

**“ESTABLISHMENT OF A NATIONAL REGULATORY
FRAMEWORK FOR THE EXPLORATION AND
EXPLOITATION OF DEEP SEA MINERALS: A CASE STUDY
FOR KIRIBATI”**

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United Nations - Nippon Foundation of Japan Fellowship Programme

December 2013



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ABSTRACT

Whilst many countries have the opportunity to rely upon terrestrial mining to underpin their national economies, Kiribati is geologically disadvantaged and does not possess any significant economic mineral deposits on land. As such it is looking to the seafloor to alleviate the economic vulnerability of its limited resource base and secure a sustainable future.

The UN Convention on the Law of the Sea (LOSC), upon coming into force in 1994, gave coastal states exclusive sovereign rights to explore and exploit the deep sea minerals contained within the boundaries of its maritime zones. Surveys indicating abundant and promising mineral deposits in the region suggested a potential source of wealth, which – if realised – may provide an opportunity for developing island states such as Kiribati to improve national livelihoods. However this must be balanced against other imperatives because although provisions under the LOSC give certain legal rights for States over deep sea minerals, international law also imposes duties, most of which entail that States must protect the ocean environment, prevent pollution, and preserve rare or fragile ecosystems and ocean habitats.

It is also a requirement under international law that States develop and enact national legislation for deep sea exploration and exploitation that should meet standards as high as (or higher than) those set by the international community. Further to that, States should also enforce such regulations. Such legislation is largely non-existent in many Countries, including Kiribati, and it is therefore vital that national policies and legislation are developed, and enforced, accordingly. Implementing a robust regulatory regime, that meets international standards as appropriate within the State's legal system, will provide protection for states, marine biodiversity, sea users, and local communities, while providing security and clarity to the explorers and future miners.

The thesis examined the international legislative framework for the exploration and exploitation of deep sea minerals, as it stands today; and highlighted all the requirements that all States must adhere to at the national level, in regards to carrying out activities related to the exploration and exploitation of seabed minerals, within and beyond their national Jurisdictions (including claimed areas of extended continental shelf (CS))- to ensure that all 'appropriate' and 'necessary' measures are taken to protect the marine environment.

Such a prescription constitutes the basis by which a State should adhere to in developing national legislative frameworks, looking specifically at the case of Kiribati. It is noted that although the thesis intends to provide a detailed and critical analysis on policy and legislative issues pertinent to deep sea mineral exploration and exploitation, it would be overly ambitious to suggest that the thesis considers all of them; and certainly for the scope of this thesis, such issues would be generalized and specific to Kiribati.

Specifically, the thesis provides guidelines on issues and priorities that should be considered by policymakers and more importantly included in national policy and legislative frameworks, as appropriate under the State's legal system.

ACKNOWLEDGEMENTS

First and foremost, I would like to express my sincere gratitude and appreciation to The United Nations and the Nippon Foundation of Japan for this wonderful fellowship award- that has not only enabled me to carry out this research, but also meet wonderful people along the way, which whom I have shared rich and memorable experiences; professionally and socially, and in both New York and Brisbane.

For New York, I would like to thank the Director and the wonderful Staff of the Division for Oceans Affairs and the Law of the Sea, for hosting my 3 months tenure. I extend my greatest thanks to my Supervisors and the Coordinators of the Fellowship Program, Dr. Francois Bailet, Valantina Germani and Mona Al-Sharmani, for their valuable comments and reviews and for all the help and support throughout the whole fellowship. On that note, I would also like to express my utmost thanks to Simone Dempsey, who has helped me throughout the fellowship program in many administrative things that I cannot even begin to list down.

For Brisbane, I would like to thank the Marine and Shipping Law Unit, of the TC Beirne School of Law, and the University of Queensland, for hosting me and for providing all the support I required during my tenure: I owe my greatest gratitude to Associate Professor Craig Forrest, who supervised my thesis, and who made my whole research tenure possible; and to the rest of the Marine and Shipping Law Unit (MASLU) who have readily shared and exchanged ideas with me, Dr Michael White QC, Dr. Vincent Cogliati-Bantz and Professor Nick Gaskell. I would also like to extend my gratitude to the wider University of Queensland TC Beirne School of Law: Head of School, Professor Sarah Derrington, for allowing me to be part of the School, Helen Braatvedt and Robyn Rossback for their help and support in getting the required forms for travel to Australia and for help in getting my Visa, and to the IT staff Mr. Vu Ngo. I would also like to acknowledge the help and support of Dr. Tina Hunter, who kindly met with me regularly and exchanged views and ideas that have helped my research.

To my 2013-2014 fellows, you have all made this fellowship far more richer beyond what I could have possibly imagine- and for that I thank each and every one of you. And although we come from different places all over the Earth, we all share one Ocean- which will always connect us no matter where we are in the world.

And finally to my family, my mom and my sisters- thank you for being there for me from day one. To my son Teejay and my wife Aileen- thank you for your never ending support and for allowing me to spend hours on ends, away from you guys, to do this research fellowship. I dedicate this thesis to you two.

LIST OF ACRONYMS

- BCA Benefit Cost Analysis
- CS Continental Shelf
- DSM Deep Sea Minerals
- EEZ Exclusive Economic Zone
- EIA Environmental Impact Assessment
- EITI Extractive Industries Transparency Initiative
- EMP Environmental Management Plan
- EU European Union
- IMO International Maritime Organisation
- ISA International Seabed Authority
- LTC Legal and Technical Commission
- IUCN International Union for Conservation of Nature and Natural Resources
- LOSC United Nations Convention on the Law of the Sea
- MARPOL International Convention for the Prevention of Pollution from Ships
- MSP Marine Spatial Planning
- MSR Marine Scientific Research
- Nm nautical miles
- RLRFP Regional Legislative and Regulatory Framework for Deep Sea Minerals
Exploration and Exploitation in the Pacific
- SEA Strategic Environmental Assessment
- SMS Seafloor Massive Sulphides
- SOLAS 1974 International Convention for the Safety of Life At Sea
- SOPAC Secretariat of the Pacific Community's Applied Geoscience and
Technology Division
- SPC Secretariat of the Pacific Community
- SPREP Secretariat of the Pacific Regional Environment Programme
- The Area The International Seabed Area, beyond national jurisdiction

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Thesis outline

This thesis examines the international legislative framework for the exploration and exploitation of deep sea minerals, as it stands today; highlighting the requirements that entail what States must adhere to at the national level, in regards to carrying out activities related to the exploration and exploitation of seabed minerals, within and beyond their national Jurisdictions (including claimed areas of extended continental shelf (CS))- to ensure that all 'appropriate' and 'necessary' measures are taken to protect the marine environment.

Specifically, the thesis aims to provide guidelines on issues and priorities that should be included in national policy and legislative frameworks, as appropriate under the State's legal system, in accordance to the aforementioned requirement as set out under international law.

Such a prescription would constitute the basis by which a State should adhere to in developing national legislative frameworks, looking specifically at the case of Kiribati. A clear and comprehensive articulation of this requirement can provide a platform by which the Government of Kiribati can effectively, and efficiently, further develop and enact its regulatory regimes and legislation, that should be effective to govern activities of the State, and entities acting on its behalf, in carrying out exploratory and extractive activities regarding seabed minerals within and beyond national jurisdiction. This is imperative as the Kiribati Government shows interest in the exploring and exploiting the minerals within its EEZ and in 'the Area', including potential areas of extended continental shelf, entailing a regulatory regime that should reflect the specific criteria of each jurisdiction as set out under the international legal framework. It is noted that although the thesis intends to provide a detailed and critical analysis on policy and legislative issues pertinent to deep sea mineral exploration and exploitation, it would be overly ambitious to suggest that the thesis would consider all of them; and certainly for the scope of this thesis, such issues would be generalized and specific to Kiribati.

The thesis is divided into 2 main parts, the first part mainly cover aspects of the legislation and policy for seabed minerals at the international level, while part 2 examines legislation and policy at the regional and national level, alluding to the need to harmonize frameworks at both levels. By way of introduction, Chapter 1 discusses seabed minerals, the processes and the physical and chemical parameters in which they are formed, and the concepts by which mining exploration

and extraction could be carried out. This includes the current legal frameworks for the exploration and mining of seabed minerals, as it stands today, including views both for and against such activities and the interdisciplinary issues that arise and are pertinent to deep sea mineral initiatives. The consideration of views from both sides of the coin, regarding deep seabed mineral exploration and extraction activities, is vital in this thesis as it will help give more defining resolutions to issues and problems facing this emerging facet of the minerals industry and wider mining industry.

Chapter 2 discusses the legal provisions by which such minerals can be explored and exploited by States, within and beyond their Jurisdictions, as set out under the current international legislative framework, as it stands today; highlighting the requirement that entail what States must adhere to, in regards to carrying out activities related to the exploration and extraction of seabed minerals, within and beyond their national Jurisdictions (including claimed areas of extended continental shelf (CS)). Much of this chapter articulates the statutes of the international legislative framework that underscores the need for States to develop and enact national legal frameworks for such activities, which should, as necessary and appropriate to the country's legal system, give direct effect to the guidelines and requirements of the international legislative framework. Pertinent international frameworks considered here primarily comprises of the LOSC, the 'Mining Code', and the 'Advisory Opinion' of the Seabed Disputes Chamber of the International Tribunal for the Law of the Sea (ITLOS). However other legislative frameworks are also considered, such as the Code for Environmental Management of Marine Mining established by the International Marine Minerals Society, the 1992 Rio Declaration and regulations established under auspices of the International Maritime Organizations, such as the Convention for Safety of Life at Sea (SOLAS) and others. These frameworks provide important key international responsibilities that should be adhered to, under the principles of customary international Law. More critically, this section of the thesis also assesses the importance and relevance of harmonizing international law within the statutes of the national legal system of States intending to carry out exploratory and extractive activities regarding seabed minerals. Such an analysis constitutes the basis by which States should adhere to in developing their national legislative frameworks.

Chapter 3 examines the practicality of adopting ‘appropriate’ and ‘necessary’ measures within the context of policies and legislative frameworks of states intending to carry out mineral exploratory and exploitation activities, on and in the seabed environment. Each of the sections in this chapter discusses specific aspects of policy and legislative guidelines that should be reflected in national regulatory regimes pertinent to seabed mineral activities; all of which should conform to the principles of ‘best environmental practices’, ‘the precautionary approach’. It also addresses the need for social communities to be included in the policy and legislative development process, and arrangements for adequate measures for to safeguard the integrity of the marine environment for communities that are dependent on the marine environment, including the necessity to consider other sea users and other states.

The second part of the thesis (Chapters 4-6), examines legislation and policy at the national level, regarding deep sea mineral exploration and exploitation, and how it relates to the broader regional level. Much of the issues discussed in Part 2 of the thesis are specific to Kiribati, and include the rationale for Kiribati’s interest in deep sea minerals and its appetite for offshore exploration and mining in the international seabed area, an analysis on the current institutions capacity of Kiribati for mineral resource development, relevant treaties and agreements that at the regional level of which Kiribati is a party, Kiribati’s legal system, and the relevant legal instruments existing in-country that are aimed to implement UNCLOS and which give international law direct effect under Kiribati’s legal system.

As a basis for ‘critical assessment’, much of this chapter will constantly refer to the issues and guidelines that were articulated in earlier chapters (particularly in chapter 3), that should be developed/adopted to give effect to what would be considered a ‘robust legislative regime’ that comprehensively covers all aspects of an effective policy, including fiscal, social and environmental management regimes. This should then provide a means by which national policies and legislation are ascertained to be able to adequately ensure that all ‘appropriate’ and ‘necessary’ measures are taken to protect the marine environment.

The collation of such concepts, issues and priorities may present a way by which this thesis could be used as a tool for Kiribati Government officials in developing the required legislative and regulatory framework. However it should be pointed out that while it can help give some clarity as to which the principles and rationale in which such concepts and issues may provide an

initiative for a successful legislative framework, the actual drafting and writing of Laws is much more complicated and requires highly specialized work- which is not the objective of this thesis. For this reason, this thesis will concentrate and focus on providing a rationale and guidelines by which the ‘development of regulatory and legislative frameworks’ for seabed minerals, particularly nodule deposits can be successful, and explains the principles and elements of model regimes. It shall not provide model language and clauses for how such regimes can be drafted in Laws. In saying that, it should be noted that the thesis may allude to principles and other work by which such legal language; clauses and draft bills can be obtained and provided.

PART 1 OF 2: LEGISLATION AND POLICY AT THE INTERNATIONAL LEVEL

Chapter 1: Seabed Mining- the new frontier

1.1. Introduction

The world as we know today is rapidly changing, and as the global population surpassed the 7 billion mark, there is certainly a greater need for strategic metals, including rare earth elements (REE), today compared to 10 to 20 years ago. Life in the 21st century now revolves around technology, and with the continued global growth of the middle class, especially in China, India and Africa, demand will continue to grow¹. Cell phones, iPads and tablets, laptops, televisions, hybrid cars, wind turbines, solar cells and many more products that are the definition of the ‘modern society’, depend largely on the ongoing production of strategic metals and an abundant supply of rare earth metals to function. Using copper as an example, the US Geological Survey² has estimated that world consumption of copper over the next 25 years will exceed all of the copper metal ever mined to date. The average reserve grade of land based copper projects as of 2009 stood at .61 %. On the other hand, crude estimates for deep sea mining projects are 7.2 %.³ Indeed the prospect of deep seabed minerals have been noted from as early as the 1960s, but they were considered uneconomic then because of technological challenges for extraction and the high cost of operations⁴. However the depletion of land-based minerals, coupled with the rising demand for production of metals (and REEs) and rising metal prices, and (2) the rapid advancement in technology in the cable laying, marine diamond mining and deep water oil and gas sectors; has prompted an invigoration of deep sea mineral exploration and extraction technologies, which consequently reduces the technological challenges and capital intensity of sea floor mining operations that have previously made this resource sector uneconomic⁵.

¹Nath, B., & Sharma, R. (2000). Environment and Deep-Sea Mining: A Perspective. *Marine Georesources & Geotechnology*, 18(3), 285-294.

²Solwara 1 Project – High Grade Copper and Gold. Nautilus Minerals Inc. 2010. Retrieved 14 September 2013.

³ Ibid

⁴ Ghosh A & Mukhopadhyay R (2000). *Mineral Wealth of the Ocean: a treatise on distribution, origin, exploration, mining, and management of sea floor non-living resource*. Taylor & Francis publications. Pp.20

⁵ Ibid

Interestingly, as the world also becomes intrinsically concerned with global carbon emissions and carbon footprints in light of the issue of climate change⁶, there is now an observed focus to reduce carbon emissions and the use of fossil fuels through utilization of renewable energy and clean energy technologies such as wind, solar and hydroelectricity⁷. To provide most of our power through renewables, it would take hundreds of times the amount of rare earth metals that we are mining today, which then becomes a problem considering that global reserve estimates of the mining industry suggest that land-based minerals are decreasing and current ore grades and qualities are declining, creating pressure on global metal prices⁸. Clean energy technologies alone are highly dependent upon metals such as nickel, copper, manganese and cobalt, all of which are contained predominantly in deep sea mineral deposits⁹. It is not surprising then to observe the current rise of interest in deep seabed minerals.

But as much as the realism for the prospect of this emerging untapped resource causes excitement for interested industries and countries eager to expand their economic resources¹⁰; it has also become a contentious issue, particularly for the possible ecological impacts it may cause on the deep seabed environment and the marine environment in general¹¹. This is because very little is understood about the possible impacts of each individual deep sea mine¹² let alone the cumulative impacts. Conditions around the hydrothermal vents are unlike anywhere else on the planet and this has resulted in unique ecosystems¹³. At these depths the barometric pressure is very high, the mineral chemistry results in high acidity, and very hot water from the vents mixes with very cold sea water from the sea bottom¹⁴. Some scientists believe that hydrothermal vents are where life first started on earth¹⁵. If so, these environments and these ecosystems could provide insights into the evolution of life. But this also means that if deep sea mining goes ahead, many species could potentially be affected and become extinct before they have even been

⁶ The Working Group II (WGII) contribution to the Fifth Assessment Report on impacts, adaptation and vulnerability will be considered in Yokohama, Japan, on 25-29 March 2014.

⁷ Ibid

⁸ Solwara 1 Project – High Grade Copper and Gold. Nautilus Minerals Inc. 2010. Retrieved 14 September 2013.

⁹ Sharma, R. Deep-sea mining: Economic, technical, technological, and environmental considerations for sustainable development. *Marine Technology Society Journal*, vol.45(5); 2011; 28-41

¹⁰ Ibid, (p. 29)

¹¹ Ibid, (p. 30)

¹² Ibid, n 8

¹³ Ibid

¹⁴ Ibid

¹⁵ Ibid

identified¹⁶. This is a rather worst case scenario- but is still a valid concern, given the scale of proposed seabed mining projects.

Apart from the direct removal of parts of the sea floor during mineral collection, increased toxicity and turbidity is expected in the water column due to sediment re-suspension during the extraction (ie near bottom) and tailings rejection after minerals are sorted on the floating platform (ie near the surface) resulting in clouds of particles forming plumes¹⁷. Waste will represent most, 90%, of the volume of materials pumped to surface and, thus, seabed operations will deposit massive amounts of waste at the sea floor¹⁸. This waste can, in turn, release massive amounts of metals and other elements to the surrounding water, impacting on the ecosystems that thrive near these deep sea mining sites. While near bottom resuspended sediment may cause a major threat to local communities, surface plumes generated by tailing may have a wider impact by affecting larger areas, considering the trans-boundary nature of the ocean¹⁹.

Another contentious issue is that deep sea communities are very poorly characterized and mapped, and even where a reasonable taxonomic knowledge could be claimed and communities mapped over accurate scales, their sensitivity to these impacts is unknown²⁰. Despite these uncertainties, there is little doubt that losses of fragile deep-sea communities during the operations will be unavoidable, and the focus of industry and scientists is placed in the ecological restoration of the deep sea from impacts of mining²¹.

1.2. Outlook for DSM

Despite the many concerns raised about the possible impacts of seabed mining- there is still a growing number of companies and governments-including Canada, Japan, South Korea, China, and the UK²²- rushing to claim rights to explore and exploit minerals found in and on the seabed,

¹⁶ Ibid, n 9, (p. 38)

¹⁷ Ibid

¹⁸ Ibid

¹⁹ See Greenpeace International (2013). Oceans in the Balance: the crisis facing our waters. 2nd Edition, <http://www.greenpeace.org/international/en/publications/Campaign-reports/Oceans-Reports/Oceans-in-the-Balance/>

²⁰ Rosenbaum H. (2011). Out of our depth: mining the ocean floor in Papua New Guinea. <http://www.deepseaminingoutofourdepth.org>

²¹ Ibid

²² ISA exploration contracts as of 12 June 2013, by date of applicants' submissions: 2001: IFREMER/AFERNOD (France); State Enterprise Yuzmorgeologiya (Russia); Deep Ocean Resources Development Company (Japan); China Ocean Mineral Resources Research and Development Association (COMRA) (China); Interocean Metal Joint Organization (IOM) (Bulgaria, Cuba, Czech Republic, Poland, Russian Federation and

such as copper, manganese, cobalt and rare earth elements in some cases. There are currently 17 exploration contracts for the seabed that lies beyond national jurisdictions (the area) and in deep seas of the Pacific, Atlantic and Indian oceans- which is a relative surge from only 8 contracts in 2010²³ - hence the use of the aforementioned term ‘rushing’. Contract holders will then be able to apply for licenses to carry out commercial mining in the high seas as soon as regulation for exploitation are developed, currently anticipated to occur as early as 2016²⁴. There are also a number of significant interests within national waters, particularly in the Pacific Ocean, with one licence to mine already being granted in PNG waters²⁵.

For some countries in the Pacific, in terms of economic growth through natural resources, deep sea minerals present an opportunity to expand their narrow-based resource base, and in some cases, particularly with Kiribati, it is the only resource that the country has in moving forward, apart from fish. This then sets the precedence that there will be continuous political, economic and social pressures, both from the countries and the investors regarding the notion of seabed mining. All of these issues underscore the imperative to continually develop appropriate legislative and regulatory frameworks for the mining exploration and extraction activities, regardless whether extraction activities are to eventually occur or not.

The UN Convention on the Law of the Sea, upon coming into force in 1994, gave each coastal state exclusive sovereign rights to explore and exploit the deep sea minerals contained within the boundaries of its maritime zones. In every Pacific Island state, this area of seabed vastly exceeds land territory; indeed, as much as 99 per cent of the sovereign territory of many of the region’s island states is ocean. Surveys indicating abundant and promising mineral deposits in the region suggested a potential source of wealth, which – if realised – may provide an opportunity for Pacific Island states to improve livelihoods.

Slovakia); South Korea; 2002: India; 2006: The Federal Institute for Geosciences and Natural Resources of the Federal Republic of Germany (Germany); 2011: Nauru Ocean Resources Ltd (Nauru); Russian Federation; China Ocean Mineral Resources Research and Development Association (COMRA) (China), Tonga Offshore Mining Ltd (Tonga); 2012: South Korea; IFREMER (France); UK Seabed Resources Ltd (UK); Marawa Research and Exploration Ltd (Kiribati); G-Tec Sea Minerals Resources NV (Belgium)

²³ Ibid

²⁴ Preceding’s from Annual Sessions of the International Seabed Authority, 2013 <ISBA/19/C/5>

²⁵ Solwara 1 Project – High Grade Copper and Gold. Nautilus Minerals Inc. 2010. Retrieved 14 September 2013.

But this must be balanced against other imperatives²⁶ because although provisions under the LOSC give certain legal rights for States over deep sea minerals, international law also imposes duties, most of which entail that States must protect the ocean environment, prevent pollution, and preserve rare or fragile ecosystems and ocean habitats. Given the vast knowledge gaps that exists in our understanding of the deep ocean environments and how they may be affected by deep sea mineral exploration and exploitation activities, a precautionary approach must prevail²⁷. Pioneering ventures into deep sea mineral development must be undertaken carefully and thoughtfully, under close control and scrutiny, and adjustments must be made as projects progress and experience is gained²⁸. If States do not fulfill those obligations imposed by international law, not only will the health of the Pacific Ocean be in peril, but State governments may find themselves liable for damage occurring as a result, which most developing Pacific island states will not be in a position to adequately compensate²⁹.

This deems the necessity to develop national legislation pertinent to deep sea exploration and exploitation, that should meet standards as high as (or higher than) those set by the international community. Implementing a robust regulatory regime will set out a means for protection of states, marine biodiversity, sea users, and local communities, while providing security and clarity to the explorers and future miners.

In light of these issues, this thesis will analyze the international legislative framework for the exploration and exploitation of deep sea minerals, to highlight the requirement that state activities, related to the exploration and exploitation of seabed minerals within and beyond national Jurisdictions (including claimed areas of extended continental shelf (CS)); need to adhere and adopt within the portfolio of their regulatory frameworks at the national level.

More importantly, a clear and comprehensive statement of this requirement can provide a platform by which the Government of Kiribati can effectively, and efficiently, develop and enact its regulatory regimes and legislation, that should be effective to govern activities of the State,

²⁶ Regional Legislative and Regulatory Frameworks for Deep Sea Minerals, Secretariat of the South Pacific paper. Preface page.

²⁷ Ibid, p. 25

²⁸ Ibid

²⁹ Ibid

and entities acting on its behalf, in carrying out exploratory and extractive activities regarding seabed minerals within and beyond national jurisdiction. This is imperative, not exclusively because the current Kiribati Government shows interest in the minerals within its EEZ and in ‘the Area’, including potential areas of extended continental shelf³⁰, but also in conforming to the obligations that the State has in protecting the marine environment, for the benefit of its people, and as an obligation under customary international Law.

1.3. Mining methods and technology

In considering the notion of seabed mining, what always seems to stand out is the environment in which such mineral deposits are found- the deep seabed. The deep seabed, as it is known today, has largely been considered a place of myth and mystery; a place beyond the usual realms of life that we know of on a day to day basis- much of which alludes to its intriguing and compelling notion³¹. It is filled with weird and wonderful life forms, much of which can be perceived to be alien life forms by general populations- and much of which to this day, is still largely unknown. In fact, as a matter of relative comparison, we know more of the moon than we know of the deep seabed³². These facts allude to the notion that in most people’s minds, deep-sea mining is still something for sci-fi movies. Much to the contrary, the technology for deep-sea mining is not something of the future, but largely exists. In general most deep-sea mining operation consists of a mining support platform or vessel; a launch and recovery system; a crawler with a mining head, centrifugal pump and vertical transport system; and electrical, control, instrumentation and visualization systems³³. Companies such as Lockheed Martin, Soil Machine Dynamics, IHC Mining and Bauer or Nautilus Minerals are developing vehicles for deep-sea mining, pledging they are in the position to readily develop techniques to operate down to 5,000 metre depth. Indeed, the submarine vehicles required are already in existence and their operations are described in compelling animations³⁴. Shallow submarine mining is already a reality in coastal areas, such as the De Beers Marine diamond mining operation in Namibia, in depths up to 150

³⁰ Armstrong CW, Foley N, Tinch R & Van den Hove S (2010). Ecosystem goods and services of the deep sea. Deliverable D6.2 HERMIONE Project (p. 68);

³¹ Cronan, D. S.; 1980. Underwater minerals, London (Academic press).

³² Ibid, (p. 69)

³³ Nautilus Minerals (2008). Environmental Impact Statement.

<http://www.cares.nautilusminerals.com/Assets/Documents/Main%20Document%20Text.pdf> [Accessed 13 August, 2013].

³⁴ Rosenbaum H. (2011). Out of our depth: mining the ocean floor in Papua New Guinea. <http://www.deepseaminingoutofourdepth.org>

metres. There are a variety of other proposed methods for seabed mining, all of which differ between current companies, and the type of deep sea mineral deposit to be explored and mined. The Canadian registered company Nautilus Minerals Inc. proposes to use large robotic machines to excavate material by removing deep-sea hydrothermal chimneys and then cutting deeper in the seafloor. A suction hood and pipe behind the cutter head of the underwater robot will collect the material, along with anything living on it, and have this pumped up to a ship on the surface as a slurry. On board the ship, the slurry will then be ‘dewatered’ and the solid material will then be shifted into a barge, while the used seawater will then be pumped back down towards the sea floor using pipes³⁵. Other companies, including UK Seabed Resources (a British entity owned by US defence giant Lockheed Martin) are investigating the option of vacuuming up manganese nodules that lie on the seabed³⁶. All of these information suggests that seabed mining could very well eventuate in the near future- it is necessary then to ensure that the legislative framework is in place, not only at the international level, but within domestic legislations as well with States intending to carry out seabed mining.

³⁵ Ibid, n 33

³⁶ Ibid, n 34

Chapter 2: The international legislative framework

2.1. The United Nations Convention on the Law of the Sea (LOSC)

The 1982 United Nations' Convention on the Law of the Sea³⁷ (LOSC), is the international legislative framework that comprehensively provides for regulation of all ocean space, access to seas, navigation, protection and preservation of marine environment, exploitation and conservation of living resources, scientific research; settlements of disputes; and including the legal framework for the exploration and exploitation of the non-living resources of the deep seabed or 'deep sea minerals' (DSM). A notable characteristic of the LOSC is the omnipresence of the delicate balance between the enjoyment of rights and benefits and the concomitant undertaking of duties and obligations on the part of States Parties, culminating into the principle by which it is paramount that all State parties to the LOSC should respect the rights of others States³⁸.

The LOSC established the concept of an Exclusive Economic Zone of up to 200nm so as to enable the Coastal States to gain economic benefit from areas further off their shores. The coastal state is given certain economic rights in regard to the exploitation of living and non-living resources. The Exclusive Economic Zone (EEZ) consists of the area extending to 200 nautical miles (nm) from the baseline, which is measured by reference to geographical points set in accordance with Part II of LOSC, and subject to the delimitation of boundaries between neighbouring States. The seabed and subsoil up to 200 nautical miles is also the continental shelf (CS). The CS may extend beyond 200 nm, under specific criterion set out in article 76 of the LOSC.

Article 77 of the LOSC confers rights upon all coastal States, including small island nations, to engage in the exploration and exploitation of the natural non-living resources of the seabed and subsoil within its national jurisdictions. Specifically, the coastal State exercises sovereign rights over the CS for the purpose of exploring it and exploiting its natural resources (including its minerals). These rights are exclusive: if the coastal State does not explore the CS or exploit its

³⁷ United Nations Convention on the Law of the Sea, Montego Bay, 10 December 1982. In force 16 November 1994. United Nations Treaty Series, vol. 1833, No. 1-31363, p. 397; 21 International Legal Materials 1261 (1982).

³⁸ Ibid

natural resources, no one may undertake these activities without the express consent of the coastal State. The coastal State also has sovereign rights within its EEZ for the purpose of exploring and exploiting, conserving and managing the natural resources of the waters superjacent to the seabed (LOSC Article 56), and also enjoys exclusive rights to construct and regulate the operation and use of artificial islands, installations and structures that are related to the exploration and exploitation of the resources of the EEZ and CS.

The LOSC also establishes two zones beyond national jurisdiction: the ‘high seas’ (the water column beyond the EEZ) and ‘the Area’ (the seabed and subsoil beyond national jurisdiction). The Area is the seabed and subsoil beyond the external limits of the CS (including extended CS), and comprises the seabed and ocean floor and the subsoil thereof, beyond the limits of national jurisdiction, as well as its resources. Under the 1994 agreement and part 11 of the LOSC, these are declared by the LOSC to be ‘the common heritage of mankind’; the exploration and exploitation of which shall be carried out for the benefit of mankind as a whole. An independent autonomous body, the International Seabed Authority, is established by the LOSC to regulate in areas outside of national jurisdiction the conduct of prospecting or exploration, or exploitation of DSM. These will be discussed in greater detail in the subsequent section of the thesis.

2.2. The International Seabed Authority

The International Seabed Authority (‘ISA’) is responsible for organising and controlling activities in the seabed, ocean floor and subsoil beyond the limits of national jurisdiction (known as ‘the Area’), particularly with a view to administering the resources of the Area. This mandate is set out in Part XI of the LOS Convention³⁹ and the Agreement⁴⁰ Relating to the Implementation of Part XI of the United Nations Convention on the Law of the Sea. These activities may only be carried out under a contract with the ISA. Contracts may be awarded to entities having the nationality of State Parties or sponsored by State Parties. Detailed rules, regulations and procedures for these activities are set out in the ISA’s Mining Code (comprising regulations tailored for each deposit type), which is being elaborated by the ISA progressively, as DSM mining activities develop²⁵.

³⁹ *Agreement Relating to the Implementation of Part XI of the United Nations Convention on the Law of the Sea*, opened for signature 28 July 1994, 1836 UNTS 42 (entered into force 28 July 1996) (‘1994 Agreement’).

⁴⁰ *Ibid*

Under the LOS Convention art 153(2), activities in the Area may be carried out by:

- (i) ISA (called ‘the Enterprise’ in the LOS Convention), on its own behalf or in a joint venture arrangement; or
- (ii) State Parties, state enterprises or natural or judicial persons through sponsorship by a State Party.

The latter allows for a parallel system of exploration and exploitation of resources contained in ‘the Area’, recognizing that developing States can have special access rights to reserved (and already prospected) zones within the Area. In effect, this then provides developing States with a practical and realistic means of participating in DSM mining: by sponsoring commercial entities that have access to the financial capital and technology necessary to conduct DSM exploration and exploitation in these reserved areas⁴¹. This element of sponsorship is fundamental to the international regime, as it is designed to ensure that, ultimately, a State Party to the LOSC has international responsibility for the activities of contractors with the ISA.

The LOSC provides that States may be entitled to areas of CS that extend beyond 200 nm from the coastal baseline, up to a maximum of 350 nm, in accordance with criteria set out in Article 76 of the LOSC. A formal process must be followed before a coastal State may establish the outer limits of its CS beyond 200 nautical miles, including submission of its claim to the UN Commission on the Limits of the Continental Shelf⁴². For DSM exploration and exploitation activities on the extended CS (i.e. beyond 200 nm from the baseline) the LOSC provisions that are relevant are those specific to the CS, and to the ‘high seas’ (for the water column), rather than the EEZ regime. Article 82 of the LOSC also requires financial payments for exploitation of the extended CS, which are not required for the CS up to 200 nm from the baseline.

The EEZ regime in the LOSC largely governs State rights to utilise living resources (LOSC Article 61-68), whereas the CS regime governs State rights to explore and exploit non-living

⁴¹ *LOS Convention*, art 162(1).

⁴² *Ibid*

resources, e.g. minerals⁴³. In effect the CS regime governs the seabed and subsoil and all rights to minerals both below and beyond the EEZ²¹. Both regimes will have jurisdictional implications for seabed mining operations.

2.3. The Mining code

The 'Mining Code' refers to 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 Area. All rules, regulations and procedures are issued within the general legal framework established by the *1982 United Nations Convention on the Law of the Sea* and the *Agreement Relating to the Implementation of Part XI of the United Nations Convention on the Law of the Sea*. To date, the Authority has issued Regulations on Prospecting and Exploration for Polymetallic Nodules in the Area⁴⁴ (adopted 13 July 2000) which was later updated and adopted again on 25 July 2013; the Regulations on Prospecting and Exploration for Polymetallic Sulphides in the Area⁴⁵ (adopted on 7 May 2010) and the Regulations on Prospecting and Exploration for Cobalt-Rich Crusts (adopted on 27 July 2012). These Regulations include the forms necessary to apply for exploration rights as well as standard terms of exploration contracts.

2.4. The Advisory opinion of the Seabed Disputes Chamber (ITLOS)

Recalling that Under the LOS Convention art 153(2), activities in the Area may be carried out by: (i) ISA (called 'the Enterprise' in the LOS Convention), on its own behalf or in a joint venture arrangement; or (ii) State Parties, state enterprises or natural or judicial persons through sponsorship by a State Party; two Pacific island developing states, Nauru and Tonga, applied to the ISA for approval to obtain contracts to explore for polymetallic nodules, seeking to rely on the sponsorship provisions of the LOS Convention, on 10 April 2008. Nauru is a small island of around 21 square kilometres, and has a population of around 10 085, per capita GDP of US\$5462 (having once boasted the second highest per capita GDP as a result of now depleted phosphate

⁴³Ibid art 162(2)(a). Also note that sedentary species under art 74 (4)- while within the EEZ are covered by EEZ regime; however outside 200nm, are covered by CS regime

⁴⁴ ISBA, Regulations on Prospecting and Exploration for Polymetallic Nodules in the Area (adopted 13 July 2000) ('*Nodules Regulation*') <<http://www.isa.org.jm/files/documents/EN/Regs/PN-en.pdf>>

⁴⁵ ISBA, Regulations on Prospecting and Exploration for Polymetallic Sulphides in the Area (adopted 7 May 2010) ('*Sulphides Regulation*') <<http://www.isa.org.jm/files/documents/EN/Regs/PolymetallicSulphides.pdf>>.

reserves) and a very small private sector responsible for fewer than 300 employees⁴⁶. Tonga is an archipelago approximately 747 square kilometres in area, and has a population of a little over 105 000 people and per capita GDP of US\$3518⁴⁷.

On 5 May 2009, Nauru and Tonga requested that the ISA postpone consideration of their applications. The reason for postponement is apparent from Nauru's proposal⁴⁸ to ISA on 1 March 2010 seeking an advisory opinion from the Chamber relating to the responsibilities and potential liabilities of sponsoring states.¹⁵ Nauru had originally sponsored NORI on the assumption that it: could effectively mitigate (with a high degree of certainty) the potential liabilities or costs arising from its sponsorship. This was important, as these liabilities or costs could, in some circumstances, far exceed the financial capabilities of Nauru.¹⁶ Further, Nauru suggested that, if sponsoring states were exposed to potential liabilities for damage caused to the Area by activities of the sponsored entity, Nauru and other developing states may, in effect, be precluded from participating in such activities, contrary to the purposes and principles of Part XI of LOS Convention.¹⁷ On 6 May 2010, ISA decided to request an advisory opinion⁴⁹ from the Chamber on three specific questions of law:

1. What are the legal responsibilities and obligations of States Parties to the LOS Convention with respect to the sponsorship of activities in the Area in accordance with the LOS Convention, in particular Part XI, and the 1994 Agreement relating to the Implementation of Part XI of the United Nations Convention on the Law of the Sea of 10 December 1982?⁵⁰
2. What is the extent of liability of a State Party for any failure to comply with the provisions of the LOS Convention, in particular Part XI, and the 1994 Agreement, by an entity whom it has sponsored under art 153, para 2(b), of the LOS Convention?⁵¹

⁴⁶ United States Department of State: Bureau of East Asian and Pacific Affairs, Background Note: Nauru (13 March 2012) <<http://www.state.gov/r/pa/ei/bgn/16447.htm>>

⁴⁷ United States Department of State: Bureau of East Asian and Pacific Affairs, Background Note: Tonga (31 October 2011) <<http://www.state.gov/r/pa/ei/bgn/16092.htm>>.

⁴⁸ ISBA, *Proposal to Seek an Advisory Opinion from the Seabed Disputes Chamber of the International Tribunal for the Law of the Sea on Matters Regarding Sponsoring State Responsibility and Liability* (ISBA/16/C/6) (5 May 2010)

⁴⁹ *Responsibilities and Obligations of State Sponsoring Persons and Entities with Respect to Activities in the Area* (Advisory Opinion) (International Tribunal for the Law of the Sea, Seabed Disputes Chamber, Case No 17, 1 February 2011)

⁵⁰ Ibid

⁵¹ Ibid

3. What are the necessary and appropriate measures that a sponsoring state must take in order to fulfil its responsibility under the LOS Convention, in particular art 139 and annex III, and the 1994 Agreement?⁵²

On 1 February 2011, the Seabed Disputes Chamber ('Chamber') of the International Tribunal for the Law of the Sea ('ITLOS') delivered its first advisory opinion⁵³ in Responsibilities and Obligations of States Sponsoring Persons and Entities with Respect to Activities in the Area.

The Advisory Opinion represents the first proceedings before the Chamber and the first time that ITLOS has invoked its advisory opinion jurisdiction under art 191 of the United Nations Convention on the Law of the Sea. The Advisory Opinion is significant because it clarifies the obligations of a sponsoring state, and its potential liabilities, in circumstances where damage is caused by the activities of a sponsored entity in the Area⁵⁴. Despite the fact that exploration activities have been carried out in the Area since at least the mid-19th century⁵⁵, the Advisory Opinion is timely given that the development of new mining technologies and the rising price of minerals may mean that the exploitation of the deep seabed resources will soon be possible and commercially viable. In addition to the greater likelihood of the deep seabed resources being exploited, the Advisory Opinion is timely and highly relevant and important because of the real risk that harm is likely to be caused to the Area in circumstances where the sponsored state or entity fails to comply with its legal obligations and/or industry best practice. Through the destruction of seabed habitat or the effects of pollution and disposal of waste, it is likely that mining activities will cause harm to marine environments, including affecting protected fish species or marine parks in the vicinity of such activities. The Advisory Opinion confronts the risk of harm by imposing stringent limits on mining activities in the Area with the aim of preventing the risk of harm being caused to the Area. The primary reason for this stringency is the recognition by the Chamber of the importance of the Area as a common heritage of mankind.

⁵² Ibid

⁵³ Ibid, above n 40

⁵⁴ The 'Area' is defined by art 1(1) of the *LOS Convention* as 'the seabed and ocean floor and subsoil thereof, beyond the limits of national jurisdiction'.

⁵⁵ Polymetallic nodules were discovered during the 19th century in the Arctic Ocean off Siberia (1868). During scientific research expeditions of the *HMS Challenger* (1872–77), polymetallic nodules were found to occur in most of the oceans of the world: see International Seabed Authority ('ISBA'), *Polymetallic Nodules* <<http://www.isa.org.jm/files/documents/EN/Brochures/ENG7.pdf>>

Importantly, the Chamber clarified that the breadth of the phrase ‘activities in the Area’ (defined by the LOS Convention art 1(1)(3) as including ‘all activities of exploration for, and exploitation of, the resources of the Area’) did not extend to all activities associated with seabed exploration and exploitation. To reach this conclusion, the Chamber confined the interpretation of the word ‘activities’ to such activities contemplated by the LOS Convention art 145, namely ‘drilling, dredging, excavation, disposal of waste, construction and operation or maintenance of installations, pipelines and other devices related to such activities’.⁵⁶ On this basis, the Chamber advised that the processing and marketing of the minerals on land and the transportation of the resources to land, to the extent that such transportation is not directly connected to the recovery of minerals from the seabed and the lifting of the minerals to the surface, are excluded from the phrase ‘activities in the Area’. This is a significant development as the definitions of the terms ‘exploration’ and ‘exploitation’ in the Nodules Regulation and Sulphides Regulation (collectively, ‘Regulations’) imply that processing facilities and transportation systems constitute ‘activities in the Area’.⁵⁷ As the Regulations are subordinate to and inconsistent⁵⁸ with the LOS Convention, the Chamber limited the phrase ‘activities in the Area’ to those directly related to the extraction and lifting of minerals. In light of the Advisory Opinion, ISA will need to consider whether it is necessary to amend the definitions of ‘exploration’ and ‘exploitation’ in the Regulations, and should ensure that the definitions of these terms are consistent with the views of the Chamber in the Regulations for Prospecting and Exploration of Cobalt-Rich Crusts (currently being prepared) and other regulations in the future. With respect to activities in the Area, the Chamber advised that the primary responsibilities and obligations of sponsoring states (‘Primary Obligations’) are to:

- (i) ensure that such activities undertaken by its nationals are carried out in accordance with the LOS Convention Part XI;⁵⁹
- (ii) assist ISA by taking all measures necessary to ensure compliance with art 139 (being (i) above);⁶⁰ and

⁵⁶ *Advisory Opinion*, above n 40, [85].

⁵⁷ *Nodules Regulation*, above n 37, reg 1(3)(a)–(b); *Sulphides Regulation*, above n 28, reg 1(3)(a)–(b).

⁵⁸ *LOS Convention*, art 145, annex III art 17(2)(f) and annex IV art 1(1).

⁵⁹ *Ibid* art 139(1).

⁶⁰ *Ibid* art 153(4).

- (iii) ensure, within its domestic legal system, that the sponsored entity carries out such activities in conformity with the terms of its contract with ISA and its obligations under the LOS Convention.

In addition to the Primary Obligations, the Chamber identified further ‘Direct Obligations’ incumbent on sponsoring States under the LOS Convention and the related Regulations, including to:

- (i) assist ISA in the exercise of control over activities in the Area.⁶¹ This obligation will be met through compliance with the due diligence obligation;
- (ii) apply a precautionary approach, according to the sponsoring state’s capabilities, to ensure effective protection for the marine environment from harmful effects.⁶²

This obligation applies in circumstances where the scientific evidence relating to the impact of the activity is insufficient and there are plausible indications of risk.⁶³ If a sponsoring state were to disregard those risks, it would fail to meet its obligation of due diligence. The Chamber also ruled that beyond the primary and direct obligations, it is also a requirement that a high standard of due diligence should also be observed by Sponsoring States. However, given the explicit text of the Convention, it was not a strict liability regime, despite arguments to the contrary. But if damage occurred, and the sponsoring state had failed to take “all necessary and appropriate measures to ensure compliance” by its contractor, then the state would be liable. Moreover, the Chamber pointed out that nothing would prevent such liability from being introduced in the future through the mining regulations or the establishment of a trust fund to cover damage not covered by the Convention.

Laws, regulations, and administrative measures must be in force at all times that the contract with the Authority is in force. These measures cannot simply be contractual arrangements with

⁶¹ *LOS Convention*, art 153(4).

⁶² *Nodules Regulation*, above n 27, reg 31(2); *Sulphides Regulation*, above n 28, reg 33(2); *United Nations Declaration on Environment and Development*, UN Doc A/CONF.151/5/Rev.1 (1992), principle 15 (‘*Rio Declaration*’).

⁶³ *Advisory Opinion*, above n 40, [131].

the sponsored entity. They must be at least as stringent as those adopted by the Authority and certainly no less effective than international rules.

2.5. Implications of the ‘Advisory Opinion’

The *Advisory Opinion* is a landmark decision as it unanimously endorsed a legal obligation on sponsoring states to apply a precautionary approach and best environmental practices, and to ensure that EIAs are prepared. These are positive developments for the protection of the marine environment in the Area from the impacts of exploration and exploitation activities. With respect to the precautionary approach, the *Advisory Opinion* is significant because it recognised that there was a ‘trend’ towards making this approach part of customary international law. However, if states do not implement appropriate and necessary legislative and administrative measures, then they are unlikely to be able to apply a precautionary approach or ensure that contractors undertake EIAs. In the circumstances, the level of protection for the marine environment would be questionable.

The *Advisory Opinion* did leave open the possibility that different standards may be applied to developed and developing sponsoring states regarding the application of the precautionary approach in light of the limiting words ‘according to their capabilities’ contained in principle 15 of the *Rio Declaration*. The Chamber indicated that the term ‘capabilities’ refers to the ‘level of scientific knowledge and technical capacity’.

Having regard to the fact that a sponsoring state is under a duty to ensure that the sponsored entity prepares an EIA setting out the impacts of the proposed activities on the marine environment, it is hoped that any scientific uncertainty relating to such impacts would be apparent on the face of the EIA and, therefore, the application of the precautionary approach will seldom rely on the sponsoring state’s capabilities. In any event, there is an obligation on sponsoring states to follow ‘best environmental practices’,⁶⁴ which does not differentiate between states based on capabilities⁶⁵ available to the sponsoring state.

But while the *Advisory Opinion* provides useful guidance on the content of the measures to enable discharge of the Primary and Direct Obligations, this has not effectively expedited the

⁶⁴ *Advisory Opinion*, above n 40, [162].

⁶⁵ *Ibid*

work of States intending to exploit seafloor minerals in the area, and within their maritime boundaries. There are currently 17 contractors for the exploration of polymetallic nodules,⁶⁶ yet the report of the Advisory Opinion implied that only two State Parties (Germany and the Czech Republic) have adopted relevant domestic laws and regulations. It has not been investigated whether this is still correct as of today. However, assuming this to be the case, one may ask why so few states have implemented internal legislation. A future study could look at the reason(s) for the low rate of adoption of domestic legislation by sponsoring states. The absence of sponsoring states, particularly those in consortiums, could one day lead to interesting liability claims in the Chamber. While both the ‘Mining code’ and the ‘Advisory Opinion’ state that the existence of such laws, regulations and administrative measures is ‘not a condition precedent’ for concluding a contract with ISA, ‘it is a necessary requirement for compliance with the obligation of due diligence of the sponsoring State and for its exemption from liability’.⁶⁷ This suggests that a number of sponsoring states may not be able to rely on the exemption from liability should their sponsored entities cause damage to the Area. Despite this exemption, sponsoring states should be implementing legislation and administrative measures in any event to ensure the marine environment is protected, and to lead by example. That is, states should adopt the highest standards of due diligence not only to avoid potential liability, but to protect the Area — the common heritage of mankind — more generally.

2.6. Other key responsibilities under international law

It is also a due diligence obligation therein, for States that are subject to other key international law responsibilities, to also reflect such provisions within their national policies and legislative frameworks:

- General and unqualified duty to protect and preserve the marine environment and rare or fragile ecosystems and habitats⁶⁸
- Duty to prevent, reduce and control pollution from seabed activities⁶⁹; or caused by ships⁷⁰, or by dumping of waste and other matter at sea⁷¹

⁶⁶ Ibid

⁶⁷ *Advisory Opinion*, above n 40, [219].

⁶⁸ LOSC Articles 192 and 194(5).

⁶⁹ LOSC Articles 194(3)c, 208, 209; Noumea Convention Article 8.

- Duty to prevent trans-boundary harm⁷².
- Duty to conserve biodiversity⁷³
- Duty to employ best environmental practice⁷⁴
- Prior environmental impact assessment of activities likely to cause significant harm⁷⁵ and ongoing monitoring of environmental impacts⁷⁶
- Duty to take measures for ensuring safety at sea⁷⁷).
- Duties not to interfere with rights and freedoms of other States, such as the installation of submarine pipelines and cables, and marine scientific research⁷⁸

Apart from these key responsibilities, there are other principles of regulatory development that have been seen in the literature as fundamental in national policy and legislation, and should be recognized expressly. These principles include:

- Sustainable economic development and integrated management⁷⁹.
- An objective to promote the equitable and efficient development of the economic potential of marine mineral resources⁸⁰ ‘Polluter pays’ principle⁸¹.
- Regional cooperation/integration in monitoring, processing and capacity building⁸²
- Identifying mechanisms of building capacity and expertise in-country⁸³
- Promotion of transparency and accountability, including with regard to revenues⁸⁴

⁷⁰ LOSC Articles 194(3)(b) and 211; MARPOL 73/78 and the other marine environmental conventions applicable to ships concluded under the auspices of the IMO.

⁷¹ LOSC Articles 194(3) and 210; the London Convention and the 1996 Protocol thereto.

⁷² (LOSC Article 194, London Convention Preamble; London Protocol Art. 3(3); Seabed Disputes Chamber of the International Tribunal for the Law of the Sea (ITLOS), Case No. 17, ITLOS Advisory Opinion of 1 February 2011.

⁷³ CBD Article 3(3)(1); ITLOS Advisory Opinion; ISA Mining Code

⁷⁴ ISA Mining Code and ITLOS Advisory Opinion

⁷⁵ LOSC Article 206) CBD, and Noumea Convention Article 16.

⁷⁶ LOSC Article 204.

⁷⁷ LOSC Article 94, 1974 Convention for the Safety of Life at Sea and other conventions for the safety of ships and crew concluded under the auspices of the IMO

⁷⁸ LOSC Articles 58, 78, 79 and 246.

⁷⁹ Onorato, William, 1999. Legislative frameworks used to foster petroleum development. World Bank Publication # 1420.

⁸⁰ Preamble to the LOSC; and the Pacific Plan.

⁸¹ London Protocol, Article 3(2); Rio Declaration

⁸² LOSC Articles 276 and 277; and the Pacific Plan.

⁸³ (the LOSC Part XI).

⁸⁴ Aarhus Convention; and the Extractive Industries Transparency Initiative.

Development of national legislation and regulatory regimes, in the case of DSM, is much trickier/complex than most land-based exploration and extractive industries, given that the resources are located in jurisdictions beyond the territorial zones of a State and involves third party interests from the international community and from international legislative frameworks. For example national legislative for DSM activities must aim comprehensively to incorporate relevant international law obligations, as per due diligence obligation principles (LOSC Articles 208(3)-(4) and 209(2)). This in itself would not be a straight-forward concept, as opposed to land-based regulations on exploration and mining activities.

One approach to achieve this would be to make high-level statements reflecting these obligations as a preliminary ‘purpose and principles’ part of the legislation, against which decision-making under the legislation would be considered³⁶. An alternative approach, to set clear parameters and avoid ambiguity, is to incorporate those obligations expressly into the sections of the legislation that provides for the decision-making power itself. In particular, powers, duties and functions under national DSM legislation should always be consistent with the LOSC. The RLRf suggests that the incorporation of the LOSC into domestic law could be achieved by a preliminary overriding principle provision in the legislation, for example setting a preamble such as, “This Act must be interpreted, and all persons performing functions and duties or exercising powers under it must act, consistently with the State’s international obligations under the LOSC.” However it should be noted that a high-level statement about interpretation should not, of course, replace careful consideration of the relevant international obligations during the drafting process.

2.7. The International Marine Minerals Code for Environmental Management of Marine Mining

The International Marine Minerals Society has also developed a voluntary Code for Environmental Management of Marine Mining that recommends that plans for deep sea mining include at the outset procedures that “aid in the recruitment, re-establishment and migration of biota...”⁸⁵ The Code is the first international instrument to address environmental aspects of the emerging marine mining industry from “cradle to grave”. Its comprehensive scope ranges from

⁸⁵Philomene A. Verlaan, *International Marine Minerals Society*, Offshore Technology Conference, 3-6 May 2010, Houston, Texas, USA.

research, exploration, prospecting and exploitation to decommissioning and rehabilitation. The Code is necessary because little national environmental regulation of marine mining exists, especially beyond the territorial sea, apart from the 'Mining code' of the International Sea Bed Authority (ISA).

Setting broad directions in the context of shared values, rather than prescribing specific practices, the Code offers a framework to develop and implement a responsible environmental programme for marine minerals exploration and extraction, and to assess proposed and actual applications of best environmental practices at marine mining sites. An important aspect of the Code, in terms of developing national legislation, under the auspices of a broader international legislative framework; is that it seeks to complement national and international marine mining environmental regulations where they exist, and to provide environmental principles and guidelines where these are absent or could be improved. Where the Code sets higher standards than those legally required, following those standards and improving the legally binding requirements are encouraged. Designed to be a living, adaptive guide to the responsible development and use of marine mineral resources, responsive to improvements in best environmental practices, technological developments, changes in applicable regulations, and experience with its implementation, the Code requires a periodic review in consultation with marine mining stakeholders. Upon its formal adoption at the 40th Underwater Mining Institute in September 2011, the Code became the only international instrument specifically designed to guide environmentally responsible and sustainable marine mining at present. Given its voluntary nature, it is hoped that the Code may assist in providing a useful example for the development of future legally binding national and international marine mining legislation.

Chapter 3: Adoption of 'necessary' and 'appropriate' measures to protect the marine environment

In the event that a coastal State should be interested in exploring and extracting seabed minerals, either within or beyond national jurisdiction, as highlighted in the international legal framework,

the LOSC Articles 208(3)-(4) and 209(2) require laws, regulations and measures to be developed or adopted by coastal States with regard to seabed activities under a State's jurisdiction, and activities in the Area operating under a State's sponsorship respectively; to "be no less effective than international rules, standards and recommended practices and procedures". States are also required to endeavor to harmonize such policies at the appropriate regional level. The LOSC Articles 214 and 215 are clear that such standards must not only be enacted in national regulatory regimes and legislation, but steps must also be taken to enforce them.

In some cases, States could already have existing legislation and regulation in place, which will be similar to, or may overlap with, the new measures to be introduced to govern DSM activities. Examples include legislation relating to environmental management and other extractive industry or resource development; other offshore activities; health and safety; revenue and fiscal management; foreign investment; maritime transport; marine pollution; conservation of marine wildlife; risk management for natural disasters; land and coastal management; employment; and fisheries⁸⁶.

States can then, within the frameworks of their national legal system, have the option to amend, supplant or supplement existing legislation. The principle of integrated management suggests that having fewer legislative instruments avoids complexities and helps facilitate efficient and timely decision-making⁸⁷, and that having a single legislative instrument is usually more user-friendly, both for the State and for potential applicants. However it is also recognized that it may be easier in terms of the Parliamentary or legislative process in some jurisdictions to build upon existing legislation instead. In any event, drafting legislation that minimizes cross-sectoral inconsistency, regulatory gaps and overlaps is desirable.

One of the two options (amendment to existing legislation or drafting of new legislation) will be required by every State engaging in DSM activities in order to meet international law obligations. Either may be a time-consuming process and entails an early start to policy discussions and timely involvement of key stakeholders.

⁸⁶ Ibid, n 26

⁸⁷ Onorato, William

In any such policy discussions at the national level, it is important to consider certain issues as guidelines to policy priorities, to ensure that appropriate and necessary measures are taken to protect the marine environment, as set out in the international legislative framework⁸⁸. An effective and comprehensive regulation, in that regards, should at the least have (1) an appropriate environmental management plan, (2) an equitable/transparent fiscal regime, (3) an active public engagement/consultation process, and (4) an effective enforcement and compliance scheme. Such guidelines are discussed below.

3.1. Environmental Management

3.1.1. Best environmental practices and precautionary measures

Most DSM projects are likely to have an impact on the environment, certainly at localized sites. Prior EIA is a requirement of international law. It is also one means by which to implement the precautionary approach, another requirement of international law. The licensing part of national legislation must therefore incorporate provision that before any DSM activities likely to have significant effect on the environment are permitted, a comprehensive report meeting set standards and assessing that effect must be provided and submitted to expert independent assessment. Where, after review of the EIA, a DSM project is permitted to proceed; an EMP must be put into place. A model increasingly in use for on-land mining is to provide a pre-selected pool of expert individuals and companies, from which the operator must choose, to prepare the EIA. The EIA should be supplemented by the EMP and by the monitoring of actual effects both during DSM operations, as well as for an agreed period afterwards.

An EIA requirement in the legislation will also assist with identifying potential adverse environmental (including social and economic) impacts and developing tailored mitigation strategies. This requirement, particularly for activities within national jurisdiction, should not be limited to a narrow interpretation of ‘environmental’ considerations, but should require comprehensive impact assessment, taking into account other stakeholders, including those with interests in near-shore waters or on-land. Accordingly, any EIA should assess the impact of DSM activities and any associated activities (e.g. land-based transport and/or processing) on all those

⁸⁸ LOSC Articles 208(3)-(4) and 209(2); Advisory Opinion, n 40.

values. An ‘Ecosystem Services’ approach is recommended. This recognizes that ecosystems provide a wider variety of services than just providing resources (fish, oil, minerals), such as regulating services (waste detoxification, nutrient regeneration, carbon sequestration), production services (oxygen), future options (biogenetics, biotechnology) and cultural services (aesthetic and existence values). Attempts should be made to value and balance these services with a longer-term perspective, before taking decisions that may affect or alter those ecosystems²⁸.

If the existing environmental legislation does not cover social, cultural and health impacts, it is recommended to modify that legislation or to require a separate Health and Social Impact Assessment, and to include provisions to ensure that any human rights implications are identified. Key to ensuring that EIA addresses all values that might be affected by an activity is to define ‘environment’ broadly so that it encompasses all factors of concern, as well as those relating to geophysical and biochemical properties, flora and fauna.

Examples of definition of ‘environment’ can be found in legislation from other jurisdictions, e.g.

New Zealand’s Resource Management Act 1991: “environment includes

- (a) Ecosystems and their constituent parts, including people and communities;
- b) All natural and physical resources;
- (c) Amenity values; and
- (d) the social, economic, aesthetic, and cultural conditions which affect the matters stated in paragraphs (a) to (c) or which are affected by those matters”

In the Espoo Convention⁸⁹ on Environmental Impact Assessment in a Trans-boundary Context “impact” means any effect caused by a proposed activity on the environment including human health and safety, flora, fauna, soil, air, water, climate, landscape and historical monuments or other physical structures or the interaction among these factors; it also includes effects on cultural heritage or socio-economic conditions resulting from alterations to those factors.

⁸⁹ Espoo Convention, <http://www.unece.org/fileadmin/DAM/env/eia/documents/legaltexts/conventiontextenglish.pdf>; retrieved 14 September 2013.

In the ISA Mining Code, relating only to the Area (where no people are in the vicinity), “marine environment” is used, and is defined as including the physical, chemical, geological and biological components, conditions and factors which interact and determine the productivity, state, condition and quality of the marine ecosystem, the waters of the seas and oceans and the airspace above those waters, as well as the seabed and ocean floor and subsoil thereof.

It is anticipated that States will already have in place EIA requirements and laws.

Terrestrial impacts of DSM will in many cases be governed by this existing national environmental legislation; however, the impacts of DSM that occur within the ocean will differ from the impacts of associated activities on land. Where relevant existing EIA legislation is already in place, the DSM legislation could incorporate the EIA requirement, by reference to existing national legislation and EIA requirements and processes, but may also need to amend the existing regime, to ensure that DSM activities and its likely effects are appropriately covered.

An effects-based or impact-specific approach (rather than an activity-specific approach) can be a good model for an EIA requirement. DSM exploration is a staged process, which may have almost no impact in early evaluation stages (and which does not necessarily result in mining). In an effects-based model the project is assessed by its potential impact, and not categorized according to the description of the activity. This means that a lower-impact activity or one with well-known effects would require less information and analysis than a large-scale and novel activity – and as impacts of the activity change and/or increase, the requirements change accordingly.

An effects-based approach: (i) avoids generalization about the types of activities that may be undertaken; (ii) accommodates the possibility that some deep seabed scientific research and/or exploration activity may not have significant environmental impacts; and (iii) takes into account that the ability to mitigate adverse effects/impacts of certain activities will improve over time.

Accordingly, it would be proportionate and reasonable for assessment requirements to be relative to scale and effect; for example, requiring an EIA in some circumstances and no EIA in others, or alternatively requiring:

- a comprehensive EIA (following a set template and incorporating extensive stakeholder consultation and public participation provisions) where a DSM project's potential impact is 'significant';
- a lighter EIA (following a shorter set template and with a quicker process) where a DSM project's potential impact is 'minor'; and
- the filing of a form and an undertaking from the operator, where a DSM project's potential impact is 'insignificant' or 'de minimis'.

One international example of this is in the Madrid Protocol on Environmental Protection to the Antarctic Treaty, Article 8 and Annex 1, which, following initial environmental evaluation, allows activities that will have a less than a minor or transitory impact to proceed; allows activities that will have a minor or transitory impact to proceed with monitoring measures in place; and requires comprehensive EIA processes for activities that are evaluated to be likely to have more than a minor or transitory impact.

A DSM-specific example can be found in the approach that the ISA is developing that defines a maximum area (which varies depending on the mineral resource) that can be sampled, before an EIA is required. Equally, as all potential DSM mining effects may be difficult to anticipate; and where there are some activities that by virtue of their nature, size or location will always have significant impact (e.g. exploitation of DSM within national jurisdiction), the State may wish expressly to specify in the legislation that those activities are presumed to require completion of a comprehensive EIA. Given that DSM activities will take place in lesser-known environments, and are novel in nature and new to regulatory oversight, it would be inadvisable to make early assumptions regarding a lack of impact, and the precautionary approach in this regard is emphasized. The specific meaning of those terms related to impacts/effects must be defined in the DSM legislative or regulatory regime. For example 'impact' may mean: 'the direct or indirect effect of any aspect of a project from design through to completion on human beings, fauna (including microfauna), flora (including microflora), biological diversity, soil, water, air, seabed, climate, the landscape, material assets, community structures, living standards, cultural heritage, or the interaction between any of these elements'. Risk to rare, endemic and endangered species, both those known (marine mammals, turtles, reptiles, sea birds); and those as yet unknown to science (insofar as possible) should also be factored in. The State's Regulating

Authority should verify the DSM operator's primary analysis of potential impact. Where there is doubt or uncertainty, a cautious approach should be adopted.

The national DSM legislation, and the regulations made under it, may wish to specify the particular format of the EIA required for each DSM activity. Useful model templates are currently being prepared by the ISA – see the ISA's Technical Study 10 (<http://www.isa.org.jm/files/documents/EN/Pubs/TS10/index.html>). P-ACP States may wish to refer to, or adopt, this template in their national instruments.

The content of the EIA and the resulting statement must be sufficient to enable informed consideration of the actual or potential effect on the environment and other interests, such as social and human health conditions. For example the following may be required for a DSM project:

- a description of the project including information on its site, design and size;
- an assessment of the likely effects and impacts of the project;
- an explanation as to how that assessment has been reached;
- details of any consultation undertaken;
- a description of the measures envisaged to avoid, reduce or remedy anticipated adverse effects;
- the data required to identify and assess the main effects which the project is likely to have on the environment;
- an outline of the main alternatives studied by the operator (and the no-action option – for comparison) and an indication of the main reasons for the choice(s) made; and
- a non-technical summary of the above.

Kiribati may wish to seek independent review and assessment of the EIA report, and the legislation should make provision for this, and for related reasonable (e.g. capped) cost recovery, whose terms are set out in advance in the legislation or regulations.

There are no established best practices for DSM work yet. International law requires the precautionary approach to be applied by States engaging with DSM activities, as there is a very low level of information held currently about the deep seabed environment, and the new technologies that may be implemented for DSM activities and its effects on that environment. In

relation to the Area, the ISA's Mining Code provides that "In order to ensure effective protection for the marine environment from harmful effects which may arise from activities in the Area, the Authority and sponsoring States shall apply a precautionary approach, as reflected in principle 15 of the Rio Declaration, and best environmental practices."

Principle 15 of the (non-binding) Rio Declaration⁹⁰ is a common starting point for defining the precautionary approach: "Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation." The Seabed Disputes Chamber of the International Tribunal of the Law of the Sea has recognized the customary law value of the precautionary approach (ITLOS Advisory Opinion⁹¹).

The basis of the 'precautionary principles' advocates that positive action to protect the environment may be required before scientific proof of harm has been provided. It can be seen then that there are two factors necessary to trigger the precautionary approach: (1) potential for harm; and (2) uncertainty about causality or magnitude of impacts. Adopting the precautionary approach enables decision-makers to justify their decision-making on the information that is available but where there is an absence of complete scientific evidence upon which to base that decision. Precaution may be defined as caution in advance; caution practiced in the context of uncertainty; or informed prudence. Precaution introduces a shift from a culture of paying compensation for damage caused, to a decision-making framework that rather avoids the occurrence of irreversible damage. The precautionary approach does not necessarily prevent activities with unknown effects from proceeding, but rather it requires that if they proceed, they only do so with caution; and cognizant of unknown potential impacts, with appropriate checks and risk-minimizing controls in place. Precaution includes seeking out and evaluating alternatives to the proposed action. Ongoing monitoring and research is also an essential component of the precautionary approach, with a view eventually to moving into more scientifically-certain risk management mechanisms.

⁹⁰LOS Convention, art 235(2).

⁹¹ Ibid, n 40

The precautionary approach⁹² requires an assessment of possible harm that is considered unacceptable, and the implementation of interventions proportionate (with specific regard to cost) to the desired level of protection and the magnitude of that possible harm. Science can estimate a risk level within a certain range of error but cannot tell us what level of risk is socially acceptable. Decisions made by applying the precautionary approach therefore cannot appeal solely to scientific or technical information for justification but must also align with social norms and values about what harm is considered acceptable. A public participatory approach to decision-making about DSM⁹³ is recommended. Social debate will be necessary to assist Government determine the relevant social values that underpin the precautionary approach, and to determine what costs are proportionate to the benefits expected.

While the Rio Declaration's statement of the precautionary approach uses the term "serious or irreversible damage", the (binding) LOSC (and the ISA's Mining Code) employ the term "serious harm to the marine environment" in some contexts; and elsewhere the LOSC uses: "serious and harmful"⁹⁴, or "major harm"; and otherwise the terms "harm" or "harmful"⁹⁵. It is recommended that national legislation select and use consistently one of these terms from the legally binding instruments. Also, to provide a definition of that term, which is likely to require that such thresholds will be informed by scientific evidence— and may include considerations such as: provision of ecological space and margins for error; recognition of the well-being and interests of non-human entities; a shift in the burden of proof onto those who propose change; concern for inter-generational impact on future generations; and recognition of the need to address ecological debts.

Precaution shifts the burden of proof as to the effects of the DSM activity to those who wish to carry out the activity (and who are also best-informed about it): the DSM operators. The legislation therefore should apply the precautionary approach by requiring decision-makers to take into account the best available information; to identify any uncertainty or insufficiency in the information available; and to exercise caution when the information is uncertain or insufficient (remembering that the absence of information or certainty does not necessarily imply

⁹² Ibid, n 40

⁹³ (as detailed in section 16 – and in Principle 10 of the Rio Declaration)

⁹⁴ (e.g. Article 206)

⁹⁵ (e.g. Article 1(4) or 145)

the absence of knowledge). Where there is a possibility of an adverse effect, the provision of evidence that the nature or extent of this will be acceptable should rest with the DSM

Inter-generational equity raises the issue of the allocation in time of natural resources – that is the principle that resources should be preserved today that will have a higher value later.

An interesting formulation, which takes into account both impact and probability, can be extrapolated from the definitions section of the International Law Commission’s 2001 Articles on the Prevention of Trans-boundary Harm from Hazardous Activities, as follows: “‘risk of causing significant harm’ includes risks taking the form of a high probability of causing significant harm and a low probability of causing disastrous harm”.

The operator (i.e. the company carrying out the activity), who should demonstrate safety to human health and ecosystems; take financial responsibility for precautionary behavior; undertake continuing monitoring of activities to remove the remaining uncertainties; and distribute findings. The decision that it is acceptable to proceed on the basis of that evidence should rest with the State (through the Regulatory Authority), who also will bear the responsibility of verification, normally achieved through peer review of EIA and careful independent monitoring of information supplied by the operator during the currency of the mining activity. Measures should be imposed to avoid, remedy or mitigate potential adverse impacts/effects.

3.1.2. Environmental planning

Implementation of a comprehensive environmental plan for a State’s marine area is another potential tool to assist effective protection of the marine environment from harmful effects that may arise from DSM activities, as required by the LOSC. A DSM legislative regime may make provision for the preparation of strategic environmental management plans where there is an adequate degree of knowledge concerning the areas in question, or where a location-specific approach is required (e.g., where there is intensive existing use of a specific area, or the presence of specific or ecologically sensitive areas that require protection, or a pre-existing marine protected area regime). Given the very poor knowledge of deep-sea ecosystems, applying the precautionary approach to management suggests designating areas covering a wide variety of habitats and depths for conservation, and allowing for adaptive management as more knowledge

is generated (most likely through the commercial use of resources, e.g. through activities by DSM operators). Plans should be drafted in a flexible and transparent manner, so as to enable improvement as more scientific, technical and environment baseline and resource assessment data are supplied by DSM operators and other relevant actors. Historically, marine and coastal resource management have been characterized by single- sector approaches (addressing quite separately, for example: fisheries, offshore extraction of aggregates or petroleum, aquaculture, shipping, marine pollution etc.) with jurisdiction falling to different levels of government. In developing policies for DSM activities – a new use of marine space – integrated governance, based on the concept of ‘the ecosystem approach’, is strongly recommended. Activities of different sectors may mitigate or enhance the impact of others; therefore all activities need to be considered cumulatively, in a comprehensive management plan. Ecosystem-based management seeks to consider together all uses and industries that affect an ecosystem.

Ecosystem-based oceans management strategies, laws and regulation for DSM mining would include provisions for:

- collection of adequate baseline information on the marine environment where mining could potentially occur;
- establishment of protected areas where there are vulnerable marine ecosystems, ecologically or biologically significant areas, depleted, threatened or endangered species, and representative examples of deep-sea ecosystems; and
- adoption of a precautionary approach that, in the absence of compelling evidence to the contrary, assumes DSM mining will have adverse ecological impact.

A number of spatial management tools exist, which States may wish to consider, or seek further advice upon. It has been suggested that States could choose to set aside a small percentage of their total revenue from DSM projects, in order to establish a trust fund for meeting the costs of properly upholding these environmental standards.

It is also an international law requirement of States involved with DSM activities to ensure the employment of ‘best environmental practice’, which can be summarized as “the application of the most appropriate combination of environmental control measures and strategies” (adopting wording used in the 1992 Convention for the Protection of the Marine Environment of the North-

East Atlantic). It generally refers to widely accepted norms or customs of environmental and risk management. The concept originally focused upon technical and physical aspects (also known as ‘best available technology’) but has since evolved to take into account a wider remit of concerns for social, community and gender issues.

National legislation does not have to reflect the specifics of best environmental practice as long as the principle of best environmental practice is reflected as a statutory requirement. This requirement is provided in relation to the Area by the ISA Mining Code and the ITLOS Advisory Opinion; and can be seen to apply equally to national jurisdiction through Article 208 of the LOSC, which requires Coastal States to adopt laws and regulations to prevent, reduce and control pollution of the marine environment arising from seabed activities within national jurisdiction, which are no less effective than international rules, standards and recommended practices and procedures, such as the Mining Code.

This enables best environmental practice to evolve over time and to adapt to specific scenarios. A proportionality element may also be included, such that the DSM operator is required in all activities to employ best environmental practices, including the best available technologies, for the protection of the marine environment and for the prevention, reduction and control of pollution and other hazards to the marine environment arising from its activities, except where the State Regulating Authority determines that the incremental benefits are clearly insufficient to justify the incremental costs of using such methods or measures.

It should be established by the legislation, regulations and license documentation that, not only is the DSM operator’s obligation to satisfy the requirement of best environmental practices, but also to provide the State (via its Regulating Authority) with reporting information to confirm that best practices are being employed. (Also, to update the Regulating Authority as they adopt better technology or methodologies, during the term of the license. What constitutes ‘best environmental practice’ is likely to evolve throughout the duration of the operation, and the duty should be a continuing one). The Regulating Authority’s obligation will be to verify (either in-house or through independent peer review) that the information supplied by the DSM operator confirms that it is adhering to best environmental practices.

Best environmental practice will invariably be determined by the specific DSM activities involved and will be proportionate to their risk and scale. Best environmental practice should be incorporated into the license terms, and the Regulating Authority's decision-making framework. It also requires open reporting and verification in the field (e.g. by use of independent observers) that best environmental practice is being followed. Examples of best environmental practices in the context of DSM would be:

- following the guidelines and recommendations of the ISA, as a minimum;
- to adopt a series of control strategies to protect the marine environment – including biodiversity offsets (e.g., buffer zones or protected areas) where environmental damage is unavoidable;
- to require from DSM operators use of the best technology for assessing the environment with minimal environmental impact (e.g., the use of autonomous underwater vehicles (AUVs) for mapping and monitoring, and remotely operated vehicles (ROVs) for sampling and imaging);
- engaging the right expertise and capacity building through establishing partnerships and collaborations;
- standardization of methods and robust information management (e.g., good data archiving and access and following best practice designs for environmental surveys); and
- submitting scientific and technical information to the CBD Secretariat's repository on ecologically or biologically significant areas.

3.2. Adaptive management

The term adaptive management, which can simply be described as 'learning by doing' – is appropriate where there is uncertainty (as is the case with DSM activities) and can aptly be a means by which States like Kiribati can utilize in pursuit of applying the precautionary approach. An adaptive management approach allows activities to proceed, provided they are carefully monitored and adjusted as information improves. Where no established practice exists, an adaptive management approach allows the DSM operator to fill the vacuum with a novel methodology. It can be implemented through ongoing monitoring and assessment of the operator's activities, and by amending or improving the plan of work (including methods of

mitigation) in cases where new information requires changes in approach. An adaptive management approach should also feed into policy and law development, as the regulatory framework for DSM is likely to require ongoing amendment as new scientific knowledge is obtained, and practical experience developed.

Other examples of how the precautionary approach might be incorporated into DSM decision-making include the following:

- Comprehensive baseline research requirements in the exploration/mining license, e.g., on the rate of encounter of new species per sample collected, or on genetic studies of species at the proposed mining sites.
- Regular reporting of data on environmental impacts (e.g., levels of emissions like noise, light, sediment plumes, and invasive species), and pre-emptive action (e.g. use of best available technology) to avert serious harm to the marine environment.
- Creation of marine protected areas in proximity to the mining footprint
- A requirement to introduce aspects into the DSM mining methods which encourages regeneration of biota.
- An incremental approach to a DSM activity where impacts are uncertain, e.g., staged work programs, that allow activities to be scaled up or down or cancelled, depending on observed results, or permitting trial mining (or validation sampling) on a small scale, rather than immediately authorizing commercial-scale activity.

3.3. An equitable fiscal regime

It is recommended that Kiribati should develop a tailored and comprehensive policy on the fiscal regime to be applied to DSM activities (i.e. the application of taxes, royalties, fees, levies and other fiscal impositions that determine how revenues are shared between the State and investors), and how the State's share of money raised from deep sea mining will be managed³⁶.

Arrangements for the fiscal framework must balance international competitiveness (in order to attract and sustain foreign company interest in that State's DSM resources) with benefits for the host country – recognizing (for DSM exploitation within national jurisdiction) that Kiribati should be compensated financially for the loss of finite resources. This is not an easy balance to

strike. It is also challenging to design a tax system for an emerging industry, whose viability is not yet established – to some extent at this early stage there will need to be some guesswork about the economics. This should be a particularly challenging feat for Kiribati, given its ‘developing state status’ and the level of competence in which its current fiscal regulations are in. But some merit for encouragement should be emphasized here, given that unlike the extended CS and in the Area, fiscal terms for the mining of a coastal State’s DSM within the 200 nm jurisdiction boundary are solely a matter for national governments to decide (LOSC, art 56). States will need to examine the different fiscal models available, and determine which model(s) to apply in their DSM regulatory regime, taking into account established practices in that State, the pioneering nature of DSM activity, and that DSM operators will be seeking profit from their endeavors, however the decision on which model is most appropriate for the Country is solely a decision for the Government itself. This may include raising funds from DSM operators through: royalties, income and withholding taxes, additional profits taxes, production levies, payments to a community development fund, import/export duties, and/or taking an equity stake in the operating company (which may support additional non-financial objectives, such as transfer of technology, or training and employment opportunities). Conversely, provision of certain incentives such as tax breaks or exemptions may also be considered appropriate to encourage new or sustained investment in the sector or the development of new technologies to enable exploration in previously inaccessible places. These measures may be profit-based or production-based. Profit-based taxes may not yield revenue for States for some years; production-based taxes may be raised sooner in the life of a Project and can be easier to collect – but may be less popular with DSM operators, as production may take place in non- profit-making or loss-making years.

A fiscal regime must be adapted to the specific requirement of the Kiribati Government, and will also need to integrate with the State’s other established fiscal regimes. It is suggested that Kiribati may wish to set a fiscal regime that will work to attract global mining capital (which may be otherwise directed to alternative jurisdictions) – but it should also be guided by international best practice, and what has been deemed to be a competitive fiscal regime in related areas (particularly terrestrial mining) – while recognizing that certain adjustments will need to be made to apply such models to DSM, in particular to avoid the problems encountered with the phosphate mines in Banaba. In particular, at this time before commercial DSM mining has

commenced and proven profitable, it should be taken into account that DSM is a new, start-up industry (and not an established one, like terrestrial mining), and that the risk and return profile is currently unproven. DSM mining requires, inter alia: high exploration risk, high capital investment, development of sophisticated machinery and technology, and sensitive environmental impact and stakeholder scrutiny – all before any extraction occurs. The cumulative effect on one operation of the whole tax regime (including any upfront fees and/or financial bonds required) should be taken into account. Non-monetary benefits (such as developments in national infrastructure, business, employment or technology) and the ripple effect of these on a State's economy may also be relevant factors in designing the fiscal regime.

Key objectives for a competitive fiscal regime should:

- be stable, predictable, equitable, and transparent in its application: to the State, the public and to the DSM operator and its investors;
- be established by law;
- support macro-economic stability;
- provide sufficient returns to investors to encourage continued financing and development of the industry;
- recognize non-monetary contributions to the State's development arising from operations (e.g. infrastructure, employment, industry diversification etc);
- encourage further exploration and expansion, including further value-adding (e.g. downstream processing); and
- recognize the volatility and particular nature of the minerals commodities markets.

At the same time, one important feature of an adequate fiscal regime is its progressivity⁹⁶. A progressive regime ensures that the Government will be in a position to capture a higher share of fiscal benefits generated from DSM activity as a project's profitability increases. Conversely it acts in the operator's favour, when a mining project becomes marginal due to high operation costs and low commodity prices. Rent capture may also be an element of the taxation regime⁹⁷.

⁹⁶ Ibid, n 26

⁹⁷ Ibid

‘Resource rent’ is defined here as any financial return that is surplus to the level of return actually required to motivate an investor to invest⁹⁸. Such excessive profit may arise due to unexpected hikes in commodity values, or unanticipated grades of metals in exploited deposits, that are not otherwise captured by the fiscal regime. Resource rent (or ‘excess profit’) tax is designed so that any bonanza profits for the DSM operator will trigger higher tax take for the State. It recognizes that the company would be earning the required rates of return to motivate their investors, without such excessive profits. Companies and their financiers are likely to advocate against resource rent tax, arguing that they should be entitled to capture any bonanza (‘super- profits’ as a reward for the ‘super-risk’ of investing in this pioneering industry), and conversely to seek protection mechanisms within the fiscal regime, for any downside. Simplicity in the tax regime is also desirable – particularly in States where there may be low administrative capacity to calculate, collect and audit the sums due. It may be feasible for States to use its general tax system, incorporating a few DSM-specific features. Some Governments have faced difficulties in deciding whether to open up to resource extraction before a well- structured, well-staffed fiscal system is available, or whether to wait until everything is in place before seeking foreign investment. Given the scale of investment that will be required for most projects, it can be expected that investors will request stabilization of their fiscal terms, at least for a defined time period. The State may prefer to limit such ‘stabilization’ to the period of investment recovery, and/or to charge for it, for example, by linking the stabilization to extra percentage points of royalty. In any event it is important to establish a balanced fiscal system before authorizing operations. This may be especially tricky if upfront fee payment from mining applicants is intended to fund the establishment of a fiscal system. While leaders may consider a large upfront payment enticing, care must be taken that a long-term perspective is used to devise a system that will benefit the nation. The system chosen must also be practically capable of administration and implementation by the State’s tax authority. The efficiency of tax administration, the operation of a judicial forum at which tax disputes can be resolved, and the system for remitting tax refunds will also have a significant impact on the overall investment climate in a State. Strengthening the fiscal system and building public financial management and implementation capacity will be important to cope with potential increases in revenue from DSM, and will come with experience gained over time.

⁹⁸ Ibid, n 26; Onorato, William, 1999.

There are generally two alternative methods of setting a fiscal system for an extractive industry project (as outlined in the RLR⁹⁹): (1) by a project-specific negotiated contract, or (2) in a unilaterally applicable legislation. While it may seem desirable in setting the fiscal regime to provide significant leeway for negotiation on individual projects, this can expose a State to risk of striking a bad bargain. This is particularly likely if the State has a weak or new mining administration, with limited knowledge of the relevant economics and engineering, and so poorly placed to engage in complex negotiations with DSM operators over fiscal terms. The project-specific approach can also be administratively burdensome and lacking in transparency, and may have a weakening effect on institutional checks and balances. DSM operators may also be reluctant to enter into a contract where volatile political systems may lead to subsequent demands by new political leaders to re-negotiate. Therefore a suitable approach is likely to be to have a largely fixed regime, to secure a minimum acceptable level of ‘take’ for the State, while offering incentives for risk-taking by DSM operators and their financiers, so long as this is balanced by a progressive fiscal arrangement to capture part of any upside arising when mineral prices are high, or a particularly rich deposit is exploited.

Regional co-operation with regards to DSM fiscal matters would assist in situations where deposits may be trans-boundary, or – given the mobile nature of DSM operations – where a mining vessel and equipment may move from one jurisdiction to another. In the latter situation the assets may have been written down due to depreciation in one jurisdiction (and the tax benefit claimed) and then moved to another jurisdiction, where the operator may seek to write up the value of the asset, in order to obtain a second tax break on the same equipment. Cross-border co-operation and information-sharing would assist in addressing any such potential tax avoidance. Regional co-operation in setting fiscal regimes is to be recommended²³. Some States may have existing rules that place restrictions on foreign investment (or expatriate staff). Consideration may need to be given to amending such regimes where this may be necessary to provide an environment that is conducive to DSM activity funded by overseas companies and investors.

⁹⁹ Ibid, n 26

3.4.1. Fiscal regimes specific to the continental shelf

It is important to highlight that Kiribati also needs to establish fiscal regimes that relate to other jurisdictions beyond its maritime zone, such as potential areas of extended CS and for ‘the Area’. This is because Kiribati has potential claims for eCS, in regions adjacent to the Clarion-Clipperton zone; and that it is sponsoring a State entity that will conduct DSM activities in ‘the Area’. It is particularly interesting to note that while States enjoy sovereign rights over the minerals on any areas of outer CS claimed beyond 200 nm from the coastal baseline; they are required by the LOSC Article 82 to make payments and contributions to the ISA for exploitation of the non-living resources of its extended CS. This requirement will need to be taken into account by a State intending to offer mining tenements on its extended CS, in any financial modeling performed to underpin the setting of a fiscal regime for DSM. Payments and contributions are to be made annually at the rate of one percent on the value or volume of all production, commencing on the sixth year of production, and increasing by one percent per year until the rate reaches seven percent on the twelfth year, and thereafter remaining at seven percent²⁵. The ISA is tasked to distribute the payments and contributions to State Parties in accordance with equitable criteria, taking into account the interests and needs of developing States, and in particular the least developed and land-locked States, and peoples who have not yet achieved full independence or other self-governing status. However it should be noted that Article 82, lacks the specifics as to how this unique and complex provision is to be accomplished and carried out.

3.4.2. Fiscal regimes specific to ‘the Area’

In relation to the Area (as opposed to seabed within national jurisdiction), the LOSC designates the mineral resources as the “common heritage of mankind”²³. Implicit in this is the notion that the benefits of deep seabed mining are to be shared for the benefit of mankind as a whole, irrespective of the geographical location of States. It is not yet established how this will work in practice. The ISA is empowered to establish the financial terms for the DSM operator’s payments to the ISA, as well as rules and procedures for the equitable sharing of financial and other economic benefits.

The LOSC contains detailed and prescriptive provisions on the financial terms of deep seabed mining between the ISA and the DSM operator, involving the payment of a production charge based on a percentage of processed metals produced. These provisions proved to be contentious, however, and were removed as a consequence of the 1994 Implementation Agreement. The ISA is required instead to develop a fiscal regime on the basis of general principles set out in the 1994 Agreement. These general principles include, inter alia, that the system of payments to the ISA shall be fair to both the contractor and the ISA and shall provide adequate means of determining compliance; that the rate of payments shall be within the range of those prevailing in respect of land-based mining; that the system should not be complicated; and that an annual fixed fee should be payable. The ISA commenced work on the fiscal regime in 2011 with a view to putting a system in place by the time commercial deep seabed mining is expected to commence.

These financial arrangements between the ISA and the contractor do not include in their scope payments from the contractor to the sponsoring State. This fiscal regime must be set separately by the State, but should take into account the funds already required to be paid to the ISA by the contractor. These include an application fee (currently US\$ 250,000 for a nodule application

The DSM Project intends to develop a regional DSM fiscal policy that will include a number of fiscal regime options from which States can choose. This regional fiscal policy is adaptable to suit each State's comparative advantages, fiscal structure and mineral endowment.

In setting the terms of the sponsorship agreement, the State will wish to assess whether the benefits to the State of sponsorship will adequately compensate for the potential burden and risk of that sponsorship. The seabed resources of the Area are vested in mankind as a whole, of which the State is a part— but the State does not have sovereign rights over the resources of the Area and so cannot expect financial compensation for the resources extracted, in the same way as for those extracted from within its national jurisdiction over which the State does have exclusive rights.

When DSM revenue is forthcoming, responsible management of these funding streams is paramount in order to secure the development advantage that States hope to obtain from this new industry. Companies themselves attach increasing importance to the capacity of a host Government to use revenues effectively and transparently, to avoid objection to mining

operations at a local level by communities perceiving a lack of benefit to the country in return for the extraction of its resources.

A protected savings fund is to be recommended. Examples of such funds working in practice to support sound management of revenue generated from extractive industries can be found in a number of jurisdictions, including Alaska, Canada, Norway, and more recently in Timor Leste³⁶. In the Pacific region, both Papua New Guinea and Nauru have experimented with such schemes, albeit being considered to have done so unsuccessfully; it would be remiss not to note that valuable lessons can be learned from their experiences. Protecting saved revenue is not always easy. It is advised to have a separate funding vehicle for savings that is governed by non-discretionary rules, so that Governments are not pressured to spend these savings. Most States with such savings accounts place at least some of the funds in overseas investments that provide a steady, and – it is hoped – permanent, income for the nation. If such a fund is used appropriately (with money being deposited when prices are high, and withdrawn when prices are low) it can protect against mineral resource price fluctuations. The use of such a fund also keeps the majority of the revenue out of the local economy, thus avoiding excessive inflationary pressure (and Dutch Disease); and safeguarding funds for future generations.

Setting aside revenue for future generations need not preclude immediate investment in infrastructure and socio-economic projects. Using State revenue from DSM to fund work that improves health care, education, roads, technology, and the like, while mining is taking place, also allows for investment for future generations. This is particularly a possibility given that it is envisaged that the activities in the Clarion Clipperton zone (CCZ) are to commence sooner than activities within Kiribati waters, and given the proximity of the CCZ to Christmas Island in the Line Islands of Kiribati, it would be a proactive incentive to allow for policy deeming that the resources be processed onshore at Christmas Island, allowing for the possibility of such immediate investment in infrastructure and socio-economic projects.

It is also been suggested that Kiribati could choose to set aside a small percentage of their total revenue from DSM projects, in order to establish a trust fund for meeting the costs of properly upholding marine environmental standards within its EEZ, again avoiding the pitfalls of what was previously experienced with the phosphate mining in Banaba.

How the income will be managed, and by whom, should be a matter of published policy before DSM operators are licensed to mine. If the income is large, it may be appropriate at least initially to use the services of professional money managers to ensure that funds are wisely invested and yield a steady income for national expenditure. States are also encouraged to comply with the Extractive Industry Transparency Initiative (EITI)¹⁰⁰. This is a global standard that promotes revenue transparency by using an agreed methodology for monitoring and reconciling company payments and government revenue from extractive industries (i.e. mining, oil and gas). Companies publish what they pay and Governments disclose what they receive, and a multi-stakeholder working group engages independent auditors to reconcile the two³⁶.

Kiribati should also allow for provisions to publish (and have verified) information about all payments derived from mining revenue and their onward use of such revenue (not just its receipt) – sometimes referred to as ‘EITI-plus’. Adherence to such transparency initiatives benefits companies and investors by reducing political and reputational risks, and demonstrating the contribution that their investment makes to a country. State commitment to greater transparency can improve levels of confidence and trust between people and their Government, and avoid potential civil tension arising around the DSM sector. A more elaborate discussion on how such incentives and initiatives could be carried out is outlined in the outcomes of several key workshops conducted in 2011 and 2012, and in which all Government departments participated and contributed.

3.5. Social impacts

3.5.1. Public participation and engagement

There are many reasons why it is recommended for States to engage citizens, communities and interest groups in development of public policy and consideration of applications for DSM activities. These include the notion that public participation is likely to:

- ensure that all relevant information is taken into account;
- enhance the effectiveness of the policy and decisions taken under it;

¹⁰⁰ Aarhus Convention; and the Extractive Industries Transparency Initiative- Promotion of transparency and accountability, including with regard to revenues; Ibid, n 26

- enhance public knowledge, understanding and awareness, and enable stakeholders to hear each other and to understand the range of views on an issue;
- increase the likelihood that the policy will be implemented with public consent and commitment;
- demonstrate governmental openness and transparency, to encourage trust and avoid conflicts;
- identify priorities, and possible trade-offs or partners; and
- meet legal, policy, and good governance requirements.

Principle 10 of the Rio Declaration⁴² provides that “environmental issues are best handled with the participation of all concerned citizens, at the relevant level. At the national level, each individual shall have appropriate access to information concerning the environment that is held by public authorities, including information on hazardous materials and activities in their communities, and the opportunity to participate in decision-making processes. States shall facilitate and encourage public awareness and participation by making information widely available. Effective access to judicial and administrative proceedings, including redress and remedy, shall be provided”.

Although DSM mining, likely to be operating far offshore, is unlikely to face the same landowner issues as many land-based projects, there is still a need to ensure the protection of human rights of local communities (particularly any who are identified by the EIA as potentially affected by the DSM activities or to have traditional rights over resources), including their right to free, prior and informed consent. It should be affirmed that any proposed project to exploit DSM resources will not impinge, or will adequately compensate and contain due consent for any impact, on fishing and other customary rights and connections to the ocean or internationally protected human rights, including economic, cultural, social, political and religious rights. States are encouraged therefore to engage in a deliberate process to identify all and any customary marine tenure in their EEZ, in particular in areas overlapping with, or adjacent to, proposed DSM licenses. Although areas to be directly affected will be largely outside of customary fishing areas, particular care should be taken to avoid conflict with customary fishing rights (which may include coastal waters and surrounding reefs) – for example by obtaining the agreement of local Councils or traditional leaders to DSM activities occurring off their coastal areas.

Affording interested parties and local communities appropriate opportunity to participate in DSM policy and law development upfront is likely to lead to better-informed and more durable decisions. The responsible Ministry should therefore publicly notify its intention to develop the legislation and subsequent regulations, in order that interested parties are aware of the process. Adequate time and opportunity to seek comment from the public, relevant persons and organizations, and other government departments should be allowed. National regulations that address the content of the EIA required for DSM activities may wish to include provision for early identification of, and consultation with, interested or potentially affected persons and communities.

The establishment of independent Citizens' Advisory Councils³⁶ can be an effective means to provide legitimate, informed, effective citizen engagement and monitoring over the life of DSM projects in national waters. These can provide an advisory function, with representatives (selected by the constituency, not by government or industry) of all major concerned and potentially affected citizen stakeholders (e.g. commercial fishing, tribal entities, tourism, women's groups, conservation organizations, local government and others). A Citizens' Advisory Council may even be able play a role in contributing to, and informing, the State's function to monitor DSM activities (e.g. through involving members in an onboard observer program).

Once policy and law have been established, appropriate public participation in operational implementation and decision-making is also important. This can be achieved through public notification of DSM applications, and providing opportunity to interested parties to make submissions and appear at hearings in respect of the licensing applications for DSM activities. Consideration should also be given to mechanisms to avoid delays or obstructions caused by purely vexatious or frivolous interventions.

3.5.2. Free Prior and Informed Consent

'Free prior and informed consent' (FPIC)¹⁰¹, is the principle that a community has the right to give or withhold its consent to proposed projects that may affect the lands they customarily own,

¹⁰¹ Tara Ward, *The Right to Free, Prior, and Informed Consent: Indigenous Peoples' Participation Rights within International Law*, 10 Nw. J. Int'l Hum. Rts. 54 (2011).

occupy or otherwise use. The right of FPIC is necessary to ensure a level playing field between communities and the government or companies and, where it results in negotiated agreements, provides companies with greater security and less risky investments¹⁰². FPIC also implies careful and participatory impact assessments, project design and benefit-sharing agreements. FPIC has been widely accepted in the ‘corporate social responsibility’ policies of private companies working in sectors such as dam building, extractive industries, forestry, plantations, conservation, bio-prospecting and environmental impact assessment¹⁰³.

“Informed consent” is generally understood as consent given with full knowledge of all the relevant facts, risks and alternatives to the proposed action that are necessary for an adequate understanding and in order to reach an enlightened decision. At a minimum this requires that the information be disclosed to the relevant persons sufficiently in advance of the proposed action, and in a culturally, linguistically and technically appropriate manner, adequate to enable them to understand it and reach an informed decision¹⁰⁴.

Given that FPIC is now a key principle in international law and jurisprudence related to indigenous peoples, such a concept should also be included in national policies- moreover given the well-publicized social problems that the Solwara-1 project faced with local communities in Papua New Guinea, including the wider Pacific and International communities.¹⁰⁵

3.6. Due regard to other sea users and impacts on fisheries

Surrounded by vast ocean spaces, the people of Kiribati rely for their livelihoods upon sustainable use of the sea and its living resources. DSM exploitation represents a new potential ocean activity, but it is important for the Government to ensure that it does not unduly interfere with the various existing uses.

Work by the Deep Sea Minerals Project of the SPC-SOPAC division has conducted various regional and local consultations in the Pacific, which revealed a primary concern amongst those

¹⁰² Ibid, n 92

¹⁰³ Ibid, n 92

¹⁰⁴ Ibid

¹⁰⁵ Ibid

consulted to be the potential for DSM to affect adversely fish populations¹⁰⁶. Regional instruments to which Pacific States are Parties also contain provisions relating to fisheries (e.g. LOSC Articles 61-68, the UN Fish Stocks Agreement, the Nauru Agreement and others, which will be discussed at length later sections of the thesis), and emphasize the importance to conserve such living resources, and to maximize their sustainable yield. Actually, the indication to date from DSM operators is that, due to the depth and pressure of their operating environment, the anticipated impact of DSM activities on fish (in the less deep water column) is extremely minimal. Given the prevalence of this concern, it is however recommended that a State plans carefully to identify and mitigate any such adverse effects on fisheries (both commercial and artisanal) and that the measures so taken are particularly emphasized by States in their stakeholder consultations and development of policy and law, and that DSM is managed so as not to encroach upon or threaten customary or other fishing rights.

Reassurance in this regard could be provided by:

- the drafting of national DSM legislation taking full account of, and complementing, existing fisheries legislation;
- EIA requirements that include in their scope potential impact on fish populations;
- an express requirement in the legislation or regulations that any adverse effect on fisheries must be taken into account in State decision-making about DSM activities; and
- a requirement that the DSM decision-maker collaborates with other ministries or branches of government with fisheries responsibility and expertise as well as with relevant regional bodies (e.g. the SPC and the Pacific Forum Fisheries Agency (FFA)).

Indeed each State's DSM regulatory framework should take into account assessment (and where relevant compensation for impacts) of DSM activities on all other sea users, such as: trade and commercial/artisanal fishery, shipping, traditional sea users, research, military endeavors, petroleum, transport and communication, energy facilities (e.g. solar, wave, nuclear), waste disposal plants, recreation and tourism, and cultural activities.

This would ideally be achieved through integrating policy and law for DSM and other sea uses under a single legislative or management regime. Such a regime would integrate the

¹⁰⁶ Ibid, n 26

environmental management (e.g. planning and EIA) of the uses and impacts of all activities that might take place within the EEZ.

It may be simpler and more cost effective for States to retain existing legislative regimes, rather than embarking on wholesale regulatory change. Therefore, alternatively, a legislative regime solely designed to govern DSM should be integrated with existing legal regimes for other sea uses, to ensure that decisions under one piece of legislation do not have unforeseen impacts on other sectoral interests governed by different legislation (e.g. fishing, energy, marine transport, tourism and culture). This is commonly referred to as a sectoral approach.

If a sectoral approach is maintained it will be necessary for EIA requirements under all legislative regimes to ensure there are mechanisms for identifying and assessing the impacts of one sector on other sectors governed by different legislation. One way of achieving this is to have an environmental planning and EIA regime that bridges new and existing legislation – an example of this approach is Fiji's Environment Management Act 2005.

In any event DSM decision-making should take into account, and mitigate, the potential for DSM activities to interfere with other sea uses, and particularly recognized sea lanes essential to international navigation or areas of intense fishing or tourism activity.

A provision should also be included in DSM legislation and/or licenses to require a DSM operator immediately to notify the Regulating Authority in writing of any finding in the State's jurisdiction of an object of actual or potential archaeological or historical nature, and its location, in accordance with the requirements of the LOSC (Articles 149 and 303).

3.7. Due regard to other States

Provision for consideration of trans-boundary impacts should also be included in national DSM legislation¹⁰⁷. For example, the licensing process should incorporate a requirement to provide timely information to another State who may be affected by proposed DSM activities, and an opportunity for that State to contribute information to the environmental decision-making

¹⁰⁷ LOSC Articles 58, 78, 79 and 246)- Duties not to interfere with rights and freedoms of other States, such as the installation of submarine pipelines and cables, and marine scientific research

procedures. The International Law Commission's Articles on the Prevention of Trans-boundary Harm from Hazardous Activities may be useful precedent in this regard.

Other States also have qualified rights in a State's EEZ and on its CS under international law. These include the right to carry out MSR; the right to lay international cables and pipelines; and freedom of navigation and flight through the air space, subject to the marine environmental requirements which also apply to them as State Parties to the LOSC¹⁷. Further 'high seas' rights will exist, where the DSM license applies to seabed that underlies international waters (i.e., the extended CS and the Area). These rights should be taken into account by the DSM regulatory framework, and should only be infringed or curtailed where permitted under international law.

3.8. Marine Scientific Research (MSR)

DSM operators should have 'exclusive rights' to the seabed under license. Nevertheless, States are obliged under international law to promote and facilitate the development and conduct of MSR by other States and international organizations. This is particularly important for Kiribati given that very little is understood of its offshore and deep sea environments, including limited geologic knowledge on its formation, etc, which are essential information that should be delved into and acquired. The regulatory framework for MSR is provided in the Environment Act, 1999, as amended 2007; however most of the schemes reflect the general provisions provided in the LOSC, and do not specifically reflect the current needs for scientific baseline data, including specific parameters. In any case, should any amendments be made, at the least, considerations should be made to the following issues:

- ensuring that the terms of any license to conduct DSM activities do not obstruct current or planned MSR initiatives; or that any such disruption is at least appropriately mitigated or compensated for (e.g. by making an equivalent site available for MSR activities).
- Given that DSM could be an opportunity to promote and facilitate MSR, requirements could be placed on, or incentives provided to the DSM operator to facilitate MSR; or by widely sharing the results of work equivalent to MSR that is carried out by the DSM operators (e.g. data gathered in the EIA process).

- Specifically wording the terms of the national DSM regulatory requirements so that activities that are deemed to be MSR are not inadvertently caught within the provisions and processes (and fee structures) designed specifically for commercial DSM activities, insofar as the State does not intend to apply the same rules to MSR operators.

It is also interesting to note that the term ‘Marine Scientific Research’ is not defined by the LOSC, so it poses a challenge to effectively determine MSR from other activities, and it has been observed that it may be very difficult to distinguish in practice between MSR and commercial exploration, as the processes and impacts may be the same. Taking an effects-based approach, MSR operators should not be treated differently from commercial DSM operators in relation to environmental management requirements. MSR operators may actually be affiliated to DSM operators. In the event that planned MSR activities may cause adverse impacts on the environment or other sea uses, it is appropriate (and required under the LOSC) for the same EIA provisions and risk-based decision-making processes to apply. It is important to avoid setting up a dual system, which could encourage MSR activity to be used as a ‘front’ for commercial exploitation, to avoid regulatory requirements imposed on DSM operators. Coastal States may in their discretion withhold their consent to the conduct of a MSR project within their national jurisdiction in certain circumstances, for example if that project is of direct significance to DSM work, e.g., its results would inform the status and availability of DSM for commercial exploitation, or if it involves drilling into the CS or the introduction of harmful substances into the marine environment.

3.9. Occupational health and safety

DSM activities will operate in challenging conditions. The surface production vessel is likely to be remotely located – far from land, infrastructure, or other vessels; and exposed to potentially hostile conditions and weather events. The technology employed will be novel, the water depths extreme. Securing the health and safety of employees and contractors and visitors of DSM operators is of paramount concern.

International shipping law obligations will apply to vessels used in DSM operations. This will be relevant both to the conduct of operations in national jurisdiction (by domestic and foreign-

flagged vessels) and beyond national jurisdiction (by flag vessels, by nationals, and under sponsorship of a State).

The LOSC requires State parties to ensure that ships flying their flag or foreign ships under their jurisdiction apply generally accepted IMO provisions regarding safety and prevention and control of pollution. The LOSC (Articles 58, 94, 217) also directly imposes upon State parties the obligation to ensure safety at sea with regard to (i) the construction, equipment and seaworthiness of ships; (ii) the manning of ships, labour conditions and the training of crews; and (iii) the use of signals, the maintenance of communications and the prevention of collisions. Such measures must include those necessary to ensure that each ship (i) “before registration and thereafter at appropriate intervals, is surveyed by a qualified surveyor of ships, and has on board such charts, nautical publications and navigational equipment and instruments as are appropriate for the safe navigation of the ship”; and (ii) “is in the charge of a master and officers who possess appropriate qualifications, in particular in seamanship, navigation, communications and marine engineering, and that the crew is appropriate in qualification and numbers for the type, size, machinery and equipment of the ship”.

It is presumed that States will each already have national legislation and procedures in place to incorporate these IMO Conventions and the LOSC shipping standards. States should ensure that any vessels involved in DSM activity, regardless of their flag, are captured by the existing legal regime. Evidence or undertakings as to the seaworthiness, manning, equipment, and navigation of those vessels involved in DSM activities (whether under the P-ACP State’s flag, or within the State’s EEZ under another State’s flag) can – again be taken into account in the DSM due diligence. Combined with this are requirements to adhere to appropriate standards in the DSM license, to ensure that vessels comply with principles of international law regarding the design, construction, alteration, repair, equipment, operation, manning, and maintenance, identification and mitigation of risk, hazard and incident reporting, staff training, drills and inspections, emergency preparedness and response plans and procedures relating to vessel and crew safety; and the promotion of safety of life and property at sea. Vessels involved in DSM operations (including subsidiary activities such as the transportation and transfer of fuel and/or ore) not conforming to those standards should be identified during due diligence or license monitoring processes and prohibited from sailing until they do comply.

States should also specifically include employee and visitor health and safety information as a mandatory criterion, before any license is granted. The license itself should contain provisions requiring the DSM operator to comply at all times with the prevailing national laws and procedures relating to occupational health and safety, employment security and labor laws.

PART 2 OF 2: LEGISLATION AND POLICY AT THE NATIONAL LEVEL

Introduction

This chapter of the thesis explores Kiribati's interest in Seabed minerals and the Government's position on how it can utilize such resources as a means to expand its economic resource base and obtain much required economic benefits, with as little environmental impacts as possible. The chapter will integrally discuss how Kiribati, from as early as the moment it gained independence, declared showed interest in developing these non-living resources for the benefit of its national development, as stated in its national development plans. The Chapter also defines the configuration of Kiribati's legal system, including relevant aspects of the 'Constitution of Kiribati' as applicable in regards to seabed minerals. It will also discuss the several instrumental events that have confounded the Government's plan to alleviate its economic vulnerability by paving an interest in seabed minerals such as the discovery of manganese and cobalt-crust resources within its waters; the portrayed decline in fisheries resources; and the establishment of the Country's first ever Seabed Mineral exploration entity (Marawa Research and Exploration Limited or 'Marawa') that looks to explore the seabed minerals of the Clarion-Clipperton Zone and conduct marine scientific surveys- an incentive that has been granted approval by the International Seabed Authority. Such events, as will be discussed in this chapter, directly setting the imperative criterion that Kiribati must develop its policy, legislative framework and regulatory regimes for seabed minerals, for the State to be effectively competent in regulating such activities.

Chapter 4: Kiribati and Seabed Minerals – opportunities for a developing state

The republic of Kiribati is a coastal State comprising of 3 groups of 33 scattered islands, the Gilbert, Phoenix and Line islands; stretching over 2000 nautical miles of the equatorial south Pacific, commanding an Exclusive Economic Zone of more than 3 million square kilometers (the second largest in the Pacific region after French Polynesia). Having a disproportionately larger ocean than land mass, the economy of Kiribati is heavily dependent on its marine resources, with fisheries being the most significant resource for Kiribati as a mainstay for food security, self-reliant livelihoods and economic growth. Commercialization of tuna, through access fees from international fishing fleets, is by far the biggest contributor to the state's GDP¹². This affixes immense pressure on Kiribati's fishery resources and outlines the need to seek out other economic resources to safeguard the livelihoods of the people of Kiribati in the future.

4.1. Kiribati legal system

4.1.1. The legal structure

The legal system of Kiribati, given its colonial past, takes precedence from the British common law legal system, with four main sources of law¹⁰⁸. The supreme law is the Constitution of Kiribati, which came into force following independence from British rule in 1979; there is also the statutes, the common laws and the customary law¹⁰⁹. Since the legal system was inherited from the County's affiliation and former colonial ties with the British, as evident in the legal concepts being heavily dominated by Christian and English-oriented values; the islanders' customs have been given recognition in the pre-independence laws and in the constitution, entrenching that the "tradition, will and rule of the people [shall be] heavily stressed"¹¹⁰. As such, some customs, such as the local custom of land tenure, and other aspects of cultural essence such as adoption and hereditary rights to property; have been codified and provided for by legislation.

¹⁰⁸ The Laws of Kiribati Act, 1989; The Constitution of Kiribati, 1979.

¹⁰⁹ Ibid

¹¹⁰ Ibid, p. 2, para. 1.

4.1.2. Formal process for development of legislation

All Laws enacted in Kiribati by the Parliament, are introduced through Bills and presented to Parliament either classified as Government Bills or bills introduced by Ministers and Private Members' bills. Bills can be further categorized in to two: those creating a new law for a particular new subject or a law to amend an already existing law. Nearly all bills introduced in Parliament are all Government bills.

Bills passed by Parliament must be assented by the President in order to become law and come into force and if the President is of the opinion that the Act will be unconstitutional he may withhold his assent. In such case the bill is send back to Parliament for amendments. If it is passed again and the President is still have the opinion that the Act will be unconstitutional, the bill is referred to the High Court for its determination on its constitutionality. If the High Court declares that the bill is not inconsistent with the Constitution then the President must assent. Otherwise the bill is referred back to Parliament for further amendments.

There are some domestic legislation that have been enacted as national Acts that give direct effect to international law, and guarantees that obligations required by Kiribati for being a party to international conventions are met. These include the Geneva Conventions Act, 1993 The Merchant Shipping Act, 1983, The Environment Act, 1999 as amended 2007 and the Marine Zones Declaration Act¹¹¹. Of special interest is the latter, which directly relates to the implementation of the Law of the Sea Provisions under national Laws in Kiribati, and discussed below.

4.1.3. Kiribati and the Law of the Sea

Kiribati, being a party to UNCLOS, deems that it should enact appropriate legislation that should give direct effect to international Law (i.e. UNCLOS). An example of that legislation is the Kiribati Marine Zones (Declarations) Act of 1983, as amended (2011). This national legal instrument defines the territorial seas of Kiribati as those parts of the sea within the 12 nautical miles from the outer limits of the internal waters of the State. The Internal waters are all waters inland of the baseline of Kiribati; the baseline of Kiribati being the low-water line of the seaward

¹¹¹ All of these acts listed are national legal instruments implemented to give direct effect to international law, all of which can be found in <www.parliament.gov.ki/list-acts>

side of the reef fronting the coast of any part of Kiribati or bounding any lagoon waters adjacent to any part of the Coast (ref38). Articles 55 and 57 of the LOSC prescribe the inner and outer limits of the EEZ. The inner limit is the outer limit of the territorial sea, and the outer limit, “shall not extend beyond 200 nautical miles from the baseline from which the territorial sea is measured”. While 200 miles is the maximum breadth of the EEZ from the baselines from which the breadth of the territorial sea is measured, it would be possible for a state to claim an EEZ of some lesser breadth, as baselines can be (and are) manipulated by the Coastal State. Kiribati did not opt for that choice, but it does have to delimit some areas of its EEZ, at a breadth less than 200nm, because of the presence of neighbouring EEZs of other Pacific states, (namely Tuvalu, Nauru, Tokelau, the Cook Islands, Marshall Islands, and the USA) following principles of the LOSC, Articles 74(1), 74(2) and 74 (3).

To enable effective administration and to provide regulatory certainty for investment and other activities associated with DSM within national jurisdiction, it is important for Kiribati to expedite the establishment of its maritime boundary, including the outer-most limit of its continental shelf on the basis of the LOSC (Art.74, LOSC). To date, the Kiribati Maritime Boundaries team has produced baselines for the Phoenix, Line and Gilbert groups, including computation of the median lines for the share boundaries with Tokelau and Cook Islands for the Phoenix group; RMI and Nauru for the Gilbert group and will soon be followed by completion of work computing median lines for shared boundary with Tuvalu. Further work is progressing with computations of the outer limits for all the island groups and the extraction of schedule of coordinates for both baselines and outer limits, which will be used in verification during treaty negotiations and signing. The schedule of coordinates will also be incorporated into domestic legislation and deposited with the Secretary-General of the United Nations, to be fully recognized and enforced under the statutes of the LOSC.

4.2. Geological setting

Kiribati is formed by three north-northwest trending extinct volcanic chains lying on the western part of the Pacific Plate. All three chains are on the oceanic crust which is believed to be of cretaceous age and may represent the movement of the crust over hotspots in the underlying mantle⁵³. However a lot is yet to be cohesively understood about the extensive geological

formation of the 3 island chains of Kiribati, particularly due to the limited context of studies conducted in the area.

With the exception of Banaba (a raised atoll), all islands of Kiribati are low-lying atolls or reef-top islands. Most of the atolls of Kiribati have a typical configuration of reefs with small islands surrounding a central lagoon, and were formed on extinct submarine volcanoes. In terms of mineralogical composition of the sediments comprising Tarawa, and to an extent, the rest of the Kiribati islands (apart from Banaba that once had phosphate), there is no other means of economically significant resource on land such as precious or base metals and other significant geological resources¹¹². Whilst many countries have the option of relying upon their land based minerals to underpin their national economies, the geological setting of the atoll nation deems it unlikely to possess significant economic mineral deposits on land. As such, Kiribati is looking to the seafloor to alleviate the economic vulnerability of its limited resource base and secure a sustainable future, in any appropriate extent under the national legal structure of the Republic of Kiribati, yet also compliant to standards set out in international laws and conventions of which the State is a party.

Early marine mineral exploration in Kiribati waters were reported as part of the Pacific Ocean Expedition in the 1960s and early 1970s¹¹³. In 1979 there was the CCOP/SOPAC survey¹¹⁴ investigating potential for manganese nodules and crust resources, and later expeditions were also carried out in 1980-1981 and 1987, 1989 and 1991 with the Japan-SOPAC cooperative study¹¹⁵. The collective result of these early mineral exploration surveys established the occurrence of manganese nodules and cobalt-rich crusts in Kiribati's EEZ and highlights the baseline data that can be used as basis for further explorations in the future.

The Government of Kiribati, respective of these findings, have been interested and intrigued by the discovery of these minerals within its EEZ, and also in adjacent areas of its territories in the Phoenix and Line Island groups, namely the Clarion-Clipperton Zone or 'the golden horn as it is known in the 1980s.

¹¹² Exon, N.F; 1982. Manganese nodules in the Kiribati region. *Marine Geology Notes*, 2: 77-102.

¹¹³ These data were compiled from existing reports with SOPAC; other reports outside of SOPAC are not included here but can be added on as part of the technical collation process, when such reports are accessed.

¹¹⁴ Ibid

¹¹⁵ Ibid

The Kiribati National Development Plan of 1979-1982¹¹⁶ is quoted as follows:

“It appears from the available data that the region extending from Nauru, through the Gilbert Islands, the Phoenix Islands and as far as the Line Islands, should be regarded as having the greatest potential for offshore phosphate...¹¹⁷”

The same national development plan alluded to the discovery of significant deposits of Manganese nodules in an area known as the ‘golden horn’ which starts as chain of seamounts about 960 KM west of Mexico and stretches into Kiribati waters around the Line islands Group.

In fact a quote taken from the Kiribati budget reports of 1980, by the ruling President of the Republic of Kiribati at the time, H.E Ieremia Tabai, is stated as follows:

“My Government considers, as I am sure most of us do, that our salvation must lie in the wealth contained in the sea. Our seas provide us not only with a steady income from fishing license fees, and a high potential fishing industry...but also with the promise of significant mineral resources on the seabed waiting to be explored¹¹⁸”.

It is well noted then that seabed minerals have been considered as alternative sources of economic benefit for the Government of Kiribati, which again have been alluded to in National Development plans ever since. Recently in the Kiribati National Development Plan of 2012-2015¹¹⁹, the prospect of Seabed Minerals, providing economic resources for the State, was invigorated as a possibility in the near future.

On the other hand, the International Seabed Authority has been regulating exploratory work ‘the Area’ for over 16 years, with reports stating that in 2011 and 2012 respectively, the number of tenements for exploration spiked dramatically with now more than half of the usual number of exploration contractors being granted approval in just those 2 years alone¹²⁰.

¹¹⁶ Kiribati National Development Plan 1979- 1982, Government Printing Division, 1979.

¹¹⁷ Kiribati National Budget Report, Government Printing Division, 1979, Bairiki, Tarawa.

¹¹⁸ Ibid, n 116, preamble

¹¹⁹ Kiribati National Development Plan 2012-2015, can be viewed at < <http://aid.dfat.gov.au/countries/pacific/kiribati/Documents/kiribati-development-plan-2012-2015.pdf>>

¹²⁰ Ibid, n 22.

Currently, the Solwara 1 Project, a high grade copper-gold resource in the waters off Papua New Guinea, is poised to begin full-scale undersea excavation of mineral deposits within the next 5 years¹²¹.

These new developments consequently sparked the interest of the Government of Kiribati in Seabed Minerals, and have resulted in the Government to begin considering opening its waters for further explorations and survey work. Moreover the Government has also applied for rights to sponsor a state entity to explore for seabed minerals in ‘the Area’, namely the Clarion-Clipperton Zone, approximately 90 nautical miles east of the Line Islands of Kiribati, securing the paramount need for Kiribati to develop its regulatory and legislative frameworks for seabed minerals.

4.3. Current Deep Sea Minerals projects

In a summary report of the LTC during the 2012 annual session of the ISA¹²², it was stated that Kiribati has been naturally interested in the exploration activities occurring in the CCZ, given it extends into Kiribati’s own EEZ and also because the ISA’s map “Polymetallic Nodules Exploration in the Pacific Ocean”¹²³, depicts that the ISA Contractor/Reserved area blocks are situated approximately 80 nautical miles from Kiribati’s EEZ in the Line islands; making Kiribati the closest state in the world to these ISA blocks. Whilst development of policies for Mining of such resources is yet to be formalized by the “Authority”, mineral explorations have been progressing over the last 30-40 years, including the historical approval of licenses for NORI and TOML, respectively sponsored by Nauru and Tonga; giving Kiribati a heightened interest to participate in mineral exploratory activities in the CCZ and joining the other States already involved. Furthermore, the polymetallic nodule belt in the EEZ of the Line Islands is an extension of the deposits in the CCZ and therefore increasing the knowledge of the minerals and seabed environment in the CCZ will simultaneously contribute to having a greater understanding of the mineral deposits within Kiribati’s EEZ. This is reflected in the policy statements of the Kiribati Ministry dealing with Natural resources, and the Kiribati Development Plan of 2012-2014.

¹²¹ Ibid, n 2.

¹²² In the summary document of the application by Marawa Research and Exploration Limited, in document ISBA/18/LTC/L.6, which can be viewed at < <http://www.isa.org.jm/files/documents/EN/18Sess/LTC/ISBA-18LTC-L6.pdf>>

¹²³ Map for “Polymetallic Nodules Exploration in the Pacific Ocean”, can be viewed at <http://www.isa.org.jm/en/scientific/exploration/maps>

4.3.1. Marawa Research and Exploration Limited

On May 30, 2012, Marawa Research and Exploration Ltd. (Marawa), sponsored by the Government of Kiribati, submitted an application for approval of a plan of work for polymetallic nodule exploration to the Secretary-General of the International Seabed Authority.

As outlined by the Legal and Technical Commission of the ISA¹²⁴, Marawa is a State enterprise owned and controlled by the Government of Kiribati. Marawa's Board of Directors comprises the Minister for Fisheries and Marine Resources Development; the Minister for the Environment, Lands and Agricultural Development; and the Attorney-General of Kiribati- curtailing the Government's effect and control on the entity. Further to that, Marawa is administered by the Ministry of Fisheries and Marine Resources Development, a department of the Ministry, whose mandate, *inter alia*, includes the management of mineral resources, coastlines and the marine environment. Encompassed within the Minerals Unit portfolio is the protection and restoration of coastal benthic and deep sea pelagic habitats, guided development, environmental monitoring, scientific research and the promotion of coastal and deep ocean mineral resource development.

In accordance with regulation 11, the State has provided a certificate of sponsorship to the Secretary-General certifying that Kiribati sponsors the application and assumes responsibility in accordance with article 139, article 153, paragraph 4, and annex III, article 4, paragraph 4, of the 1982 United Nations Convention on the Law of the Sea (the Convention). The certificate of sponsorship certifies that Marawa is a national State enterprise wholly owned by Kiribati and that it is subject to the effective control of the State. Kiribati acceded to the Convention on 24 February 2003.

Owing to the nature of the exploration activities proposed by Marawa, the environmental impacts from the exploration of the marine environment are expected to be extremely limited and will not pose a threat to the biodiversity and ecosystem function in the contract area. Nevertheless, throughout the exploration programme, Marawa will establish and maintain, in accordance with internationally accepted standards, appropriate measures to prevent, reduce and control pollution

¹²⁴ Ibid, n 122

and other hazards, as well as impacts on the marine environment. It will also expedite the development of its legislative regimes, as stipulated under the regulations of the international seabed authority, the LOSC, and the outcomes of the ‘Advisory Opinion’.

4.3.2. Challenges

The LOSC, and general international law, imposes a general due diligence obligation on State parties not to cause harm to the environment beyond national jurisdiction. In the context of DSM, due diligence requires a State to adopt laws and regulations and to take administrative measures which are, within the framework of its legal system, reasonably appropriate for securing compliance by persons under its jurisdiction. Those laws and regulations must be monitored and enforced, in accordance to the ITLOS Advisory opinion. Obviously the comprehensive collation of policy guidelines from a wide range of key areas of environment, fiscal and social issues; albeit an industry that is unlike any other thus far and open to global scrutiny, would not be an easy and straight-forward task and would pose many challenges. Currently, Kiribati does not have the relevant technical skills and knowledge or the technology on mineral mining and that lack of capacity will also pose a challenge. Kiribati has not yet enacted comprehensive policies, regulations and appropriate legislation to govern such activities¹²⁵, and it would not be prudent to initiate such activities without advocating due diligence to actively safeguard the integrity of our marine environment. Reviewing existing policies, regulations, legal instruments and legislative authorities related to such activities, and using them as basis for enacting specific national policies and legislative instruments, would be greatly beneficial for Kiribati in exploring the potential of DSM for future economic development aspirations.

It is acknowledged that exploration and subsequent mining of seabed minerals of the deep ocean environment is a very new concept worldwide, moreover in Kiribati, and there is currently no set legislation for Seabed exploratory and mining activities¹²⁶. However Kiribati is not new to exploitation of its ocean resources and it does have regulatory frameworks for protection of the marine environment from human activities. Such legislations emphasize the sustainable use of

¹²⁵ Ibid, n 122

¹²⁶ The International Seabed Authority is currently in talks with Member States in beginning the development of the exploitation frameworks, particularly for Polymetallic nodules; in other parts of the Pacific, Tonga and the Cook Islands are in the final stages of establishing their Deep Sea Mining legislation.

ocean resources and protection of the marine environment/ecosystems and can be used to develop legislations for Mineral exploration and Mining activities in Kiribati. Such developmental work can also be actively coalesced with other relevant international and regional conventions, agreements and guidelines, principally the LOSC, but other international and regional instruments that Kiribati is a party to should also be considered, such as the Rio Declaration, the Noumea Convention, the Madang Guidelines, the PIROF- to list a few.

Chapter 5: Institutional development

5.1. Introduction

As stated earlier, the creation of adequate legislative and regulatory frameworks by States is not sufficient in itself to meet international obligations, or to provide adequate comfort to parties concerned about the potential impacts of DSM activities. Implementation and enforcement of the regimes created are also crucial. Strong institutions are particularly important to the oversight of DSM activity and legal, fiscal and environmental matters will all require dedicated public administration capacity. It is recognized that this may be particularly challenging for Kiribati with limited administrative and technical capabilities. This lack in technical capacity can easily be quantified (for example, Kiribati has only 1 qualified Marine Geologist and one legal advisor for the whole government who specializes in the Law of the Sea, several qualified tax officers, several environmental managers and only 1 small patrol boat manned by only 10 crew members and no fire arms).

5.2. Institutional development

It is instrumental then, that for Kiribati to begin engaging with DSM industry activities, either within national jurisdiction, or in the Area, it will require the creation or identification of a specialized government body to regulate, on behalf of the State, operators performing those DSM activities. This body will: (i) receive and assess applications to explore or exploit DSM; (ii) set the terms of permitted activities, by issuing licenses; (iii) receive and assess reporting documents from licensed operators; (iv) monitor their compliance with the terms of the license; and (v) take action to amend the terms of licenses or suspend activities if necessary, and to enforce sanctions for non-compliance. Such institutions must be given sufficient capacity and authority to perform these functions and to monitor compliance with the DSM legal framework

This body does not exist today and it is in the interest of the State itself to begin developing and strengthening the capacity of the responsible ministry/department (e.g. Mining or Environment), or may wish to establish a new specialized entity for DSM regulation in the form of a new government department, or a quasi-independent statutory authority. A number of critical issues must be considered in this regard:

- Should the regulating authority be established within a government department, or as a stand-alone body?
- Should the regulating authority have the power to issue recommendations only, or actually to make decisions?
- Should the regulating authority be able to delegate any of its functions? If so, which functions and to whom?

These are very important questions, that must be discussed within relevant modes of the Government of Kiribati and with relevant stakeholders. Provision must also be made for independent oversight and public notification of, and participation in, decision-making wherever appropriate. Cost-recovery provisions should be written into the national legislative regime, in order that the costs to the State of this regulatory work can be recovered from the private sector operators to be regulated, for example by charging a fee for license applications and/or an annual fee for current licenses. In Papua New Guinea (where there is a significant mining presence in-country) under the Mineral Resources Authority Act 2005, the Government can levy up to 0.5%

of the royalties from mineral production to help fund the proper regulation of the mining industry.

Even with cost recovery provisions, the in-country financial and human resources required for effective DSM regulation, and the lack of capacity and specialized expertise available in many States, have led to suggestions that a regional (or sub-regional) body may be better- placed to provide advice and/or administer DSM licenses on behalf of States.

5.3. Capacity building

It is recognized that there are significant capacity gaps in Kiribati, particularly in relation to the technical expertise and know-how required for DSM operations and regulation, such as in the areas of technology development and operation, vessel operation, EIA methods, EIA analysis, DSM financial management, monitoring and evaluation, public relations, legal advice and others.

A common problem faced by the public sector in the region is the departure of trained and experienced national specialists to work overseas or in the private sector. It is hoped that a burgeoning DSM industry in the region will present capacity-building opportunities, and may offer incentive to specialist professionals to stay in the region.

States are therefore encouraged to maximize the opportunities that may arise to build such capacity¹⁶, as a result of the DSM industry's interest in the region. Measures should be taken to harness these opportunities both on a national level (e.g. by seconding government staff members to DSM operations, where legal, safety and liability requirements permit this) and by co-operating regionally (e.g. by sharing knowledge and experiences between countries).

The potential for DSM activities to build technical capacity in-country can be realized through legislative provisions. Subject to each States' trade and discrimination laws, the DSM legislation or the terms of the license can include a duty for DSM operators to employ local workers, use local goods and services, provide training or secondment opportunities, and/or permit use of their vessel and technology for State MSR activities. Where such arrangements are included in legislation, provision should also be made to allow for adequate and timely planning and communications with the DSM operator, so as not to be unreasonably onerous— recognizing the forward planning, cost and limited capacity onboard of any voyage at sea.

The DSM industry might also provide direct employment opportunities for States within a State's regulatory mechanism and within the private sector, depending upon the degree to which administration, transport and technical operations related to DSM are situated within States. Potential training programs could be established to fill highly skilled or technically specialized positions within the DSM field. Indirect employment, for instance in hospitality, lodging, and provisioning industries, could occur if mining operations obtain goods and services locally. Mining operations may also require the development of new local infrastructure (e.g. roads, ports, power plants) that could serve to spur infrastructural development in the host States. Nevertheless, it is also possible that DSM operations will take place entirely at sea, and that the ore would be shipped directly to processing plants elsewhere, thus leading to little investment, or having little impact, onshore on the host State. So these possible secondary benefits (additional to the main economic benefit anticipated, through royalties and standard fees) should perhaps not be overstated.

The Cook Islands Seabed Mining Act envisages DSM operators within their jurisdiction providing direct philanthropic and community support – such as health and education services – for local communities. The DSM operator actively engaged in Papua New Guinea's waters currently has established a skills-building program, providing vocational training to local geologists, geophysicists and environmental scientists and also support for selected students from Papua New Guinea to pursue studies in marine science related fields at an international university. The company sponsored by Nauru to explore in the Area has provided scholarships for Nauruan nationals to pursue university studies relevant to DSM. Industry-provided philanthropy, however, will be case-specific, and may be limited in scope and duration States may consider incentivizing the support of DSM operators for development initiatives, through tax breaks or exemptions for their investment in such schemes.

States also have an opportunity in their regulatory framework to include provisions requiring the DSM operator to transfer skills, knowledge, and/or technologies to the Government, to ensure that the State also benefits from scientific and technological development. To be workable, such arrangements need to take account of commercial sensitivity, competition issues and intellectual property rights.

Another model for maximizing the opportunity for technology transfer would be for the State to consider, on a case-by-case basis, and upon negotiation of terms (as this may not be an acceptable condition for the DSM operator), taking an equity stake in the DSM operating company, which entails observer and/or voting rights. It should be noted that taking an equity stake means taking a share of costs, as well as profits.

5.4. Relevant Regional Conventions and Agreements

There are also existing regional conventions, regulations and agreements that will be helpful as well in the development of necessary regulatory frameworks for DSM in Kiribati, including specific guidelines. These include, but are not limited to; the Noumea Convention; the Pacific Islands Regional Ocean Forum (PIROF) and the Oceanscape Framework; the Nauru Agreement; and the Madang Guidelines.

5.4.1 The Noumea Convention

The Noumea Convention on the Protection of Natural Resources and the Environment of the South Pacific Region aims to ensure that resource development in the Pacific is in harmony with maintenance of the unique environmental quality of the region and the evolving principles of sustained resource management. Protocols on dumping and cooperation in combating oil pollution. It applies to contracting Parties' EEZs and also to areas of the high seas beyond national jurisdiction that are completely enclosed by these EEZs ('the Convention Area') ref.

The Noumea Convention requires contracting Parties to prevent, reduce and control pollution of the Convention Area, from any source, and to ensure sound environmental management and development of natural resources, using for this purpose the best practicable means at their disposal, and in accordance with their capabilities. In particular contracting Parties must prevent, reduce and control pollution in the Convention Area caused by discharges from vessels, and resulting directly or indirectly from exploration and exploitation of the sea-bed and its subsoil. It contains an EIA requirement, to include opportunity for public comment and consultation with other States who may be affected ref.

5.4.2. PIROF and the Pacific Oceanscape Framework

The Pacific region covers a vast area of the earth's surface - at least 40 million square kilometres - prompting a vital need for stewardship responsibility in effective oceans governance (ref). Testament to the concern for their Islands, coasts, and Oceans are the many commitments that Pacific Island countries have made at national, regional and international levels, which includes endorsement of various multi-lateral environmental agreements and regional policies. Such instruments cover various aspects of ocean activities, from fisheries management, management of non-living resources, to protection of the marine environment, and include the Pacific Islands Regional Ocean Policy (PIROP), the Pacific Plan and, more recently the Pacific Oceanscape Framework ref. Seen as a catalyst for implementation of comprehensive and effective ocean policy for regional ocean governance, the Pacific Oceanscape Framework is the ocean governance policy currently the focus of marine management activities in the region ref.

5.4.3. The Madang Guidelines

There are also existing specific guidelines relating to development of DSM activities in the region such as the Madang Guidelines, which is a framework for activities in the Pacific Ocean areas structured specifically for PICs activities in the ocean (EEZs and beyond) involving seabed mining ref. The Madang guidelines proposes and outlines recommendations in regards to activities of deep seabed exploration/mining, within and outside the extent of national EEZs ref.

The Madang Guidelines will play a vital role to provide, in particular, for the accommodation of the unique attributes and occurrences of the DSM deposits themselves, the "pioneering nature" of exploration and development activities and for a broad range of associated issues including; the environmental impacts and impact assessments stakeholder interests; fisheries impacts and the inter-relations of government; industry and marine scientific research; that will underpin the basis for development of policies, regulations and legislations for DSM activities in Kiribati.

5.5. Transitional provisions

It would be best practice for Kiribati to have law in place before site allocation and the granting of licenses for DSM activity. That said, it is recognized that some activities may occur within States' jurisdiction or beyond (i.e. the Area) before a comprehensive legislative and regulatory regime has been enacted, and appropriate administrative bodies and functions have been set up. This is possible given that under the Mining Code of the ISA, there is no prerequisite requirement for a State to have in place a legislative framework prior to applying for the rights to explore in 'the Area', which was what the Government of Kiribati did with Marawa; however it is in the State's interest to develop/adopt and enact appropriate legislation and regulations relevant thereof, as stipulated in the LOSC, (214, 215, etc.) including the advisory opinion of the seabed disputes chamber of ITLOS.

Since Kiribati has already engaged in securing rights to explore in 'the Area', the national DSM law it is intending to develop/enact should address how pre-existing licenses are to be handled. Equity suggests that those DSM operators already active in the State's jurisdiction, or under its control, should be required retrospectively to follow the new DSM regulatory procedures, once they are formally enacted and introduced. The onus can be placed on the DSM operator to notify the Regulating Authority of their activities, within a set deadline (e.g. three months from the date on which the legislation comes into force). The legality of doing this may depend on the terms of licenses previously issued. Where the relevant law is under review, the investor may seek agreement of further specific terms with regard to that operation, for the transitional period.

In the absence of significant concerns about the pre-existing DSM operator's activities, the Regulating Authority should be empowered to provide a temporary transitional licence permitting activities to continue, while a new application for consent, under the new regime, is made and processed. It may be sensible for the Regulating Authority to have a fast-track process for any such applicants, which takes into account processes already undertaken and checks already made.

Such transitional provisions should seek to give pre-existing DSM operators neither an advantage nor a disadvantage over new applications made once the new DSM regulatory regime is properly in place. It should however, take into account the considerable amount of time and

money that will already have been invested by the DSM operator in prospecting and exploring, and obtaining the pre-existing consent for those activities.

In practice the options open to migrate an existing operator to the new licensing regime will depend on the basis of the operator's right to explore or mine. If it has been licensed under existing (but not DSM-specific) legislation, the circumstances in which that license can be cancelled or the conditions changed will be governed by the existing legislation. If the Government has simply entered into a contract with a DSM operator, the terms of that contract will need to be examined to determine the most appropriate way forward.

It is also recognized that the proper finalization of Government Policy and the passage of Bills through Parliament can be a time-consuming process. DSM operators are commercial enterprise and as such their interest in investment may be time-specific and limited. There may, therefore, be applications to undertake DSM activities made to States after the work on DSM legislation has begun, but before it has been finalized and implemented. States therefore should either: (i) take a policy decision that consideration of such applications must be postponed until the DSM legislation and administrative arrangements are in place; or (ii) allocate responsibility and resources to a suitable existing body to deal with any such interim applications in accordance with the spirit and principles of this RLRf. The latter option may be complicated and open to abuse or inconsistency. Certainly care should be taken to not rush decision-making. The legal authorization (license) may provide for a very long tenure period, perhaps many decades. It is important not to rush through the application by one particular investor to the long-term detriment of the nation. Many nations that commence mineral sector legislative development programs are successful in putting such a system into place within 12 to 36 months.

Particular regard should be given to the public participation provisions, and access to judicial oversight, given the risk of procedural problems with decisions made before the regulatory framework is properly in place. Any such interim decision should also be reviewed (as with pre-existing licenses) as soon as the new DSM regulatory regime is in force.

5.6. Allocation of exploration and mining sites

The method by which exploration or mining sites are to be identified and allocated will need to be determined as a matter of policy by the State. The Government of Kiribati is likely to find it useful to have a map-based (GIS) system to be able to identify which sites are under application or license, which sites are protected, and which are available for DSM applications. Practically the identification of exploration tenements and mining leases by the State will be based on the geological potential and prospectivity of any site (and it will be difficult to employ such methods without knowledge of the resource base). States may therefore choose to be conservative and to impose stringent data requirements in early licensing rounds, in order to be able to develop knowledge of any potential resource base. The mechanism of allocation once established should be published policy, to provide for certainty and transparency of process. Mapping of potential exploration sites must also take into account and be consistent with submarine cable planning, and the State's marine environmental management plan, and allocation of sites may require marine protected areas, and/or buffer zones around areas of DSM activity.

Allocation systems should enable investment by mining companies and facilitate competition. Clear, consistent and stable conditions are essential. There are a number of possible methods of opening up sites for mining exploration. International tender is one established and transparent way of attracting a credible international company to express its interest to explore and/or exploit DSM. Where there is insufficient investor interest to make tendering a workable approach, there also needs to be a system where investors can apply directly for a license. The ISA has divided relevant zones within the Area into a grid, and invites applicants to identify which cells within that grid they wish to apply to access. The ISA limits the total number of cells/size of any one license block (according to the deposit type being sought).

Using a tendering system a State would identify an area where deposits appear promising, divide this into tenements, announce and publicize the opening of the opportunity for these areas to be explored, give time for expressions of interest to be received, and then review and score these tenders against pre-established objective criteria, finally selecting a DSM operator from the applicants. Using an open application system, the State may wish to designate particular areas upon its CS which it has identified as being available for license applications, or conversely it

may prefer to give notice of areas that are not available for license applications, indicating that any unlisted area is open for application. The policy or regulations should set out what process will apply if competing applications are received for the same area (e.g. ‘first come, first considered’, or competitive assessment of all applications received within a nominated timeframe, or a simple assessment of best-qualified applicants at any given time). In any event, it is strongly recommended that the criteria by which a winning bidder or applicant will be selected is clearly set out so as to avoid the risk of abuses or corrupt decision-making.

If there is a concern that a single DSM operator could obtain too much control within a national EEZ: through applying for an area disproportionate in size to the mineral sought or to its technical ability to explore or mine; or tying up large areas under licence in order to preclude other operators from accessing them (rather than to actively explore or mine them itself) – P-ACP States may consider whether there should be limitations on the maximum size of the area which may be licensed to a single DSM operator (even if under multiple licences). Alternatively, this potential concern could also be addressed by terms in the licence that require evidence of active operation – e.g. annual minimum expenditure, relinquishment requirements, or other periodic review mechanisms.

5.7. Administrative arrangements

International law¹²⁷, clearly require that appropriate environmental standards must not only be governed by domestic legislation, but must also be implemented through monitoring and enforcement.

The key provision of any legislation should be that DSM activity must not take place within a State’s national jurisdiction, nor in the Area under that State’s sponsorship, unless and until permission has been given (in the form of a licence and/or a sponsorship agreement) under the terms of the legislation.

While primary legislation will be required to set the top-level regulatory framework for DSM, the operational detail of the legislation may be better set out in secondary legislation (regulations), which may be made and/or amended subsequent to and under a power given by the

¹²⁷ (for example the LOSC Articles 214 and 215)

primary legislation – usually by the Minister or other authority responsible for administering the primary legislation. Where an individual DSM operator successfully applies for permission to conduct DSM activities, a tailored license (and/or sponsorship agreement, in relation to the Area) would be issued (in accordance with the legislation and regulations) setting out the particular conditions of the license.

Mega-projects are sometimes regulated using a combination of statutory laws and a special agreement that is ratified by the law-making body. If numerous projects are envisioned, a standardized regulatory system, with the standards and rules largely set out in legislation, may be preferred. But if the number of projects will be small, an agreement-led approach (with a less prescriptive statutory framework) can provide flexibility to accommodate individual project attributes and needs. In the development of such an agreement care should be taken in determining what terms should apply from general legislation and what terms need special treatment.

One option for States is to adopt the same model and extend the existing personnel also to cover the consideration of DSM applications. A similar model will already exist within Environmental or Planning Departments of Governments (to consider applications for construction or other large-scale projects) which could equally be adopted and extended for DSM operations. Where existing structures are to be used to handle applications and ongoing administration relating to DSM activities, it is important that these structures are verified to be fit for purpose, taking into account the practical implications, environmental concerns and monitoring and enforcement challenges, which will have characteristics particular to DSM. One example found in the United States is where a combined Minerals/Marine Environment division was formed within the Minerals Authority, to deal specifically with marine minerals. Additionally, in Papua New Guinea the Mineral Resources Authority has an Environment Monitoring Branch. Among its objectives is to set standards for monitoring environmental performance for Papua New Guinea mines.

Another option, particularly recommended where no existing structures are in place, would be to create a new DSM-specific regulating body, perhaps as a stand-alone statutory body. This body may be independent from Government policy-makers, and able to make decisions in individual cases without undue influence from the responsible Ministry (e.g. a statutory commission,

reporting to Parliament, rather than a Minister); or it may be an advisory body, making recommendations to the ultimate decision-maker (e.g. the responsible Minister).

Independent regulation and decision-making can be a challenge in small Governments and States with small populations, and yet is key to establishing and maintaining confidence in the system from all parties. Where it is not feasible to establish a new independent regulatory decision-making body in-country, then other measures to preserve independence and impartiality – and public confidence in the procedures – should be considered, for example oversight by an Ombudsman or Auditor-General of decisions, or an opinion from the Attorney- General’s Office in each case confirming that the decision complies with applicable legal requirements and procedural propriety. The public participation and appeal procedures also recommended will also serve to strengthen the integrity of the system.

5.8. Due Diligence

To meet international obligations, before issuing a DSM exploration or mining license or sponsorship agreement, States must conduct appropriate initial checks and analysis of the operator and its proposed work plan, to satisfy itself of the company’s ability to perform the proposed activities in a timely, safe, environmentally responsible, and efficient manner. The legislation may therefore require certain pre-requisites from an operator before an application for DSM activity will be considered. These might include a minimum amount of operating capital, evidence of technical competence, appropriate insurance or other certification of financial responsibility, undertakings that relevant industry standards are adhered to by the DSM operator. Also, evidence or undertakings as to the seaworthiness, manning, equipment, and navigation of those vessels involved in DSM; perhaps also evidence as to energy efficiency and initiatives to reduce carbon footprint; and that adequate staff and operational performance policies and procedures are in place.

These due diligence checks could be done as a stand-alone registration process. Once these checks have been satisfactorily made, the State registers the company as pre-approved, and therefore as permitted to make an application for DSM activity in the future. Or it may be covered in the short-listing stage, where a State has held a tendering process and is selecting a DSM operator from a pool of interested applicants. The due diligence process may require input

from other government agencies – for example approval with regard to the financial arrangements from the Finance or the Trade and Industry Ministry, or certification with regard to the vessel information from the government department with responsibility for shipping.

5.9. Review of Application

The Regulating Authority will be responsible for making decisions on applications to conduct DSM activities (or for making recommendations to an approving authority such as the Minister – depending on the national model chosen). If a tendering system is used, clear guidance on selection criteria should be set out either in the public tendering legislation or the mining legislation. Legislation can specify the content required in an application, and should specify that it must describe all aspects of the proposal, and identify all impacts/effects.

5.10. Environmental impact Assessment

The regulatory regime should specifically require the applicant to conduct an EIA as soon as the DSM project is sufficiently defined to permit meaningful analysis, and before any mining activity takes place. A key component of the EIA will be detailed baseline data collection, to enable future assessment of environmental impact of activities^{128 25, 34, 36}. The legislation should also require the EIA to encompass wider (not only environmental) impacts; such as anticipated social, cultural and health impacts and possible interference with other sea users. A similar process, requiring EIAs for proposed projects generally, may already exist in national legislation. States are advised to review this, to ascertain whether it requires strengthening or widening to address DSM activities, or they may decide to introduce a parallel process specific to DSM applications. The outcome of that EIA will form part of the DSM operator's application for a license to act, and will be reviewed by the Regulating Authority (with external expert advice, if necessary), so as to inform the State's decision as to whether the DSM activity can proceed, and if so, within what parameters. Where the application relates to the Area, the ISA will play an important role in this regard also. The legislation or regulations enacted under it should allow for

¹²⁸ Mining code, International Seabed Authority; Regulations on Prospecting and Exploration for Polymetallic Nodules in the Area. Adopted 13 July 2000 (ISBA/6/A/18 dated 4 October 2000); Regulatory and Legislative Framework (RLRF), SPC-SOPAC Division Report, 2012, Suva Fiji.

consideration also of the cumulative or collective effects of all activities on the receiving environment.

The mining license application process should also allow for a supplementary or partial application, to allow the process to move forward while environmental baseline data collection (which would be expected to span a period of time) continues. A fully supplemented EIA should be available for review; however, prior to the actual issuance of a mining license. As a result of the EIA process, an EMP is usually developed, containing conditions specific to the proposal. See section 18 for more details regarding the EIA requirement in DSM regulation.

The legislation, or regulations made under it, should specify the contents that are required in an application for a license. This may be different for different DSM activities, but (following the ISA's regulations) is likely to include the following:

- List of coordinates and chart of proposed area.
- Proposed long-term plan of work (e.g. for the life of the operations).
- More detailed shorter term (e.g. 5 years – but duration may vary according to the different scales of envisaged operations or type of deposit).
- List of employees necessary to operate the project (specifying which of those may be expatriate appointments).
- Anticipated annual actual and direct expenditure on activities.
- Proposal for oceanographic and environmental baseline studies and preliminary environmental impact assessment, and mitigation strategies.
- Proposed measures to prevent pollution.
- Contingency planning for accidents or incidents in which pollution may have occurred (including containment, clean-up, recovery of waste, and future mitigation).
- Copies of relevant corporate policies, procedures and certification.
- Undertakings to adhere to legal requirements, and to act in good faith.
- Application fee.

The legislation, or regulations made under it, may stipulate a time limit within which the Regulating Authority will acknowledge receipt (and notify the applicant of any requisite information that has been omitted from the application), and a commitment that the Regulating

Authority will consider applications and provide the applicant with a decision expeditiously. Where an application is made for an exploitation license, pursuant to a previous exploration license for the same site, the exploration license's term may be deemed to be extended until the time at which a decision is made by the Regulating Authority on the mining license application. Assurances as to the Regulating Authority's commitment to maintain appropriate confidentiality may also be given.

The legislation may state that an application will be refused if a license has already been issued by the Regulating Authority to a third party for the exploration or exploitation of the same resources or in the same area; or if it relates to an area which the State has disapproved for exploitation because of the risk of serious harm to the marine environment.

The Regulating Authority will assess the license application (or applications, in the event of a tender exercise) against objective, pre-established criteria. These (which may be weighted) would be likely to include factors such as: technical capacity, financial resources, in-house expertise and experience, professional integrity and ethos, provision of sufficiently comprehensive and detailed information, the fit between that State's DSM policy and the proposed plan of work, the economic benefits to be derived to the country from the project, assessed viability of the business plan, and anticipated compliance of the project with environmental standards.

The Regulating Authority in particular should be satisfied on the evidence before it that the DSM applicant and its proposed plan of work makes effective provision for: protection of human health and safety; protection and preservation of the marine environment including the impact on biodiversity; and avoidance of interference with the use of recognized sea lanes essential to international navigation or in areas of intense fishing activity. As with the collection of baseline environmental data, there may be other areas in which the on-going nature of work and data collection may significantly alter the information available to the DSM operator and the State (e.g. in relation to the mineral resource definition, or technology development) such that the mining plan evolves. Provision should therefore be made for supplementary information to be supplied during the license review process.

As was done with Marawa Research and Exploration Limited, where the activities will take place in the Area, the operator will first obtain sponsorship agreement from the State, and will then apply to the ISA for a contract to explore or to exploit DSM in the Area. This contract is issued by the ISA on the basis that the, as sponsoring State, has effective control over the DSM operator. Therefore it is recommended that the also put in place a specific agreement between the State and the operator, to cover the terms of any individual project for which an ISA contract is issued to the operator. This will be in addition to the sponsorship agreement, and will be similar to a license granted for activities within national jurisdiction, likely to take a different form, as it may refer specifically to, and require compliance with the same terms as, the DSM operator's contract with the ISA.

Chapter 6: National implementation

Kiribati, having expressed its support for Manganese Nodules exploration within its EEZ as well as in the International Seabed Area ('the Area'), now has a great need for the development of a regional framework and management policies from which national offshore minerals policy, legislation and regulations can be enacted. Furthermore, as the Republic of Kiribati (through State owned Marawa Research and Exploration Ltd. ("Marawa")) having made an application to the International Seabed Authority ("ISA") to explore for seafloor manganese nodules in international waters and carry out related scientific research and environmental studies and having being granted approval; necessitates the need to finalize such processes within the next 2-3 years, as part of the due diligence required by a State to adopt laws and regulations and to take administrative measures which are, within the framework of its legal system, reasonably appropriate for securing compliance by persons under its jurisdiction⁴³. At the same time, there is also a great need for capacity building and institutional strengthening on technical, legislative and fiscal and environmental issues in regards to DSM. In the immediate work of Kiribati and DSM, these 2 areas should be prioritized.

In the case of domestic legislation, considerations should also be emphasized on perhaps only two legal instruments, which are directly relevant to the principles and the notion of seabed mining. These are (1) the Environment Act (as amended 2007; including its PIPA regulations, 2008) and (2) the Mineral Development Licensing Ordinance of 1973. Other national instruments may be important to consider as well, but for the immediate scope of the thesis, and more importantly for the relevance of the issues to be discussed; only these 2 national legislations will be analyzed.

6.1. The Environment Act (as amended 2007)

Kiribati's Environment Act of 1999 (as amended 2007) sets forth the country's national EIA procedure. The Act provides the statutory definitions of the 'environment' and the 'Environment Impact Assessment' and 'Environment Impact Statement'. The Act sets out the requirement that the relevant governmental minister should consider the environmental impacts arising from any activity/project is undertaken, and consult with all relevant parties. Government ministers are also required determine whether an 'Initial Environment Evaluation Report' or 'Environment

Impact Statement' is needed based on the likely impact of the proposed development on the environment. An important feature of the Environment Act, as amended 2007, sets out provisions necessary for the implementation of the international agreements such as the Convention for the Protection of the World Cultural and Natural Heritage and the Convention on Biological Diversity. Such provisions contain principles of environmental best practices', 'precautionary approach', 'public engagement/consultation', and the mandatory prerequisite for EIA surveys to be carried out for large-scale activities. This is important as it conforms with the international framework for environmental protection, as set out under the regulations of the CBD and the Rio Declaration, and should be a vital regulatory tool for seabed exploratory and exploitation activities.

6.2. Mineral Development Licensing Ordinance (1973)

The Mineral Development Licensing Ordinance of 1973¹²⁹, was developed and enacted merely for the purposes of the phosphate mining activities carried out in Banaba, and which became depleted beyond economically profitable levels in 1978.

The Ordinance consists of 63 sections divided into 11 Parts: Preliminary (I); Acquisition of mineral rights (II); Administration (III); Reconnaissance licences (IV); Prospecting licences (V); Mining licences (VI); Mineral rights and surface rights (VII); Financial (VIII); Withdrawal of applications (IX), Surrender and termination of mineral rights (X); Regulations (XI); Penalties and offences (XII); Records, information and arbitration (XIII).

Mineral rights shall be granted only to citizens of Kiribati or to a corporation that is incorporated by or under any law of Kiribati (sect. 3). Subject to the provisions of this Ordinance the Minister may in his discretion grant to any person a reconnaissance licence over any area in Kiribati. No reconnaissance licence may be granted in respect of any area over which a prospecting licence or a mining licence has been granted (sect. 10).

The Minister may prohibit "wasteful mining or treatment practices" under section 36 and may order merger or co-ordination of mining licences under section 37. Section 39 concerns the exportation of radioactive minerals, which no person shall export, except under and in

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accordance with the terms and conditions of a permit granted by the Minister. No mining shall take place on any land not being Crown land set aside or used for the purposes of Government (sect. 42). Sections 44 and 45 provide for compensation in case of disturbance including the disturbance of fishing. Where the Minister considers that any land is required to secure the development or utilisation of the mineral resources of Kiribati he or she may compulsorily acquire such land (sect. 46).

Importantly, the legislation sets out provisions for many of the issues that have been discussed throughout the thesis, and of which have been suggested as priority issues to consider, not only under the LOSC, the regulations of the seabed authority and the ‘Advisory Opinion’; but also under auspices of customary international law. These include issues such that Mineral rights shall be granted only to citizens of Kiribati or to a corporation that is incorporated by or under any law of Kiribati; the need for careful consideration of the impacts on the environment (EIA) and compensation clauses.

Although it is entirely formulated for land-based activities, there are certain provisions that allude to principles that are important for seabed exploration and mining, and of which are suggested; but must be carefully considered.

6.3. Kiribati National DSM workshop, 2011

In September, 2011, a workshop on Deep Sea Minerals was held in Kiribati by the SPC- SOPAC DSM Project team and staff of MFMRD. The workshop was intended to bring together key in-country stakeholders in Kiribati (i.e. representatives of relevant government agencies, NGOs, private sector, educational institutions and communities) to discuss various issues relating to deep sea minerals and mining and how Kiribati can effectively engage with partners in developing this new industry, as previously outlined in Kiribati’s strategic approach to DSM. It also involved formation of working groups from the diverse backgrounds of the workshop attendees, to collaborate on development of key policies that should be covered as basis for enactment of national regulations and legislation for DSM.

Outcomes of the working groups for the Kiribati DSM workshop (outlined below), should be considered as a starting platform in regards to development of national policies and subsequent

primary and secondary legislations pertinent to DSM activities, along with relevant international and regional conventions, agreements and guidelines discussed throughout the thesis, and other relevant details of national priority; to ensure a comprehensive national framework.

- Environmental Management and Monitoring Frameworks. Frameworks and guidelines for deep sea exploration and mining should take into account the protection of the integrity of biodiversity in the deep sea environment such as seabed habitats, water column and benthic habitats; waste management and disposal measures in the ocean; protection of marine life from offshore activities; and safety measures for vessel impacts to the environment. In order to ensure that vessels comply with the relevant frameworks of DSM, agreements should be made initially with the responsible entity for observers (nationals) to be present on boat during its activities at sea. Indeed it was noted that the working group was quite adamant for participation of locals/nationals in observer schemes, once developed. Apart from other monitoring compliance activities at sea, the observer will be closely monitoring activity impacts on the environment.
- Appropriate Fiscal Regime policies for deep sea mining. There is a great need for Kiribati to have specific taxation legislation in regards to minerals exploration and mining. In relation to this, enforcement of such taxation regime is just as important to ensure that the people of Kiribati get maximum benefits from this new industry while at the same time it remains attractive for investment opportunities. Appropriate fiscal regime should also be in place to cater for mine workers.
- Provision of Assistance for Further Studies. There is a great need for the provision of scholarship programs to support studies in the fields of policy development, marine affairs and economic planning. Studies in specialized fields such as the Law of the Sea and deep sea mining related fields should be strongly encouraged as well; at the national level from the Kiribati Public Service Office, and regionally and internationally from organizations such as SPC-SOPAC, ISA, AusAID, etc..
- Appropriate Economic Planning. MFMRD as the responsible ministry in-country need to incorporate DSM long-term study and training needs on the country's' Human Resources Development plan so it can be reflected on Kiribati National priority list for in-service scholarships. Capacity building Policies and regulations in deep sea mineral explorations should be in line with economic growth and development.

- Technical and Technological Challenges of Deep Sea Mining and Recommendations. Currently, Kiribati does not have the relevant technical skills and knowledge or the technology on mineral mining. In order to ratify the issue regarding technology, an agreement (MOU etc.) should be signed between government and other party(s) for technology transfer of DSM equipments. A stakeholder partnership between government/private sector/SPC/NGO could be formed not only for technology transfer but also for capacity building issues.

6.4. Principles for national development

6.4.1. A consistent fiscal regime and tax structure

Legislation and expert advice could be obtained before the fiscal structure is set, to ensure the interests of the Kiribati Government are taken into account, but investment is not deterred¹³⁰.

6.4.2. Transparency

The Madang principles could be incorporated into any work towards enactment of regulations and legislation for DSM in Kiribati, as a condition of exploration / mining licences. The principles could apply not only to the funds passing between the mining company and the Government, but also to the Government's use of those funds¹³¹.

6.4.3. Responsible use of DSM revenue

Having the idea of a ring-fenced and independently managed investment fund, with clear and transparent governance and published rules and reports about amount and nature of expenditure, is to be recommended¹³².

¹³⁰ LOSC 214, 215, Mining code, Advisory Opinion

¹³¹ Extractive Industries Transparency Initiative- Promotion of transparency and accountability, including with regard to revenues

¹³² Ibid

Chapter 7: Conclusion and recommendations

The world as we know today is rapidly changing, including the global population, and there is a greater need for strategic metals, including rare earth elements (REE). But with land-based reserves fast becoming depleted, this insatiable need for metals has pushed the prospects mining into the deep seabed environment. With a new industry in uncharted waters the attainment of a social license involves the development of a consensus that the activity is safe and that it does not adversely affect the environment in which it is conducted. This is frequently a substantial hill to climb for industries in new areas, such as the seabed area. The complete legal framework for seabed mining is not yet in place, what currently exists is a developing framework and it is essential to develop such frameworks first prior to carry out mining activities.

In the case of ISA regulated leases one expects that a generic regime, including a royalty structure, will be developed to cover production in all ISA regulated areas. This will probably be a regime bereft of any individual negotiation between ISA and its individual licensees. It will be interesting to see whether the companies who have leases in ISA areas as a result of state sponsorship have the staying power to await an ISA articulated mining regime.

In the South Pacific very few of the island nations have mining codes, although some are in progress, such as the Cook Islands. Part and parcel of the establishment of the regulatory framework is the development of a taxation/royalty regime to provide certainty for a developer assessing its risks. For activities in territorial waters this may be negotiated between the developer and the coastal state. The attainment of a social license mine is very much a work in progress. There has been considerable opposition to seabed mining in territorial waters. To date there does not seem to be a political consensus as to whether seabed mining is acceptable. The lack of consensus is a continuing concern in assessing risk. In the case of a coastal state the political consensus which will eventually result in the granting of the social license will be directed to issues specific to the coastal state. In summary there are many issues which investors will need to address as the industry and its legal frameworks develop.

In Kiribati, it is observed that the State's current economic vulnerability, due partly because of its lack of land-based economic resources and its isolation from international markets; outlines

the need to “foster broad-based economic growth”. As part of its Ministry Operation Plan (MOP), Government, being aware that fisheries resources is currently Kiribati’s only resource mainstay for economic development; recognized that Kiribati’s seafloor polymetallic nodule deposits will play a key role in the future development of the State by assisting Kiribati diversify its narrow economic base, as well as provide career opportunities for Kiribati nationals in a new industry. At the same time Kiribati recognizes the need to develop policies and management frameworks as basis for enacting appropriate legislation for DSM; and to engage with the deep-sea mining industry and attract foreign investment to ensure Kiribati can build its national capacity to a level that will ensure Kiribati fulfills its international obligations under UNCLOS pertaining to environmental protection.

It is acknowledged that exploration and subsequent mining of seabed minerals of the deep ocean environment is a very new concept in Kiribati and there is currently no set legislation for Seabed exploratory and mining activities. However Kiribati is not new to exploitation of its ocean resources and it does have regulatory frameworks for protection of the marine environment from human activities, such as the Environment Act (1999, as amended 2007) which dictates how any new activity in Kiribati waters for any matter, will have to undergo an Environmental Impact Assessment and submit an Environmental Management Plan; and Mineral Development Licensing Ordinance (1973)- among other relevant legislations and can be used to develop legislations for Mineral exploration and Mining activities in Kiribati. Such developmental work can also be actively coalesced with other relevant international and regional conventions, agreements and guidelines, such as LOSC, Rio Declaration, Noumea Convention, Madang Guidelines, PIROF and the Nauru agreement, to list a few.

In this way, Kiribati can ensure that the deep sea mineral resources within its EEZ are developed in an environmentally sustainable manner whilst achieving the State’s economic development aspirations.

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