (formally rational) expertise of the commercial sector and its consultants. Evidence of this dependence is already seen in the frequent references to "Good industry practices" in the working draft of the exploitation regulations [42]. But the biggest drawback from this organizational arrangement is evident in the lack of a clear and explicit policy about how the ISA intends to develop our common resources. This is the subject of the next section.

4.2. Blind policy

In the absence of explicit policy goals, the global community risks draining its valuable resources, in an ineffective manner, leaving little resulting wealth for subsequent redistribution (to both current and future generations). The shortcomings of current policymaking are evident in four simple observations.

First, and foremost, there is no explicit recognition of the role that the ISA's management regime has in creating rent, and the need to secure this rent on behalf of its owners. While the ISA recognizes public ownership of the underlying resources, these resources are simply given away to those companies and joint ventures that are granted access to the Area. The public take, then, is limited to a tax or royalty on the collection process (rather than the broader value-creation process).

Second, the ISA shows remarkably little awareness of the need for strategic ownership. This is an enormous challenge, as evident in the inability to agree on how to operationalize "the common heritage of mankind [3–5] or the overall goals of the payment regime [21, p.6]. A more strategic owner would slow the pace and scope of development (in order to leverage the OBM and incentivize learning); secure public control and access to all relevant information about the resource; limit the length of the contracting period; ensure that control of the resource returns to the owner after a limited period;¹⁹ and plan to secure the rent and invest it in a way that would facilitate a fair distribution between both rich and poor, current and future, populations. If the ISA is unable to secure this strategic ownership, it will risk significant political backlash, when the global public discovers that its shared resources have been a victim of "rent theft" [43, p.204].

The most evident policy shortcoming concerns what the ISA intends

¹⁸ In addition, the LTC has produced five sets of recommendations, yet to be adopted. See <https://isa.org.jm/index.php/authority/legal-and-technical-commission>

¹⁹ It should go without saying, but in limiting the contract period, the authorities must ensure that there is sufficient time for investors to recoup their investments, while avoiding any incentive to "rush" the exploitation process (in an inefficient or unsafe manner) as the contract expires.

to do with "the Enterprise". In Norway, international companies were forced to share their operational competencies with its own form of "Enterprise" (i.e. Statoil) as well as with other Norwegian companies. Article 144 of UNCLOS and the 1994 Implementation Agreement contain similar legal obligations with regard to transferring knowledge. This was always a major task, and we are not aware of any similar international institution charged with governing an international resource. Originally, the Enterprise was conceived as a global equivalent to a National Mining Company, designed to explore and exploit seabed minerals, as well as transport, process and market them [1, Article 170]. Indeed, the Enterprise was the main instrument in UNCLOS [1] for ensuring that the gains from seabed mining operations would be distributed fairly, in particular to developing countries. Many developing countries still hope that the Enterprise can function as a vessel for transmitting data, expertise and experience from the research frontier back to national markets [44]. But the world's ideological winds now blow in a different direction, and the Enterprise has been left in the cold.²⁰

To conclude, the ISA needs to develop an explicit understanding of the costs and benefits of harvesting the resource. The challenge is bigger than ensuring that investors can secure an adequate return (while this is obviously important); the main policy issue should be: will the potential costs (environmental, social, political and economic) of exploitation exceed their potential gain? If the common benefit is near zero, or if the benefit is unfairly captured by private interests, then there is little point in risking the environmental, social and political costs of extracting these resources. The African Group, for one, has made this quite explicit: "it wishes to ensure that deep-sea mining *only* occurs if it is demonstrably beneficial to mankind" [21, p.3, emphasis added; but see also 7] These are difficult questions to resolve, but they will not get any easier once commercial exploitation is permitted.

4.3. Licensing leeway

The licensing framework is clearly the biggest difference separating the Norwegian regime and the nascent regime unfolding at the ISA. Compared to the Norwegian licensing framework, the ISA has forfeited some of the most important tools it could use to manage our resources and the resulting rent.

This forfeiture is most evident on two fronts. The first concerns access to information and the ability of companies to maintain proprietary control over data that is essential for the optimal exploitation of these resources. This is a very controversial area of policy, as many states see technology transfer as the most important aspect of global control and ownership. It will be a burden for the ISA to collect and manage such data, and it is not clear that the ISA (currently) has the capacity to do so—but absent this capacity, the ISA will be flying blind and overly-dependent upon its contractors for essential knowledge and information.

From the perspective of the Norwegian model, however, the current arrangement places the ISA at the mercy of private contractors, and makes it difficult to ensure that the best possible contractors and methods are used for the most efficient and safe exploitation of the *entire* resource. The ISA depends on the contractors to supply resources data, and large chunks of these data are deemed proprietary, and held confidential. As the ISA Secretariat has a very small staff, it does not have the independent and in-house expertise it needs. As it stands now, the balance of power rests with those that hold propriety data and access to capital, and the ISA could work harder to level that playing field.²¹

²⁰ As a result, the fate of the Enterprise is uncertain, as discussed in a number of recent papers, and in concerns voiced by the African Group. See [4,45–47].

²¹ After all, UNCLOS [1] provides the LTC with the authority to conduct the Environmental Impact Assessments, so they already enjoy the legal mandate. We thank one of the anonymous reviewers for drawing our attention to this point.

The reputation of the Finance Committee and LTC for limiting access to data and financial transparency is particularly troubling in this regard.²² Rather than starting with blanket references to the need for confidentiality, the ISA could work to make as much information as possible public, while allowing for explicit (and limited) exceptions when there is a need for proprietary protections [48,50].

The second type of forfeiture concerns control over the resource. The current arrangement provides too much freedom to potential contractors, allowing them to abscond with much, if not all, of the resource rent. Following the Norwegian example, the ISA might play a more active role in creating and regulating the eventual mining consortia [8,48], and use this regulatory control to secure a much larger public take—whether it be political (in the form of spreading operational experience) or economic (in increasing its share of influence in, and return from, the allocated licenses).

Should the ISA choose to retain this type of control, it could build out the controversial Enterprise. To do this, the ISA must first decide what it wants from its Enterprise. The Enterprise might be developed as a fully-operational public company (something akin to Statoil/Equinor in the Norwegian context), or it could be developed as a public company responsible for managing humankind's ownership share, but without any operational expertise (ala Petero). Whichever route the ISA chooses, it is important to ensure that the global community maintains a strong grasp on the consortia that result.

Either strategy is consistent with the ISA's legal mandate to act on behalf of humankind as a whole [1, Articles 140, 157], and requires that the ISA becomes a more active owner in the Area's development. This will entail greater risks, but also much greater rewards. This role will also entail greater financial obligations, some of which may be limited by Agreement language (which explicitly restricts the possibility of "subsidizing" the Enterprise). But it should be possible for the Enterprise to secure funds on international markets, in the same way that international contractors do, by using the exploitation contracts as security. Most importantly, the largest risks can be managed by the sort of legal and economic protections that we find in the Norwegian case: where the public interest is carried during the riskiest periods.

4.4. Fund opportunities

The final comparative insight is the easiest one, as the ISA has already recognized its need [51; see also 4]. In addition to ensuring that the resource is exploited in a safe, efficient and responsible manner, it is just as important that any management regime can maximize the public take, while still allowing sufficient returns on investment to attract the private assistance that may be required. As we have discussed, this public take can be economic, political (in the form of securing and sharing information, knowledge and expertise), or some combination of the two. When using the Norwegian case as a comparator, we can see how the economic gains from resource management and ownership might be secured with an active ownership of contract shares, an operational Enterprise, and a taxation/royalty/equity regime that is designed to secure the rent.

Regardless of the regulatory framework, the ISA is tasked with maximizing the public take; this means securing the rent and ensuring that firms pay their fair share for our mineral resources.²³ We do not want to climb into the weeds of the current discussions over different payment regimes (see [20]), but the current proposal of a 2% royalty is remarkably modest, especially when one recognizes the absence of alternative public revenue sources (compared to land-based regimes) [7]. Once the rent is secured, it should be used to pay down any loans

and assistance that were required along the way; any surplus can be placed in a global investment fund.²⁴ What then remains is a colossal balancing act: the need to develop and protect the underlying principal of the fund, while deciding how (and when) to distribute the eventual return. This task is all the more complicated in an international context like that of the ISA, relative to a national regime (e.g. Norway). While the principal should be protected for future generations, the annual returns from the fund—after an initial period to allow the fund to grow—can be siphoned off and used to meet our changing needs.

There are obviously a great number of important and difficult political decisions about how such a fund should operate, and its returns distributed. Now is the time to be discussing these options. Here, again, we think the Norwegian example provides some useful insight. In the end, however, the ISA will need to decide on two important features of a global fund. The first is whether its investment mandate should be guided by ethical rules and/or political objectives, or not. The second is how the income from such a fund might eventually be distributed (e.g. to individuals, states, international organizations, etc.), both now and in the future.

5. Conclusion

The ISA is facing a number of difficult choices, and it cannot postpone them any longer. The most important of these must be how we can secure a management regime that is both environmentally and politically sustainable. These decisions will not become any easier after we develop a clearer understanding of where the resources lie, and their potential value. Our objective with this piece is to provide a spark for such a discussion, in open forum, with the hope of lighting a fire under policymakers (and drawing greater public attention to the blaze).

We have used the Norwegian example as a looking glass—to reflect on how the ISA's regulatory regime might be changed to ensure that a fairer share of the value of our common resources will remain in the public's hands: both now and for future generations. We do so cautiously, as we recognize that no state should adopt another state's regulatory framework blindly, nor should the ISA. But the ISA can learn from the promise and failures of earlier (nation-based) regimes and design a regulatory regime that reflects the best our globe has to offer. In doing so, the ISA can become less reliant on the guidance and information it now receives from commercial interests in the sector. Only in this way can we safely regulate these resources for the common heritage of humankind.

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²² On the broader challenges of transparency at the ISA, see [48,49].

²³ At the same time, the management regime is not allowed to undermine the land-based minerals sector, by offering better contract terms (for example) [9, Section 8, para. 1(b)].

²⁴ As noted by A. Jaeckel, UNCLOS and the 1994 Agreement provide for a number of other funds that must receive a share of any profits. See [4, pp. 668–9].

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