

PACIFIC-ACP STATES REGIONAL LEGISLATIVE AND REGULATORY FRAMEWORK FOR DEEP SEA MINERALS EXPLORATION AND EXPLOITATION

Prepared under the SPC-EU EDF10 Deep Sea Minerals Project

July 2012

IMPORTANT NOTICE

This report has been produced with the financial assistance of the European Union. The views expressed herein do not necessarily reflect the official opinion of the European Union.



PACIFIC-ACP STATES REGIONAL LEGISLATIVE AND REGULATORY FRAMEWORK FOR DEEP SEA MINERALS EXPLORATION AND EXPLOITATION

Prepared under the SPC-EU EDF10 Deep Sea Minerals Project

First Edition, July 2012



©Copyright Secretariat of the Pacific Community (SPC) 2012

All rights for commercial/for profit reproduction or translation, in any form, reserved. SPC authorises the partial reproduction or translation of this material for scientific, educational or research purposes, provided that SPC and the source document are properly acknowledged. Permission to reproduce the document and/or translate in whole, in any form, whether for commercial/for profit or non-profit purposes, must be requested in writing. Original SPC artwork may not be altered or separately published without permission.

Original text: English

Secretariat of the Pacific Community Cataloguing-in-publication data

Pacific-ACP states regional legislative and regulatory framework for deep sea minerals exploration and exploitation/ prepared under the SPC-EU EDF10 Deep Sea Minerals Project. - 1st ed.

1. Ocean mining – environmental aspects – Oceania.
2. Marine mineral resource – Oceania.
3. Ocean mining – law and legislation – Oceania.
- I. Title II. Secretariat of the Pacific Community. Applied Geoscience and Technology Division

622.2950995 AACR2

ISBN: 978-982-00-0557-0

Printed by: Quality Print Limited, Suva, Fiji

Available from: Applied Geoscience and Technology Division (SOPAC)
Private Mail Bag, GPO Suva, Fiji
Telephone: (679) 338 1377
Fax: (679) 337 0040
E-mail: director@sopac.org
www.sopac.org

SPC SOPAC Division Published Report 111

FOREWORD

The Pacific Ocean is deeply interwoven into the lives of all the people of the region. They rely upon the ocean for subsistence, travel, livelihoods and recreation – while also being vulnerable to its perils. It is paramount to protect the Pacific Ocean and its vital resources for the future. While we continue to benefit from its vast resources, Pacific people have a shared responsibility to protect and preserve the health of the Pacific Ocean, and this must be at the forefront of the national, regional and global agendas.

In the 1960s and 1970s, when explorers equipped with new scientific and technological tools worked to locate mineral deposits in the deep seabed and identify the potentially rich metal content in these deposits, excitement was generated about a potential new and untapped ocean resource.

The UN Convention on the Law of the Sea, upon coming into force in 1994, gave each coastal state exclusive sovereign rights to search for and exploit the deep sea minerals contained within its maritime boundaries. 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.

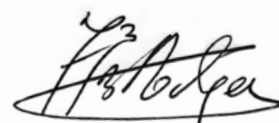
But this must be balanced against other imperatives. As well as bestowing legal rights over deep sea minerals, international law also imposes duties. States must: protect the ocean environment, prevent pollution, and preserve rare or fragile ecosystems and ocean habitats. Since there is still much to learn about the vast ocean environments and how they may be affected by deep sea mineral exploration and exploitation activities, a precautionary approach must prevail. 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 gained.

If States do not fulfill those obligations imposed by international law, not only will the health of the Pacific Ocean be in peril, but small island governments may find themselves liable for damage occurring as a result, which they can ill-afford.

This is why it is essential that national legislation for deep sea exploration and exploitation require explorers and future miners to meet standards as high as (or higher than) those set by the international community. Implementing a robust regulatory regime will provide protection for states, marine biodiversity, sea users, and local communities, while providing security and clarity to the explorers and future miners.

Very few countries in the world have taken these vital legal steps. The Pacific ACP states are leading the way. It is anticipated that this Regional Legislative and Regulatory Framework (RLRF), developed in collaboration with Pacific ACP states, industry and numerous other experts and stakeholders by the Secretariat of the Pacific Community Applied Geoscience and Technology Division's Deep Sea Minerals Project with funding support from the European Union will prove to be an invaluable roadmap for Pacific Island states in tackling this new and complex area. The RLRF seeks to give policy-makers, lawyers, and technical agencies the best information currently available to enable informed decision-making for the long-term benefit of Pacific Island communities and the future generations.

While it may be some time yet before we see commercially viable seabed mining projects, this RLRF is a timely, positive, and practical step in the journey upon which the region has embarked: towards the responsible and careful development of seabed mineral resources – and I commend it to you.



Dr Jimmie Rodgers

Director-General
Secretariat of the Pacific Community

PREFACE

I am privileged to write this Preface in my capacity as the current Chair of the Legal and Technical Commission of the International Seabed Authority (ISA) just as much as the Director of the Applied Geoscience and Technology Division of the Secretariat of the Pacific Community (SPC).

I would first like to acknowledge the support of the European Union for providing the funding under the 10th European Development Fund Regional Programme supporting the 15 Pacific ACP states for the Deep Sea Minerals Project currently underway at the SPC and which has seen this Regional Regulatory Framework as an early and significant result.

The Pacific ACP states have sovereignty over a vast area of the Pacific Ocean most of them with their Exclusive Economic Zone (EEZ) almost 100 times larger than their total island area. The opportunity for several to access additional jurisdiction for potential seabed minerals through extended continental shelf claims under the United Nations Convention on the Law of the Sea, will increase this vast area even further. As at mid-2012 several Pacific ACP states have private sector interests actively engaged in seabed minerals in their EEZ.

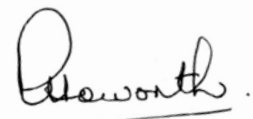
Only one hundred nautical miles away from the Line Islands EEZ of Kiribati lies the Clarion Clipperton Zone (CCZ) of the Area, over which the ISA has responsibility for approved programmes of work for exploration for polymetallic manganese nodules. In June of 2011 there were eight programmes of work approved for the CCZ, now only a year later there are thirteen, which together with programmes of work for massive sulphide areas in the Indian and Atlantic oceans brings the total approved programmes of work in the Area to seventeen. Few are familiar with the “Reserve Areas” in the CCZ. These areas are reserved for developing countries to sponsor programmes of work with private entities. Three of the thirteen programmes of work in the CCZ are in these reserved areas where Pacific ACP states are the sponsoring states.

Surely this is a true expression of the global increase in interest in deep sea minerals, and in particular the keen interest of Pacific ACP states in anticipation of the potential economic opportunity.

With this keen increasing interest in seabed minerals comes responsibility. This Regulatory Framework has been prepared in order to assist Pacific ACP states perform that responsibility through the development and enactment of national regulatory frameworks that take into consideration responsibility not only in areas of national jurisdiction but also where there are responsibilities as a sponsoring state for activity in the CCZ.

As current Chair of the Legal and Technical Commission of the ISA, I believe this framework complements similar regulatory arrangements in place at the ISA and together they will provide an assurance at all levels that anticipated sustainable resource use will be predicated on sound environmental, social and economic considerations and management. I would highlight that both are underpinned by the precautionary approach called for in Rio Principle 15 of Agenda 21.

I commend this framework to you and congratulate the Pacific ACP states supported by the EU-funded Deep Sea Minerals Project for the joint effort to date.



Dr Russell Howorth

Director of the SPC Applied Geoscience and Technology Division; and
Chair of the Legal and Technical Commission of the International Seabed Authority (ISA), July 2012 – June 2013

CONTENTS

1. WHY HAVE THIS REGIONAL LEGISLATIVE AND REGULATORY FRAMEWORK (RLRF)?.....	1
Introduction to Deep Sea Minerals (DSM) in the region	
The DSM Project	
Importance to meet international law standards	
Benefits of a regional perspective	
RLRF aims	
RLRF recognises individual States will take differing approaches	
Other sources of guidance	
The Madang Guidelines	
Summary	
2. DEEP SEA MINERALS.....	3
Seafloor Massive Sulphide deposits	
Ferromanganese nodules	
Cobalt-rich crusts	
DSM technology	
3. LEGAL RIGHTS TO DEEP SEA MINERALS.....	5
Seabed under national jurisdiction	
Seabed beyond national jurisdiction	
4. BALANCING COMPETING INTERESTS.....	6
Benefits to citizens	
Attracting investment	
Environmental protection	
Responsible management of economic benefits	
Responsible management of social impacts	
Striking a balance	
5. DEEP SEA MINERALS ACTIVITIES AND POLICY AT NATIONAL LEVEL.....	8
6. INTERNATIONAL AND REGIONAL LEGAL OBLIGATIONS.....	9
UN Convention on the Law of the Sea	
The Noumea Convention	
Convention on Biological Diversity	
Conventions administered by the IMO	
Human Rights	
7. IMPLEMENTING INTERNATIONAL OBLIGATIONS IN NATIONAL LAW.....	13
8. MARITIME ZONE DELINEATION AND EXTENDED CONTINENTAL SHELF CLAIM.....	14
9. RELEVANT EXISTING DOMESTIC LAW.....	14
10. ESTABLISHMENT OF EQUITABLE FISCAL REGIME.....	15
Fiscal arrangements within national jurisdiction	
Fiscal arrangements specific to the extended Continental Shelf	
Fiscal arrangements specific to the Area	
11. REVENUE MANAGEMENT.....	19
12. INSTITUTIONAL IMPLEMENTATION.....	20

13. ALLOCATION OF SITES.....	21
14. ADMINISTRATIVE ARRANGEMENTS.....	22
DSM operational phases	
Regulatory body	
Due diligence	
Review of application	
Environmental Impact Assessment	
Licensing	
Monitoring	
Compliance and enforcement	
15. DECISION-MAKING.....	31
16. PUBLIC PARTICIPATION.....	32
17. JUDICIAL OVERSIGHT OF DECISION-MAKING.....	33
18. ENVIRONMENTAL MANAGEMENT.....	34
Environmental Impact Assessment requirement	
Defining ‘Environment’ for EIA purposes	
Application of the precautionary approach	
Adaptive management	
Best environmental practice	
Environmental planning	
19. OCCUPATIONAL HEALTH AND SAFETY.....	41
20. DUE REGARD TO OTHER SEA USES/IMPACT ON FISHERIES.....	42
21. MARINE SCIENTIFIC RESEARCH (MSR).....	44
22. DUE REGARD TO OTHER STATES.....	44
23. CAPACITY-BUILDING.....	45
24. REGIONAL CO-OPERATION.....	46
25. TRANSITIONAL PROVISIONS.....	47
26. MODEL TEMPLATE FOR A NATIONAL DSM REGULATION BILL.....	49
ANNEX 1.....	50
Process by which the RLRf was Developed	
ANNEX 2.....	51
Suggested Template for a DSM Regulation Bill	
ANNEX 3.....	55
Contributors to the RLRf	

**PACIFIC-ACP STATES REGIONAL LEGISLATIVE AND
REGULATORY FRAMEWORK FOR DEEP SEA MINERALS
EXPLORATION AND EXPLOITATION**

GLOSSARY OF ABBREVIATED TERMS

BCA	– Benefit Cost Analysis
CBD	– 1992 Convention on Biological Diversity
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
FFA	– Pacific Forum Fisheries Agency
IMMS	– International Marine Minerals Society
IMO	– International Maritime Organisation
ISA	– International Seabed Authority
ITLOS Advisory Opinion	– Seabed Disputes Chamber of the International Tribunal for the Law of the Sea, Responsibilities and Obligations of States Sponsoring Persons and Entities with Respect to Activities in the Area, Advisory Opinion, 1 February 2011
IUCN	– International Union for Conservation of Nature and Natural Resources (The World Conservation Union)
LOSC	– United Nations Convention on the Law of the Sea
MARPOL	– 1973/1978 International Convention for the Prevention of Pollution from Ships
MMDA	– Model Mine Development Agreement
MSP	– Marine Spatial Planning
MSR	– Marine Scientific Research
nm	– nautical miles
P-ACP	– Pacific States from the EU’s African Caribbean Pacific grouping
RA	– Regulating Authority
RLRF	– 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
UNDRIP	– UN Declaration on the Rights of Indigenous People

1. WHY HAVE THIS REGIONAL LEGISLATIVE AND REGULATORY FRAMEWORK (RLRF)?

- 1.1 Introduction to Deep Sea Minerals (DSM) in the region:** Marine scientific research (MSR) and exploration within the Pacific Islands region has identified various mineral deposits on the seabed. Commercial interest in these resources has increased in recent years as seabed mining technology has continued to improve, and global prices of the metals contained in seabed mineral deposits increase. This has resulted in a certain degree of private sector (and developed governments’) investment in proposals to mine DSM throughout the region. These proposals may represent the development of a DSM mining industry in the region, from which Pacific-African Caribbean Pacific (P-ACP) States¹ could derive benefit.
- 1.2 The DSM Project:** The development of this RLRF was initiated through a regional project, launched in 2011, and referred to as the SPC-EU EDF10 Deep Sea Minerals Project (or ‘the DSM Project’), which is funded by the European Union (EU) and implemented by the Applied Geoscience and Technology Division (SOPAC) of the Secretariat of the Pacific Community (SPC). An objective of the DSM Project is to assist with the formulation of comprehensive national policy, legal framework and institutional capacity for P-ACP States to regulate and monitor DSM activities in the region. The development of this RLRF in collaboration with the 15 participating P-ACP States (and in consultation with a wide range of stakeholders) is an initiative of the DSM Project towards meeting that objective².
- 1.3 Importance to meet international law standards:** States are required to take all appropriate steps to ensure that DSM exploration and exploitation activities under their jurisdiction or control (including within areas beyond national jurisdiction) are appropriately managed, in accordance with international standards, including the precautionary approach (as explained in paragraph 18.15). In particular, States are required to respect the regime established under the 1982 United Nations Convention on the Law of the Sea (the LOSC), including a duty to protect and preserve the marine environment. This requires the adoption of national laws, regulations and administrative measures dealing with a range of issues that may arise from DSM exploration and development activity. A comprehensive national DSM management regime, established by legislation, will assist P-ACP States to minimise harm to the marine environment; reputational risk; and legal uncertainty regarding the regulatory processes, which may affect investment by industry in that State’s jurisdiction. The introduction of formalised national DSM law, policy and procedures is likely to encourage and to facilitate investment. The RLRF aims to assist individual States to achieve this.
- 1.4 Benefits of a regional perspective:** The RLRF also provides a regional perspective. The Pacific Islands Region has an agreed Regional Ocean Policy, which promotes regional co-operation as one of its key principles, complemented by a multi-national ocean governance

¹ The term ‘P-ACP’ refers to the Pacific group of countries within the Africa-Caribbean-Pacific grouping used by the European Union (EU), the donors of the DSM Project. The fifteen P-ACP countries under the EU’s classification are the following: Cook Islands, Federated States of Micronesia, Fiji, Kiribati, Marshall Islands, Nauru, Niue, Palau, Papua New Guinea, Samoa, Solomon Islands, Timor Leste, Tonga, Tuvalu and Vanuatu. These fifteen countries are participating in the DSM Project. One notable difference between this EU grouping and the SPC’s usual ‘Pacific Island Countries and Territories’ terminology is the inclusion of Timor Leste.

² It is important to note that the DSM Project and the development of the RLRF are intended to support individual P-ACP States to take informed decisions. This should not bypass policy debate and decision-making at the national level concerning the important issue of whether or not a State should decide to engage with DSM exploration and exploitation activities. Rather, the RLRF is intended to be a template to inform governments and to contribute to the development of a harmonised legislative and regulatory regime for such activities in the Pacific region. The content of the RLRF will assist those P-ACP States that have already decided to engage with DSM. It should also assist P-ACP States who have not yet reached that stage, in policy discussions and decision-making about whether to engage with DSM activities. The RLRF highlights the requirements for a State to develop a proper regulatory regime for DSM activities. The State’s capacity to meet these requirements, should itself be a critical factor in taking the decision whether or not to permit DSM activities within its jurisdiction or control.

framework adopted by Pacific Island Countries and Territories (the Pacific Oceanscape), which emphasises the importance of a regional approach to the sustainable development, management and conservation of the ocean. This regional policy is guided by international law, which requires States to endeavour to harmonise policies relating to seabed activities at the appropriate regional level. A regional approach to address DSM issues, including the development of consistent and harmonised national regulatory practices, policy and law throughout the region was agreed between the SPC; the P-ACP States; and the EU and led to the design of the DSM Project. It is hoped that the RLRF will contribute to the establishment of common standards and practices throughout the region, and facilitate a stable and transparent operating environment, and a collaborative approach to securing improved knowledge and expertise in the region concerning the regulation of DSM activities (see section 24, for further details about the benefits of a regional approach to DSM).

1.5 RLRF aims: Having regard to the foregoing, the RLRF aims to:–

- (1) Promote a regionally integrated approach to DSM regulation³.
- (2) Provide P-ACP States with a workable guide to implementation of national policies and legislation concerning DSM activities that is consistent with international obligations, rules and standards.
- (3) Assist P-ACP States to ensure that activities with national jurisdiction or control are consistent with the precautionary approach; are conducted with a view to minimising and mitigating the risk of environmental harm; and appropriately take into account other sea users.
- (4) Balance regulatory requirements with sufficient incentives and security of tenure to promote investment and private sector participation in developing national marine minerals industries.
- (5) Recommend an approach that is both efficient and cost effective to P-ACP States and to users, and proportional to the risks involved.
- (6) Develop an overview and reference document to assist government officials, and other stakeholders, in their approach to DSM.

1.6 RLRF recognises individual States will take differing approaches: It is important to emphasise that there will be significant differences between different P-ACP States' experiences, capacities, mineral potential, strategic priorities, and pre-existing legal and administrative frameworks and structures. The RLRF aims to provide useful guidance across this spectrum, but recognises that a 'one-size-fits-all' approach to DSM legislation across the region is unlikely to be achievable. The DSM Project provides support and advice to P-ACP States who are interested in undertaking DSM activities. Resources to assist countries participating in the Project on a one-to-one basis in the development of domestic legislation and administrative measures to regulate DSM exploration and exploitation are provided in the Project, should an individual country find this useful. Nevertheless, whether or when or how to undertake DSM activities, and the details of any national policy and legislation, remains entirely a matter of sovereign autonomy for each State.

1.7 Other sources of guidance: In addition to this RLRF, various useful guidance documents or industry standards already exist, to which P-ACP States may wish to refer in developing their DSM regulatory regime. These include: the Madang Guidelines (see paragraph 1.8), the International Seabed Authority (ISA) Mining Code⁴ (see paragraph 3.3), and the International Marine Minerals Society (IMMS) Code for Environmental Management of Marine Mining (www.immsoc.org). Other guidance, not specific to DSM, but which may also be useful include

³ While this RLRF is targeted at DSM, this being the Project's specific remit, it is noted that the basic regulatory and fiscal structure could potentially apply to other nearer-shore seabed resources (for example sand, gravel and coral, perhaps also methane clathrates, phosphorite nodules, and even petroleum, oil and gas).

⁴ The Mining Code refers to the comprehensive set of rules, regulations and procedures issued (and under development) by the ISA to regulate prospecting, exploration and exploitation of DSM in the Area (international waters). Copies can be found at: <http://www.isa.org.jm/en/mcode>.

the Extractive Industries Transparency Initiative (EITI) (see paragraph 11.5); the Model Mine Development Agreement (MMDA) developed by the International Bar Association (see paragraph 14.33); and the Minerals Taxation Regimes report produced by the Commonwealth Secretariat and the International Council on Mining and Metals (February 2009), available at: www.icmm.com/document/520.

- 1.8 The Madang Guidelines:** These principles for the development of national offshore mineral policies were produced in December 1999 to provide a basis for the development of new policy and legislative regimes to manage issues arising from offshore mineral exploration and potential development within national jurisdiction of Pacific island countries. The Guidelines are based on the recommendations of an expert Workshop on Offshore Minerals Policy, convened in February 1999 in Madang, Papua New Guinea, by the Government of Papua New Guinea, the Metal Mining Association of Japan, the Pacific Islands Forum, and the South Pacific Applied Geoscience Commission (South Pacific Applied Geoscience Commission Secretariat Miscellaneous reports 323 and 362). The Guidelines contain nineteen recommendations to Pacific Island governments, as a basis upon which to formulate effective and enabling policy and legislation to govern offshore mineral development. These recommendations recognise the unique attributes and occurrences of seabed deposits, the pioneering nature of exploration and development activities, and the importance of careful management of environmental impacts, stakeholder interests, and impact on fisheries; they also seek to address the inter-relation between government, industry and marine scientific research. The RLRf is based upon the Madang Guidelines. The Guidelines themselves emphasised the need for a further and more detailed evolution of the Guidelines – and this request was reiterated by P-ACP States attending the DSM Project’s inaugural meeting in June 2011. The principles stated in the RLRf attempt to be the best advice available in 2012. This may change as the DSM industry, and the current knowledge and law pertaining to it, evolves.
- 1.9 Summary:** This RLRf, then, seeks to recognise the differing interests and conditions prevalent amongst the P-ACP States, and provides high-level guidance and options for each State to develop its own national policies and laws tailored to that State (and its national priorities, existing laws and institutions, and varying political and geographic characteristics) – whilst promoting regional harmonisation and clarity for DSM exploration and development in the Pacific Islands Region. The process by which the RLRf has been developed is set out in Annex 1.

2. DEEP SEA MINERALS

- 2.1** DSM are minerals that occur in the deeper-water parts of the ocean, deposited on the surface of the seabed or within the sub-soil by natural processes. Deeper-water parts of the ocean are generally considered as areas below the photic zone, deeper than 400 metres, beyond reefs and traditional fishing grounds, where hydrostatic pressures require specialist equipment. There are different types of DSM deposits, such as iron-manganese (or ferromanganese) nodules and crusts, massive sulphides, phosphates, and metalliferous sediments. Three major deposits, identified to have potential for future development, are considered here⁵: (1) Seafloor Massive Sulphides (SMS); (2) Ferromanganese Nodules; and (3) Ferromanganese Cobalt-rich Crusts. These seabed mineral deposits are composed predominantly of metals. The rare-earth elements (REEs) have recently been added to the list of possible target metals contained within some DSM deposits, owing to recent coverage of reports of potentially rich REE resources in the Pacific Ocean, coupled with increasing global demand for these elements.

⁵ Without prejudice that this document is intentionally generic in its content, and so could be presumed to apply to any other type of mineralisation that is discovered to be of interest.

- 2.2 Seafloor Massive Sulphide deposits** are formed by processes that occur around and beneath active hydrothermal vents. The deposits are formed by tectonic plate movements including volcanic activity and faulting that cause fracturing of the seafloor. Seawater that infiltrates the cracks in the earth's crust is heated from an underlying heat source (the magma) and returns to the seabed through a vent, at a very high temperature, mixing with cold seawater at the bottom of the ocean, and depositing minerals that are rich in metals. Active seabed hydrothermal vents ejecting mineral-rich black fluids that have accumulated deep beneath the seabed are also known as "black smokers" (or those ejecting sulphate-rich white fluids: "white smokers"). Hydrothermal vents give rise to interesting benthic biological communities, with high biomass and endemism (and this biology also gives rise to interest from the pharmaceutical industry). In some places, the vents are inactive, leaving cold SMS deposits on the seafloor, where they start to oxidise. SMS deposits are found predominantly in water depths ranging from 1,000 to 5,000 metres. The target metallic minerals for SMS deposits are copper, gold, silver and zinc. It is most likely that inactive vents only would be targeted for mining.
- 2.3 Ferromanganese nodules** are metal-oxide rock materials that occur on the seafloor. These are predominantly found, often with a wide distribution, in ocean basins at 4,500 – 6,500 metres deep on abyssal plains, where sedimentation rates are low. Nodules are characterised by concentric millimetre-scale layers that grow in aggregate from <1 to >5 centimetres in diameter around a core (a rock fragment, shell or shark tooth). The growth rates are very slow at only millimetres per million years. Target economic minerals in nodules are nickel, copper, manganese, molybdenum, lithium, rare-earth elements and possibly cobalt.
- 2.4 Cobalt-rich crusts** are found predominantly on the flanks of submerged volcanic islands and on submarine ridges and seamounts throughout the world's oceans at 400 – 4,000 metres depths. Cobalt-rich crusts form at the rate of 1 – 6 millimetres per million years. Crust-bearing seamounts can be huge – some as large as mountain ranges on land. The target economic minerals for these crusts are cobalt, nickel, manganese, tellurium, rare earth elements, niobium and possibly platinum. Only a few of the estimated 50,000 seamounts that occur in the Pacific have been mapped and sampled in detail.
- 2.5 DSM technology:** Mining of DSM resources gives rise to significant challenges owing to the depths in which these minerals occur. Apart from a number of trial mining ventures, no system has yet been developed to enable the operation of commercial mining in the deeper parts of the oceans. Nevertheless, the prospect of such activity taking place in the near future has increased in recent years, owing to advancements in mining technology. One company operating in Papua New Guinea is engaged in work to develop a production system using existing technologies adapted from the offshore oil and gas and shallow offshore diamond-mining industries, to extract SMS deposits. This planned mining system has three major components: a mining support vessel, a riser and lifting system, and a seabed mining tool.
- 2.6** For different types of deposits (SMS, manganese nodules or cobalt-rich crusts), mining systems are likely to differ. The size and duration of operations, the nature of the specific effects on the marine environment, and the revenue that can be generated are also likely to vary between deposit types and different DSM operations. Each DSM project will therefore need to be assessed by any State, on the basis of its individual workplan.
- 2.7** Throughout the RLRf reference is made to different types of DSM activities: (i) prospecting, (ii) exploration and (iii) exploitation or mining. Together these are referred to in the RLRf as 'DSM activities'. These terms may be understood as follows⁶:
- 'prospecting' means the search for DSM deposits (either in the Area (see Footnote 4 and paragraph 3.2) or within national jurisdiction), including estimation of the composition, size and distribution of deposits of DSM and their economic values, without any exclusive rights;

⁶ A slightly-amended version of the International Seabed Authority's defined terms in its Mining Code.

- ‘exploration’ means searching for deposits of DSM (either in the Area or within national jurisdiction) with exclusive rights; and the analysis of such deposits, the use and testing of recovery systems and equipment, processing facilities and transportation systems, and the carrying out of studies of the environmental, technical, economic, commercial and other appropriate factors that must be taken into account in exploitation; and
- ‘exploitation’ or ‘mining’ means the recovery for commercial purposes of DSM from the seabed (either in the Area or within national jurisdiction), and the extraction of minerals therefrom, including the construction and operation of mining, processing and transportation systems, for the production and marketing of metals.

3. LEGAL RIGHTS TO DEEP SEA MINERALS

- 3.1 Seabed under national jurisdiction:** The LOSC divides ocean space into maritime zones – measured by reference to a baseline constructed from points on the land territory of the State. The Exclusive Economic Zone (EEZ) is the waters extending to 200 nautical miles (nm) from the baseline⁷. The seabed and subsoil up to 200 nautical miles is the continental shelf (CS). The CS may extend beyond 200 nm⁸. The LOSC confers rights upon all coastal States, including small island nations, to engage in the exploration, exploitation, conservation and management 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) (LOSC Article 77)⁹. These rights are exclusive: if the coastal State does not explore the CS or exploit its 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). A coastal State further 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.
- 3.2 Seabed beyond national jurisdiction:** The LOSC also establishes two zones beyond national jurisdiction: the ‘high seas’ (the water column beyond the EEZ) and ‘the Area’ (the seabed beyond national jurisdiction). The Area is the seabed beyond the external limits of the CS (including extended CS). Seabed activities beyond the national jurisdiction are also covered by the LOSC. The seabed and ocean floor and the subsoil thereof, beyond the limits of national jurisdiction, as well as its resources, 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.
- 3.3** 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 terms, defined in the Mining Code, are together

⁷ Subject to the delimitation of boundaries between neighbouring States.

⁸ The LOSC provides that States may be entitled to areas of CS that extend beyond 200 nm from the coastal baseline, up to 350 nm, where specific geological criteria set out in Article 76 of the LOSC are met. A formal process must be followed before a coastal State may confirm 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 Shelf. For DSM exploration and exploitation activities on the extended CS (i.e. beyond 200 nm from the baseline) the LOSC regime that is relevant are those parts 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 (see paragraph 10.10), which are not required for the CS up to 200 nm from the baseline.

⁹ The EEZ regime in the LOSC largely governs State rights to utilise living resources (LOSC Article 62), whereas the CS regime governs State rights to explore and exploit non-living resources, e.g. minerals (LOSC Article 77). In effect the CS regime governs the seabed and subsoil and all rights to minerals both below and beyond the EEZ (LOSC Article 76(1)). That said, both regimes will have jurisdictional implications for seabed mining operations.

‘activities in the Area’). 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 develop.

- 3.4** The LOSC also devised a parallel system of exploitation for the Area, recognising that developing States will enjoy special access rights to reserved (and already prospected) zones within the Area. The LOSC 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 areas. 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.

4. BALANCING COMPETING INTERESTS

- 4.1** DSM is an area with competing interests. These need to be comprehensively understood and taken into account by Government in deciding whether to embark upon developing the country’s DSM resources. The following are some of the key areas that require balancing in this regard.
- 4.2** **Benefits to citizens:** DSM exploitation, in a P-ACP State’s jurisdiction or under sponsorship by a P-ACP State in the Area, has potential to benefit that State by contributing to government revenues (through taxes and/or royalties). Further benefits may include: creating jobs and training opportunities, strengthening the domestic private sector, encouraging foreign investment, funding public service improvements, contributing to infrastructure (necessary for other forms of development, e.g. power plants), and supporting other economic sectors, see section 23.
- 4.3** **Attracting investment:** P-ACP States are likely to be attracted by the potential returns and benefits that DSM mining may bring, and once a decision has been taken to participate in DSM activities, either in the Area or within national jurisdiction, States are likely to be keen to encourage investment. This would not be achieved by imposing regulatory obligations that carry a disproportionate burden or cost in relation to the risks and impacts envisaged, such that it would make DSM activities in that State’s jurisdiction or under its control unworkable. DSM mining is an emerging and frontier (i.e. as yet untested) industry, requiring significant capital outlay from investors¹⁰, and offering no guarantee of returns. Industry representatives will of course want to maximise the likelihood of making a profit in choosing where to act.
- 4.4** At the same time, comprehensive and well-implemented legislative and regulatory frameworks are important to attract foreign investors into a jurisdiction. A DSM mining project entails significant risk. For countries hoping to attract foreign investment, economic and socio-political stability, a favourable fiscal regime, an assurance of security of tenure and consistency of regulation, and proper legal frameworks are all important factors.
- 4.5** **Environmental protection:** Various groups and commentators are concerned about the cutting edge nature of DSM activities, and the potential risks to the ecosystems and biodiversity that may be found at some of the sites of seabed mineral deposits; in the superjacent water

¹⁰ Although, unlike with on-land mining, this may include aspects that can be used in different sites or even for different deposits.

column (including rare and endemic species); or nearby sites of high ecological significance; and the impacts of DSM mining on the sustainable use of ocean resources.

- 4.6** Studies of biological communities and surrounding environments associated with DSM have been ongoing for some decades, at least. Nevertheless, the ecosystems that potential DSM mining sites will affect remain very poorly documented and understood. They may include important habitats, scientific research opportunities, and potentially valuable genetic resources. Our knowledge of the economic value of these habitats is very limited. Furthermore the links between these ecosystems and coastal or pelagic ecosystems – and so possible flow-on impacts – are also poorly understood.
- 4.7** Some destruction or modification of deep sea biota, their physical habitat, and the deep seabed ecosystem will be unavoidable in DSM mining. Nevertheless, the aim is that the nature of the impact of DSM mining, with good and responsible management in place, can be assessed, monitored, minimised, off-set and/or avoided by responsible management on the basis of detailed consideration of individual projects – enabling informed consent. Impacts can be checked by the application by legislators and decision-makers of internationally-accepted best practice in environmental management (such as Environmental Impact Assessment (EIA) as a prerequisite for granting rights to operators to engage in DSM activities that have environmental impacts, as well as measures to support effective environmental monitoring and the mitigation of environmental damage, see section 18).
- 4.8** At present there is no track record to judge the performance of operators involved in DSM mining activities, but the evident impacts and changes to the environment from on-land mining gives some communities in the Pacific Islands region cause for concern in relation to the prospect of the DSM mining industry. Nevertheless, it has been observed that one of the major benefits of exploration by DSM operators is that it enables the expansion of the scientific knowledge that is currently lacking.
- 4.9** **Responsible management of economic benefits:** Many resource-rich developing states exhibit slow economic growth, despite their resource wealth. Windfall (i.e. short-term, one-off) income streams, such as may be generated if successful DSM extraction occurs in significant quantities, if not handled carefully, may have negative effects on a State's economic status, causing adverse phenomena such as Dutch Disease¹¹.
- 4.10** This 'resource curse' may be combated by good governance, and an integrated resource management approach, with funds that are generated by DSM being used both for long-term investments in infrastructure or socio-economic projects, and also safeguarded for future generations. Sound revenue management by P-ACP States, grounded in transparent and non-discretionary policy and law, can ensure that the correct balance is struck between saving DSM revenues for future generations, and spending DSM revenues on existing national developments (but with long-term benefits), see section 10.
- 4.11** **Responsible management of social impacts:** There may be other social impacts of DSM activities. Although the DSM activities will largely occur at sea, transporting and processing of DSM may occur on land. There may be concern that associated land-based activities will adversely affect local communities' property, food sources and lifestyle. Equally, local communities may actively seek to host industrial facilities in the interest of attaining employment, infrastructure etc. There may be concern that coastal communities, who rely heavily on the sea for their food and income, may be affected by DSM activity through disruption of fragile and biodiversity-important ecosystems. In extreme cases, and particularly in the absence of strong governance systems, other extractive industry activity has been seen to worsen social tensions and even lead to political instability.

¹¹ Dutch Disease: local currency appreciates due to sudden increases in resource exports; other sectors, such as manufacturing and agriculture, cannot compete. When the resource boom ends, the other industries have declined and are no longer an available source of income and employment in that country.

- 4.12** Impacts on other sea uses must also be considered, and addressed by legislation and by including in the regulatory model a requirement for ongoing and careful impact assessment. For example, DSM activity at the lift/riser site and the increase in support vessel traffic from the mining vessel to the coast and back should be managed so as to avoid displacement of artisanal or industrial fishing. It is also possible that mining activity could prevent future use of the mining site for other purposes, such as bio-prospecting, or research science – and this should be assessed as acceptable, before a decision to proceed is taken (see section 20).
- 4.13** **Striking a balance:** P-ACP States interested in engaging with DSM mining should recognise these competing interests in their policy-making, and aim to strike a balance between them. Indeed in some instances it may be decided that the environmental and social costs might outweigh the potential benefits, and if so DSM activities will not be permitted to proceed. Where DSM projects are permitted to proceed, national DSM law and policy should aim to provide for the development of DSM resources to the State's benefit. The adverse social and environmental effects of activities in the P-ACP State's jurisdiction or control should be managed to promote the positive societal contribution that the DSM industry may bring, and providing for responsible investment and use of any revenue generated by DSM exploration and exploitation.

5. DEEP SEA MINERALS ACTIVITIES AND POLICY AT NATIONAL LEVEL

- 5.1** Individual P-ACP States' interests and situations are expected to vary. States may be interested in potential DSM activities in: (i) their national jurisdiction (CS); (ii) the Area; (iii) both; or (iv) neither. This RLRf broadly addresses each of the relevant areas, although some of the provisions (e.g. concerning social impact or the detail of licence terms) may be more pertinent to national jurisdiction only.
- 5.2** P-ACP States are encouraged to include DSM discussions in their national development/economic/industry strategies and priority planning processes. The DSM Project and the development of this RLRf are not intended to bypass such initial policy debate and decision-making at national level, but rather to facilitate and guide DSM discussions.
- 5.3** Once mineral resource potential has been assessed, a starting point for policy development within a P-ACP State would be to examine the appropriate degree and area of interest in DSM activity for that particular State. Encouraging informed debate amongst relevant stakeholders and the public is recommended to further such policy development.
- 5.4** Benefit/costs analysis (BCA) will assist a State in determining the extent of its interest in engaging with the DSM industry. Balancing the potential benefits and costs of DSM in development strategies requires a complete understanding of the potential external and opportunity costs of DSM exploration and exploitation to the State, including: an assessment of the nature and value of its deposits, the financial/resource costs of proper regulation of the industry; and the potential impacts on the environment, on social cohesion and on other industries that may be in place as a result of the extraction, transportation, and possible processing of DSM. These costs should be balanced against the degree to which development goals can be met without the exploitation of DSM.
- 5.5** Relevant factors for such DSM policy development would therefore include: (i) a State's development priorities and pre-existing revenue portfolio; (ii) the DSM occurrence, and mining interest/economic potential in its jurisdiction; (iii) an assessment of impact, risk and available

mitigation techniques; and (iv) a BCA. All the above factors should be considered while taking into account environmental, social and cultural impacts to assess whether DSM exploitation will provide a net advancement in achieving development goals. Multi-criteria analyses are to be recommended. A potentially interested P-ACP State may also take a policy decision simply to delay development of a DSM industry until better data on the various economic, ecological and governance impacts can be attained, through observing the efforts of other pioneering countries first. Alternatively, it may choose to impose production limits on the DSM minerals of its CS, so that these finite mineral deposits are not necessarily developed as fast as technically possible, but are reserved in case of future commodity price increases.

- 5.6** Each P-ACP State may wish to highlight in its DSM policy relevant aspects of the national constitution, and the anticipated interface between constitutional principles and planned national DSM instruments, and how DSM supports national and regional development/strategic plans (including the Pacific Plan¹²).
- 5.7** In addition to the competing interests (section 4), and international law obligations (section 6), P-ACP States may also wish to recognise expressly in their national policy other fundamental principles, including:
- the non-renewable nature of DSM resources, and the importance that they are economically and efficiently managed in the nation’s best interests in the short and long term;
 - the importance of the sea to the State’s citizens’ well-being and livelihoods;
 - the necessity to conserve and protect the marine and coastal environment;
 - public ownership of the resources: (e.g. that DSM resources are public assets, managed for, and on behalf of, its citizens by the State);
 - the importance of public participation in the planning, decision-making, and conduct of DSM activities; and
 - potential through DSM activities to gather, analyse and disseminate scientific and technical data.

6. INTERNATIONAL AND REGIONAL LEGAL OBLIGATIONS

- 6.1** If a decision is taken by a P-ACP State that it is open to applications for DSM mining activities on its CS, or to sponsor a commercial operator for DSM activities in the Area, then development and implementation of a national legislative framework is essential.
- 6.2** **UN Convention on the Law of the Sea:** States are given rights to exploit the DSM resources of their CS under the LOSC, and States are able to seek rights to undertake or sponsor DSM activities within the Area. That said, the LOSC (Article 192) also creates a general obligation for States to protect and preserve the entire marine environment. This obligation extends to activities both within and outside areas of national jurisdiction¹³.

¹² At the 2009 Pacific Island Forum meeting (in Cairns) Leaders agreed a number of key commitments and priority areas for progressing the Pacific Plan over the next 3 years, and these included: “developing regional and national frameworks to enable the development of the economic potential of marine mineral resources”. Also particularly relevant to the development of national DSM regulation legislation are the Pacific Plan’s strategic objectives of: improved natural resource and environmental management; and improved transparency, accountability, equity and efficiency in the management and use of resources in the Pacific.

¹³ Although it has been noted that the regime set out in LOSC is more specifically applied in relation to (i) the CS within 200 nm from the baseline; and (ii) the Area – than in relation to (iii) the extended CS.

6.3 The LOSC, and general international law, also 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 jurisdiction¹⁴. Those laws and regulations must be monitored and enforced.

6.4 Moreover, State laws and regulations must be “no less effective than international rules, regulations and procedures”¹⁵ – such as the ISA Mining Code. Direct obligations under international law in respect of DSM include *inter alia*¹⁶:

- applying the precautionary approach (see paragraph 18.15);
- employing best environmental practice (see paragraph 18.24); and
- conducting prior environmental impact assessment (EIA) (see paragraphs 14.22 and 18.1).

Accordingly, State laws and regulations adopted to govern DSM must make provision for those obligations.

6.5 States must adhere to the LOSC and international law obligations when regulating DSM activities regardless of their individual wealth or capacity¹⁷. This means that the general provisions concerning responsibility and liability for DSM activities apply equally to all States and are not differentiated according to a State’s economic status. States that fail to protect and preserve the marine environment through the adoption, implementation and enforcement of appropriate DSM legislation can be held responsible or liable¹⁸ for any resulting damage in accordance with general international law¹⁹. Conversely, States that adopt, implement and enforce appropriate DSM legislation are likely to be able to limit their liability for any unforeseen subsequent environmental damage. (These steps, important to relieve States of ultimate liability, should also of course importantly operate as damage prevention: the ideal situation is to remove the need for any consideration of liability for damages, by having no damage occur in the first place.)

6.6 Accordingly, the key points of international law in respect of DSM are:

- (i) States must also take measures to secure compliance with these international law obligations by any entities within their control, that are either undertaking DSM activities on that State’s CS, or in the Area under that State’s sponsorship.
- (ii) If States do not fulfil these obligations they will be responsible for any damage occurring as a result.
- (iii) States that have implemented and enforced appropriate legislation and DSM regulation that require compliance with international obligations (or higher standards), will comply with their obligation to protect and preserve the environment under the LOSC.
- (iv) The ultimate responsibility to the international community or liability to a damaged person for failure to uphold the appropriate performance of DSM obligations by operators within the national jurisdiction and beyond (e.g. in the Area or on the high seas) remains with the

¹⁴ Seabed Disputes Chamber of the International Tribunal for the Law of the Sea, Responsibilities and Obligations of States Sponsoring Persons and Entities with Respect to Activities in the Area, Advisory Opinion, 1 February 2011 (ITLOS Advisory Opinion), para. 119.

¹⁵ ITLOS Advisory Opinion, para. 241; LOSC Articles 208(3) and 209(2). Equivalent provisions are contained in the LOSC in relation to the Area and seabed activities under a State’s jurisdiction.

¹⁶ *Ibid.* paras 125-135, 136-137, 141-150 *inter alia*; LOSC Articles 204 and 206 (for EIA).

¹⁷ *Ibid.* paras 151-163.

¹⁸ Where there is a causal link between the sponsoring State’s failure and the damage (and such a link cannot be presumed), ITLOS Advisory Opinion, para. 184. Such responsibility may include, for example, the clean-up costs of pollution caused by a spill, a failure of equipment, or a vessel collision, following a claim brought by an affected neighbouring State or coastal landowner, or by the international community generally (through a supra-national organ).

¹⁹ LOSC Article 235.

State. A State that fails to adopt, implement and enforce appropriate DSM legislation and regulation will be liable for any resulting environmental damage.

- 6.7** A State's method of regulation of DSM activities is likely to vary between (i) its control over activities within national jurisdiction; and (ii) its sponsorship of activities in the Area. The Area is geographically remote from national jurisdiction, and enjoys the additional regulatory role of the ISA. States sponsoring activities in the Area should start with the ISA's Mining Code as a solid foundation for developing national rules in relation to: (i) sponsorship requirements; (ii) the timing of and types of data and information that are required; and/or (iii) the nature of the licence or agreement needed between the State and the DSM operator. These rules are likely to differ in some respects from what will be required by States of DSM operators operating within their national jurisdiction, where there is no involvement of the ISA. The fiscal regime for sponsorship in the Area (where the State has no sovereign rights over the minerals, and where the DSM operator must pay fees and royalties to the ISA), will clearly vary from the fiscal regime setting tax and royalties for mineral extraction within national jurisdiction (see section 10 for more detail in relation to fiscal regimes). Space limitations preclude detailed elaboration of the differences between the two zones in this RLR. Rather the DSM Project will make individualised advice on this aspect available to each P-ACP State.
- 6.8** Other international conventions that most P-ACP States have ratified or acceded to are relevant to DSM regulation, and should be taken into account in drafting domestic legislation, in addition to the LOSC.
- 6.9** **Noumea Convention 1986:** the Convention for the Protection of Natural Resources and the Environment of the South Pacific Region (the Noumea Convention) aims to ensure that resource development in the Pacific is in harmony with the maintenance of the unique environmental quality of the region and the evolving principles of sustained resource management. The Convention has two Protocols: one on dumping and the other on 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).
- 6.10** 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 seabed and its subsoil. It contains an EIA requirement, which must include opportunity for public comment and consultation with other States who may be affected. Contracting parties currently include: Cook Islands, Fiji, Federated States of Micronesia, Nauru, Papua New Guinea, Republic of the Marshall Islands, Samoa and the Solomon Islands. Other States interested to accede to the Convention should contact the Secretariat of the Pacific Regional Environment Programme (SPREP), where the Convention's secretariat is located.
- 6.11** **The 1992 Convention on Biological Diversity (CBD):** CBD aims to conserve biological diversity and species in natural surroundings, and to rehabilitate degraded ecosystems. It requires Convention Parties to protect *in situ* ecosystems and habitats within national jurisdiction areas. Parties had duties to (i) identify and monitor impacts (Article 7); (ii) establish a system of marine protected areas (Article 8); (iii) conduct EIA (Article 14a); and promote consultation (Article 14c) regarding processes and activities undertaken by Convention Party nationals, that may adversely affect biodiversity. CBD adopts an ecosystem approach as its primary framework for action, defining 'ecosystem' as the dynamic complex of plant, animal and micro-organism communities and their non-living environment interacting as a functional unit. The CBD provides that each State Party shall cooperate directly or through competent international organisations for the conservation and sustainable use of biological diversity.

- 6.12** The ten-year Strategic Plan of the CBD or the 2020 Aichi Targets, adopted by the 2010 Nagoya Biodiversity Summit (COP 10) included as one of its twenty headline targets that by 2020 at least 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, would be conserved through ecologically representative systems of protected areas.
- 6.13 The Conventions administered or hosted by IMO:** DSM activities require use of vessels at sea. International shipping and safety law obligations will therefore also apply to DSM operations. It is recommended that, in developing DSM legislation, States should also ensure that any vessels involved in DSM activity will be captured by existing national laws relating to more general maritime activities.
- 6.14** Specifically, the LOSC Article 94 requires flag States to take measures for ensuring safety at sea that conform to “generally accepted international regulations, procedures and practices”. The following International Maritime Organisation (IMO) Conventions may, on account of their worldwide acceptance, be deemed to fulfil the general acceptance requirement:
- International Convention for the Safety of Life at Sea, 1974 (SOLAS), and its 1978 Protocol;
 - International Convention on Load Lines, 1966;
 - International Convention on Tonnage Measurement of Ships, 1969;
 - Convention on the International Regulations for Preventing Collisions at Sea, 1972;
 - International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, 1978; and
 - International Convention on Maritime Search and Rescue.
- 6.15** Other IMO instruments exclusively regulate anti-pollution measures, whether the introduction of polluting substances into the sea is the result of an accident involving a ship or from the operational discharges from vessels. In this regard, the following instruments should be noted:
- International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto (MARPOL)²⁰;
 - Protocol of 1997 to MARPOL concerning the prevention of air pollution from ships;
 - The London Convention on Prevention of Marine Pollution by Dumping of Wastes and Other Matter and the 1996 Protocol there to;
 - Protocol on Preparedness, Response and Co-operation to Pollution Incidents by Hazardous and Noxious Substances, 2000;
 - Protocol Relating to Intervention on the High Seas in Cases of Marine Pollution by Substances Other Than Oil, 1973; and
 - International Convention for the Control and Management of Ships’ Ballast Water and Sediments, 2004 (not yet in force).
- 6.16 Human Rights:** All P-ACP States are also bound by international human rights law, enshrined in various human rights treaties and customary international law. DSM policy and legislation must be drafted and interpreted in a manner that is consistent with those international obligations. States may therefore decide, when drafting DSM policy and legislation, expressly to reaffirm their commitment to respect and protect indigenous peoples’ rights as provided for in human rights conventions, and instruments (such as the UN Declaration on the Rights of Indigenous People or UNDRIP), and in relevant domestic legislation.

²⁰ The applicability of MARPOL 73/78 and the London Convention and Protocol to deep seabed mining activities is complex. They do not apply to exploration and exploitation of DSM, but do apply to other related activities of DSM vessels, such as the disposal or storage of waste, and transporting or processing of ore. Nevertheless, the LOSC requires environmentally responsible exploitation of seabed resources in any event, and these Conventions may assist set the rules for doing so.

7. IMPLEMENTING INTERNATIONAL OBLIGATIONS IN NATIONAL LAW

- 7.1** National legislation must aim comprehensively to incorporate all the relevant international law obligations. 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 considered. This is consistent with a purpose-based approach to legislative drafting. 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.
- 7.2** In particular, powers, duties and functions under national DSM legislation should always be consistent with the LOSC. Incorporation of the LOSC into domestic law could be achieved by a preliminary overriding principle provision in the legislation e.g. *“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.”* Such a high-level statement about interpretation should not, of course, replace careful consideration of the relevant international obligations during the drafting process. The legislation must also be consistent throughout with the LOSC, and with other relevant legal principles.
- 7.3** As stated above, the LOSC Articles 208(3)-(4) and 209(2) require laws, regulations and measures 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 required to endeavour to harmonise such policies at the appropriate regional level. The LOSC Articles 214 and 215 are clear that such standards must not only be enacted in legislation, but steps must also be taken to enforce them.
- 7.4** A further non-exhaustive summary list of the key international law responsibilities detailed in section 6, is provided below for convenience:
- General and unqualified duty to protect and preserve the marine environment and rare or fragile ecosystems and habitats (LOSC Articles 192 and 194(5), Article 14 of the Noumea Convention).
 - Duty to prevent, reduce and control pollution from seabed activities (LOSC Articles 194(3)c, 208, 209; Noumea Convention Article 8); or caused by ships (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, or by dumping of waste and other matter at sea (LOSC Articles 194(3) and 210; the London Convention and the 1996 Protocol thereto).
 - Duty to prevent trans-boundary harm (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).
 - Duty to conserve biodiversity (CBD Article 3).
 - The precautionary approach (Rio Declaration, Principle 15; London Protocol Article 3(1); ITLOS Advisory Opinion; ISA Mining Code): *see paragraphs 18.15 to 18.23 for elaboration of the precautionary approach.*
 - Duty to employ best environmental practice (ISA Mining Code and ITLOS Advisory Opinion): *see paragraphs 18.24 to 18.27 for elaboration of this duty.*
 - Prior environmental impact assessment of activities likely to cause significant harm (LOSC Article 206) CBD, and Noumea Convention Article 16) and ongoing monitoring of environmental impacts (LOSC Article 204): *see paragraphs 18.1 and 18.2 for elaboration of this requirement.*

- Duty to take measures for ensuring safety at sea (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).
- Duties not to interfere with rights and freedoms of other States, such as the installation of submarine pipelines and cables, and marine scientific research (LOSC Articles 58, 78, 79 and 246).

7.5 P-ACP States may also wish to recognise expressly in their national policy and legislation other fundamental principles, including:

- Sustainable economic development and integrated management.
- An objective to promote the equitable and efficient development of the economic potential of marine mineral resources (Preamble to the LOSC; and the Pacific Plan).
- ‘Polluter pays’ principle (London Protocol, Article 3(2); Rio Declaration).
- Regional cooperation/integration in monitoring, processing and capacity building (LOSC Articles 276 and 277; and the Pacific Plan).
- Identifying mechanisms of building capacity and expertise in-country (the LOSC Part XI).
- Promotion of transparency and accountability, including with regard to revenues (Aarhus Convention; and the Extractive Industries Transparency Initiative).

8. MARITIME ZONE DELINEATION AND EXTENDED CONTINENTAL SHELF CLAIM

8.1 Section 3 summarises the maritime zones established by the LOSC, which give coastal States sovereign rights to the minerals contained within that area. To enable administration and to provide regulatory certainty for investment with regards to DSM activities within national jurisdiction, P-ACP States should expedite work to determine their maritime zones, settle outstanding maritime boundaries with opposite and adjacent States, and determine the extent to which they could claim areas of CS extending beyond 200 nautical miles in accordance with the relevant provisions of the LOSC²¹.

8.2 Where there is dispute over maritime boundaries, joint development zones for DSM exploration and exploitation can also be considered pending the settlement of such boundaries, in order to enable the States concerned to engage in the exploration and development of DSM resources in the meantime.

9. RELEVANT EXISTING DOMESTIC LAW

9.1 P-ACP States are likely to 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; 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 fisheries.

²¹ This will be subject also to the timetable of the Commission on the Limits of the Continental Shelf, and its progress through the current significant backlog of submissions.

- 9.2** This RLRf focuses principally on central DSM regulation, but does also attempt to cover the key points of some of these related areas briefly. The RLRf is comprehensive in nature, recognising that the experiences and status of legislation of P-ACP States varies greatly. But the RLRf is not intended to be applied wholesale by a State where matters contained in the RLRf are already adequately covered within their national law and policy. It may be that for some States with a mining history, onshore mining regimes are already in place, and these can be adapted to suit DSM needs. P-ACP States, should review the extent to which legal and administrative mechanisms exist already in that State which could apply also to DSM operations, and their adequacy for a DSM context. DSM projects may be very large in scope and, depending on a country's experience in dealing with very large projects, national legislation ranging from its tax code to its labour laws may or may not be adequate or appropriate to regulate such a project.
- 9.3** P-ACP States will then need to decide whether DSM-specific legislation should amend, supplant or supplement existing legislation. The principle of integrated management suggests that fewer legislative instruments facilitate efficient and timely decision-making. A single legislative instrument is usually more user-friendly, both for the State and for potential applicants, but it is recognised 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 minimises cross-sectoral inconsistency, regulatory gaps and overlaps is desirable.
- 9.4** One of the two options (amendment to existing legislation or drafting of new legislation) will be required by every P-ACP State engaging in DSM activities in order to meet international law obligations. Either may be a time-consuming process. An early start to policy discussions and timely involvement of Parliament, and Parliamentary Counsel / Law Officers are therefore recommended.

10. ESTABLISHMENT OF EQUITABLE FISCAL REGIME

- 10.1** P-ACP States 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 managed²².
- 10.2** 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 – recognising (for DSM exploitation within national jurisdiction) that the State 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. Investment levels and revenue predictions should be obtained; consideration should be given to the allocation of risk and how to manage potential extraordinary gains; and (with input from industry) other assumptions necessary to set the regime should be carefully made. While some general points and recommendations are made below, these continue to be made with the caveat that the geological, economic, social and political features and priorities of each P-ACP State will differ, such that each State's fiscal regime must be tailored appropriately, taking into account that State's particular interests and the 'offer' it wants to make on the global DSM 'market'.

²² This section examines the mechanisms by which a P-ACP State can raise revenue from DSM activities within its jurisdiction or sponsorship, and makes recommendations for sustainable use and investment of those funds. Nothing contained in the RLRf is intended to examine or advise upon how private commercial enterprises carrying out DSM activities for profit should seek to generate or use their profits.

10.3 Fiscal arrangements within national jurisdiction: Unlike the extended CS (see paragraph 10.10) and in the Area (see paragraph 10.11) 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. P-ACP 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 endeavours. 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.

10.4 A fiscal regime must be adapted to the specific requirements of each State, and will also need to integrate with the State's other established fiscal regimes. P-ACP States may wish to set a fiscal regime that will work to attract global mining capital (which may be otherwise directed to alternative jurisdictions) – but 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 recognising that certain adjustments will need to be made to apply such models to DSM. 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.

10.5 Key objectives for a competitive fiscal regime include that it 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;
- recognise 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
- recognise the volatility and particular nature of the minerals commodities markets.

10.6 Tax disincentives include political risk and tax uncertainty. Therefore stability and predictability of fiscal regimes is key to ensuring that mineral development is optimised over the life of the project – which will be achieved through having a well-thought-out regime from the outset.

At the same time, one important feature of an adequate fiscal regime is its progressivity. 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 regime. 'Resource rent' is any financial return that is surplus to the level of return actually required to motivate an investor to invest. 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 recognises 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.

- 10.7** 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 stabilisation of their fiscal terms, at least for a defined time period. The State may prefer to limit such 'stabilisation' to the period of investment recovery, and/or to charge for it, for example, by linking the stabilisation to extra percentage points of royalty. In any event it is important to establish a balanced fiscal system before authorising 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.
- 10.8** There are generally two alternative methods of setting a fiscal system for an extractive industry project: by a project-specific negotiated contract, or in 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.
- 10.9** 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 P-ACP 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.

10.10 Fiscal arrangements specific to the extended Continental Shelf: 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 modelling 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 percent. 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. Commentators note that Article 82 lacks specifics as to how this unique and complex provision is to be accomplished.

10.11 Fiscal arrangements 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”. 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.

10.12 The LOSC contained 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.

10.13 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

²³ The DSM Project intends to develop a regional DSM fiscal policy that will include a number of fiscal regime options from which P-ACP States can choose. This regional fiscal policy is adaptable to suit each State’s comparative advantages, fiscal structure and mineral endowment.

and US\$ 500,000 for an SMS application) and further fees payable upon contract, and/or commercial production commencement. In setting the terms of the sponsorship agreement, the P-ACP 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 P-ACP State is a part – but the P-ACP 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.

11. REVENUE MANAGEMENT

- 11.1** When DSM revenue is forthcoming, responsible management of these funding streams is paramount in order to secure the development advantage that P-ACP 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.
- 11.2** 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 Leste. In the region, both Papua New Guinea and Nauru have experimented with such schemes, and 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.
- 11.3** Setting aside revenue for future generations need not preclude immediate investment in infrastructure and socio-economic projects also. Using State revenue from DSM to fund work that improves health care, education, roads, technology, and the like, while mining is taking place is also investing in future generations.
- 11.4** It has also 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 marine environmental standards within its EEZ.
- 11.5** 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. P-ACP States are also encouraged to comply with the Extractive Industry Transparency Initiative (EITI). 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 two. P-ACP

States are encouraged also 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.

12. INSTITUTIONAL IMPLEMENTATION

12.1 The creation of adequate legislative and regulatory frameworks by P-ACP 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 recognised that this may be particularly challenging for small P-ACP States with limited administrative and technical capabilities.

12.2 In particular, P-ACP States engaging with DSM industry activities, either within national jurisdiction, or in the Area, will require creation or identification of a specialised 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 licences; (iii) receive and assess reporting documents from licensed operators; (iv) monitor their compliance with the terms of the licence; and (v) take action to amend the terms of licences or suspend activities if necessary, and to enforce sanctions for non-compliance (see paragraphs 14.17 to 14.20 for more detail with regard to these functions). Such institutions must be given sufficient capacity and authority to perform these functions and to monitor compliance with the DSM legal framework

12.3 This body may already exist in some P-ACP States. Others may have to strengthen the capacity of the responsible ministry/department (e.g. Mining or Environment), or may wish to establish a new specialised 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 points are discussed further in sections 14 and 15.

12.4 Provision must also be made for independent oversight and public notification of, and participation in, decision-making wherever appropriate (see section 16).

12.5 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 licence applications and/or an annual fee for current licences. 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.

- 12.6** Even with cost recovery provisions, the in-country financial and human resources required for effective DSM regulation, and the lack of capacity and specialised expertise available in many P-ACP States, have led to suggestions that a regional (or sub-regional) body may be better-placed to provide advice and/or administer DSM licences on behalf of P-ACP States (see paragraphs 24.4 to 24.6).

13. ALLOCATION OF SITES

- 13.1** 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 P-ACP State. The State is likely to find it useful to have a map-based computerised recording system to be able to identify which sites are under application or licence, 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). P-ACP 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 (see section 18), and allocation of sites may require marine protected areas, and/or buffer zones around areas of DSM activity.
- 13.2** 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 licence. 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 licence block (according to the deposit type being sought).
- 13.3** Using a tendering system a P-ACP State would identify an area where deposits appear promising, divide this into tenements, announce and publicise 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 (see paragraph 14.27), 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 licence applications, or conversely it may prefer to give notice of areas that are not available for licence 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.

- 13.4** 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.

14. ADMINISTRATIVE ARRANGEMENTS

- 14.1** International law (for example the LOSC Articles 214 and 215) clearly require that appropriate environmental standards must not only be governed by domestic legislation, but must also be implemented through monitoring and enforcement.
- 14.2** 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.
- 14.3** 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 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 licence (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 licence (see paragraphs 14.31).
- 14.4** 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 standardised 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.
- 14.5** **DSM operational phases:** The content of applications to conduct DSM activities, and the licences granted, are likely to vary according to the different activities proposed and their potential impacts. Therefore P-ACP States may find it helpful to arrange the legislation, and the licensing requirements and processes, around the different phases of DSM activities, e.g. (i) marine scientific research/exploration/feasibility studies; (ii) construction of mining operations/mining; (iii) monitoring activities; and (iv) closure and rehabilitation (including related monitoring of recovery) of mining site. There would be different application and EIA requirements, and licence terms attached to different activities. It is also important to note that a range of operational models for the mining process exists, and that exploration/exploitation methods are likely to differ between the three different DSM deposit types. While the regulatory system will be a unified process and the same principles will cover the same deposits, in detail it may have to take into account different mine site parameters (deposit size, geology); and the environmental considerations are likely to be correspondingly different in operation too.

- 14.6** For example the Cook Islands Seabed Minerals Act provides for the grant of separate types of licences for: (a) prospecting for minerals; (b) exploration for minerals; (c) recovery of minerals; and (d) retention of areas of minerals of known commercial value where recovery is not currently economically viable. The ISA has separate regulatory requirements for (i) prospecting; (ii) exploring; and (iii) exploiting of minerals (and these also vary depending on which mineral deposit type is being pursued by the applicant).
- 14.7** An effects-based approach is also recommended, where the anticipated effects and impacts of activities trigger the processes to be followed, rather than the generic type of activity. In this model, the legislation would be set around broad classifications of activities, which according to the anticipated effects, would be:
- i. 'permitted' – that is: activities which can be undertaken without licence (subject to provision of certain information);
 - ii. 'discretionary' – that is: activities which can be undertaken, if a licence is granted, following an application and EIA; or
 - iii. 'prohibited' – that is: activities that cannot be undertaken.
- 14.8** Subsidiary regulations or an Environmental Management Plan (EMP) can detail which activities fall within which category, for a specific area. For example, mining would probably be prohibited in a designated marine protected area²⁴; see paragraphs 18.6 to 18.15 for more detail as to the operation of an effects-based approach.
- 14.9** **Regulatory body:** P-ACP States pursuing DSM activities will need to nominate a government Ministry (e.g. the Minerals Department, the Natural or Marine Resources Department, or the Department for Environment) to develop DSM policy, and to hold responsibility for administration of the legislation (including any subsidiary legislation, such as regulations).
- 14.10** As stated above, P-ACP States engaging with DSM industry activities, either within national jurisdiction, or in the Area, will also require creation or identification of a specialised body, department, statutory authority or panel to implement the legislation, and to regulate, on behalf of the State, operators performing those DSM activities²⁵. It is important that this body is adequately funded, and properly qualified to assess the relevant information (see below). Specialist expertise will be required.
- 14.11** For P-ACP States already engaged with (terrestrial) mining, structures for receiving applications to explore and to mine, and for monitoring operations, are already in place. A common model is given below:
- A team within the Minerals Department (led by a Director with specialist technical expertise): *performing the administrative functions of receiving applications to mine, arranging necessary paperwork, monitoring operators' performances, receiving and retaining annual reports etc.*
 - A Minerals/Mining Board, comprising senior government officials from different Ministries, and with representatives also from local government, civil society and resource owners: *considering applications to mine, making recommendations for a decision, and reviewing reports received on on-going mining projects.*

²⁴ See example in MMDA found at: <http://www.ibanet.org/Article/Detail.aspx?ArticleUid=41f1038e-dcbf-44fd-ad17-898b7aa04a1a>.

²⁵ In the Area, the ISA will fulfil some of the administration and oversight that would fall to the P-ACP State in its EEZ. The ISA's role does not, however, relieve the Sponsoring State of its legal obligations, nor can the ISA be expected to prioritise an individual State's interests. Furthermore, while the Sponsoring State retains residual liability for the sponsored company's activities in the Area, it does not have a contract or other enforceable bilateral arrangement with the ISA. Therefore, where a State only wishes to sponsor DSM activities in the Area, although the administrative burden may be lighter than for operations in the EEZ, it should still have its own regulating entity to ensure adequate control over the sponsored entity and to safeguard national interests.

- The Minerals Minister: *the decision-maker, upon advice from the Director and recommendations from the Board, on applications and other aspects of mining projects.*

14.12 One option for P-ACP 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 P-ACP 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.

14.13 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).

14.14 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 (see section 16) will also serve to strengthen the integrity of the system.

14.15 Whatever model is followed, the function of this body (hereafter referred to in this RLR as ‘the Regulating Authority’) should include due diligence, review of applications and EIA, licensing, compliance and enforcement (see paragraphs 14.19 and 14.20). Further suggestions for statutory objectives, duties and powers that P-ACP States may wish to include in the part of the legislation that establishes the Regulating Authority, are included in Annex 2 to this document.

14.16 While the State should retain final decision-making powers, it is advised that the legislation makes provision for the Regulating Authority to be able to delegate functions it has under the legislation, for example: delegating assessment of mining applications or review of EIA information to an expert panel; or delegating monitoring and enforcement actions to another body with specialist expertise and capacity. This may be private entities, contracted on a consultancy basis, or perhaps a regional body (see paragraphs 24.4 to 24.6). Such outsourcing can assist with capacity gaps in-country, and may have significant cost benefits.

14.17 Where there are a sufficient number of users to make this feasible, funding of the Regulating Authority’s functions (e.g. processing applications, peer review of EIAs, site visits) should be borne by industry in accordance with the ‘user pays’ principle²⁶. The legislative regime must make allowance for this cost recovery. Each P-ACP will determine its own principles

²⁶ The ‘user pays’ principle does not give the ‘user’, through its payment, influence on the decision-making process.

for cost recovery, but it is recommended that these relate to actual and reasonable costs, and that the methods for calculating and collecting these costs are transparent. The most common approach is for the legislation to impose statutory fees for each type of authorisation at its various stages, such as application fees, processing fees, granting fees, and others. Sometimes a portion of a mineral royalty is legislatively allocated to the Regulating Authority. That there may be periods (particularly initially) where the Regulating Authority has ongoing administrative costs, but where there are no applications, nor any mineral production, should be taken into account by the State in establishing the funding arrangements. Imposing upfront costs on DSM operators carrying out exploration work will not encourage investment.

- 14.18** Where DSM activities are taking place within national jurisdiction, the P-ACP State may also wish to task the Regulating Authority with gathering information and developing knowledge of the marine environment, in collaboration with the DSM operator.
- 14.19 Due Diligence:** To meet international obligations, before issuing a DSM exploration or mining licence 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.
- 14.20** 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.
- 14.21 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. See section 15 in relation to the decision-making process. 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.
- 14.22 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. (For exploration in the Area, the Mining Code ('Recommendations for the guidance of the contractors or the assessment of the possible environmental impacts...') already provides guidance in relation to requirements for baseline data for exploration. Similar guidelines for exploitation are under development by ISA; see Technical Study no. 10, available at: <http://www.isa.org.jm/files/documents/EN/Pubs/TS10/TS10-Final.pdf>). 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. P-ACP 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 (see section 9). The outcome of that EIA will form part of the DSM operator's application for a licence 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 (see section 15 on Decision-Making). 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 consideration also of the cumulative or collective effects of all activities on the receiving environment.

14.23 The mining licence 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 licence. 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.

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

- Information on the DSM operator's financial and technical capability (which may be by way of forecast, for example if the operator's funding is dependent upon the licence being granted).
- 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.

14.25 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 licence, pursuant to a previous exploration licence for the same site, the exploration licence's term may be deemed to be extended until the time at which a decision is made by the Regulating Authority on the mining licence application. Assurances as to the Regulating Authority's commitment to maintain appropriate confidentiality may also be given (NB this must be balanced against for the importance of transparency in the application process (see paragraphs 17.4 and 17.5)).

- 14.26** The legislation may state that an application will be refused if a licence 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.
- 14.27** The Regulating Authority will assess the licence 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.
- 14.28** 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 recognised sea lanes essential to international navigation or in areas of intense fishing activity.
- 14.29** 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 licence review process.
- 14.30** Further recommendations in relation to the decision-making process are set out in section 15.
- 14.31** **Licensing:** When the application is approved, the Regulating Authority will issue a legally binding and enforceable licence (or 'permit' or 'consent', giving a 'right' or a 'title') to the individual mining operator, which may be different for the different types of potential DSM activity, and operational phases. Less stringent requirements and terms can be applied to activities that will have less impact. States may wish within their regulatory framework to prepare model licences, or standard/minimum terms and conditions.
- 14.32** Where the activities will take place in the Area, the operator will first obtain sponsorship agreement from the P-ACP 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 P-ACP, as sponsoring State, has effective control over the DSM operator. Therefore it is recommended that the P-ACP 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 licence 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.
- 14.33** It may assist P-ACP States, and DSM operators with potential interest in undertaking DSM activities within that State's jurisdiction or control, to draft a model licence (or licences) as part of its regulatory regime. This can identify possibilities for parties, but should avoid being prescriptive, as mineral developments, and operating environments may be diverse. A useful tool for this is the MMDA developed by the International Bar Association²⁷. The Regulating Authority should however retain the flexibility to be able to impose activity-specific terms and conditions on a licence on a case-by-case basis, taking into account the proposed nature of the activity and its potential impacts. The MMDA highlights a concern about the imbalance of

²⁷ A copy of the MMDA can be found at: <http://www.ibanet.org/Article/Detail.aspx?ArticleUid=41f1038e-dcbf-44fd-ad17-898b7aa04a1a>

resources and capacity of the parties who negotiate such instruments – noting the importance of multi-disciplinary assistance (from accountants, tax specialists, lawyers, geologists and others) in negotiation teams.

- 14.34** The licence will give express rights to the DSM operator for its activity in the designated area, including exclusive access to the site and its minerals (specifying the type of deposits or minerals covered by the licence), and security of tenure (giving that DSM operator a preferential – but not automatic – right to proceed to mine, in areas where they have carried out exploration works). It will set operational parameters and performance standards. It will contain undertakings, guarantees and indemnities on the part of the licence-holder (the DSM operator), and reporting requirements, and penalties for breaches of the terms of the licence. It will include a requirement for the DSM operator to apply the precautionary approach, to employ best environmental practices, and to collect environmental baseline data against which to monitor and report. The licence will set out the agreed plan of work activities, baseline research requirements, timetable, milestones, data retention/record-keeping and reporting requirements, and financial arrangements. The legislation or the licence may specify a minimum activity or expenditure that is required from the DSM operator within a set period. Insofar as the relevant information was not available for submission at application stage, the licence should require from the DSM operator prior to operations an EIA and EMP, and a feasibility study – either prepared by an independent expert, or by the DSM operator and verified by an independent expert. The licence may list the elements required in such a feasibility study, which may include: an estimate of the amount of, and market study for, the minerals, a description of the technology/ infrastructure/ equipment to be used, waste disposal plans, estimated capital/operation costs, and costs of compliance with the regulations, and staffing information. The licence may also include a requirement for a financing plan and for evidence of appropriate insurance, if this has not already been submitted. The licence should also contain terms to cover occupational health and safety, end-of-life operations (decommissioning and site rehabilitation) and emergency considerations (liability and clean-up provisions). It may reiterate the national laws that the DSM operator must adhere to, and any other standards to which it will be held (e.g. the EITI criteria).
- 14.35** The licence will permit activities to take place, but will not give the licensee property rights to the area to which the licence applies. With regard to a mining licence, the legislation should specify clearly what rights are granted to the DSM operator (e.g. that the ownership of the minerals transfers from the State/Crown, or that the right to remove and dispose of the minerals is vested in the licensee), and when, for example, upon the minerals being extracted, or upon the payment of the required royalty or severance tax on those minerals.
- 14.36** The legislation may empower the Regulating Authority to require bonds or insurance to be taken out, as conditions of the licence. It may permit transfer of the licence to a third party (or it may prohibit this; or may make it conditional upon Government approval and qualification of the transferee). The licence will be granted for a specified time period, suitable for the activity and the deposit. The legislation may provide the licence-holder a right to apply for a renewal or extension before the end of this term. P-ACP States may decide that licence holders are automatically entitled to such an extension, provided the licence conditions (including expenditure and reporting requirements) have been met, or an extension may be at the discretion of the Regulating Authority, upon the licence holder's application. The licence should cover end-of-project operations, and also may contain relinquishment requirements.
- 14.37** To permit an 'adaptive management' approach (see paragraph 18.22) the legislative regime should permit the Regulating Authority to be able to review or change the terms of the licence, or in extreme circumstances even to cancel it. Stability of licensing conditions is important to a DSM operator, and so such a review of terms should only occur where necessary and in only a few and narrowly specified circumstances set out in the legislation. It is suggested that the legislation and licensing allow scope for such variation both through a regular (e.g. annual)

review process, and in specified circumstances, e.g. (i) where adverse effects have arisen that were not anticipated at the time of the decision; or (ii) where new information comes to light that would have materially affected the original decision had it been available at the time; or (iii) in the event of serious non-compliance with licence conditions (see paragraphs 14.46 to 14.48); or (iv) where no material efforts have been made to undertake the licensed activity within a specified timeframe (e.g. 5 years).

- 14.38** Where a State intends to impose a unilateral licence variation, the licence-holder should be provided with a decision review mechanism and/or a judicial review process, to ensure the fairness of this procedure. There may also be a compensation scheme for changes in the licence to the licence holder's detriment, in stipulated circumstances.
- 14.39** The regulatory regime should also provide for the licence holder itself to be able to apply to the Regulating Authority to request variation of the conditions of the licence, or to surrender the licence. In the case of a request to surrender, the P-ACP State should ensure that the DSM operator is released only after any outstanding liability or obligations have been met by the licence holder (e.g. environmental management actions, or payment of royalties) – and the State may require sign-off on a final report confirming this, before the surrender takes effect.
- 14.40 **Monitoring:**** International legal requirements would not be met by a State merely putting rules in place. The State must also exercise further vigilance in monitoring compliance with those rules. This will require the Regulating Authority's monitoring of the performance of DSM operations, and their actual impact. Independent verification of the conduct of DSM operations will be critical for a State to show that it has met its responsibilities under the LOSC.
- 14.41** The Regulating Authority may require regular performance assessment, and reporting by a DSM operator on its licensed activities, expenditure, and environmental issues, in order to be able to verify progress against the plan of work. It is recommended that annual reports are required (e.g. requiring updates of operations and production amounts and values over the period), as well as reports triggered by specific serious incidents (e.g. casualties or emissions encountered) or the meeting of certain milestones. Regulations should set out the required content and format of these reports, preferably with the provision of a consistent template. They may include a requirement for regular independent audits. Once produced by the DSM operator for the Regulating Authority, this information should be published to promote accountability and demonstrate transparency to the public, insofar as is compatible with requisite commercial confidentiality.
- 14.42** Self-reporting from the DSM operator should be supplemented with other methods of oversight, including a complaints/whistle-blower procedure, site visits by the Regulating Authority (or a contracted independent expert third party to whom this function has been delegated by the State), and independent audit of operations. States should ensure that the legislation gives the Regulating Authority the necessary (but not excessive) powers by law to undertake required inspection and surveillance activities (both within national jurisdiction, and in international waters in relation to vessels of companies who are sponsored by that State). The licence should also include terms to give the State, via appointed DSM inspectors or other authorised agents, a right to inspect the DSM operations, and its accounts, books and records.
- 14.43** For example, the German Regulating Seabed Mining Act provides that the Regulating Authority in Germany will appoint 'supervisors', empowered to enter operational facilities, offices, properties and vessels of the DSM operator, to obtain information or to carry out an inspection, and it may seize objects from these locations where it considers this to be necessary to its objective to prevent accidents and promote public safety.

- 14.44** All data obtained should be given due scrutiny by the Regulating Authority, and considered against baseline data and the agreed plan of work, the EIA/EMP, and the licence conditions. The cumulative or collective effects of licensed DSM activities and any other activities should also be taken into account where the activities are occurring within national jurisdiction.
- 14.45** The Regulating Authority may wish to retain an investigatory function, to explore further apparent issues with the operator (and/or others alleging misconduct or mismanagement); or to conduct inquiries after a breach of compliance or an incident has been discovered. Alternatively, the burden of demonstrating at any time to a satisfactory standard of proof of its adherence to the requisite standards may be placed upon the DSM operator (although it is likely that some independent verification would still to be required to meet international law obligations).
- 14.46 Compliance and enforcement:** The success of a regulatory regime lies in its ability to induce compliance. An effective regulatory regime both incentivises compliance, and sets sanctions against non-compliance. Where monitoring suggests failure to adhere to the terms of the licence or the regulations governing DSM, enforcement action must be taken. The sanctions will cover both criminal and civil actions, and should be severe enough not to be dismissed as a business cost. These should be proportionate – escalating with the severity or persistence of the breach, and transparent – with the triggers and procedures for any financial, civil and criminal liability to be placed on DSM operators clearly set out in the legislation, regulations and licence.
- 14.47** Sanctions (which may be applied consecutively in a phased approach where breaches are not remedied) may include a warning notice, an enforcement order (requiring a person to undertake, or to cease, or not to undertake a specific activity), or suspension, termination, or amendment of the licence. Financial penalties may also be imposed. The regime may also include criminal offences (e.g. for failure to comply with an enforcement order made by the Regulating Authority). Recourse should be available within legal systems for prompt and adequate compensation or other relief in respect of damage caused by pollution of the marine environment, any other related economic loss, or any other related injury to coastal or marine users. This liability should be unlimited for situations arising from wilful acts or gross negligence by the DSM operator. States may wish to require of DSM operators certificates of financial responsibility, to ensure that adequate insurance or assets are in place to cover any potential compensation. An environmental bond may be required from the DSM operator upfront, that will be returned (with accrued interest) at the end of operations, if unanticipated environmental damage within the DSM operator's control has been avoided (such as pollution caused by a spill, a failure of equipment, or a vessel collision).
- 14.48** An example of an enforcement regime is as follows:
- (i) Specified actions or outcomes, picked up by the reporting and monitoring measures or by third-party complaint, are assessed as providing evidence of non-compliance, such as (a) waste and pollution not being properly managed, (b) exploration or exploitation activities being conducted outside of the boundaries of approval, (c) performance assessments or reports not being submitted, (d) environmental monitoring not being done, (e) unauthorised mining methods being used, or (f) other material and un-notified deviation from the plan of work or licence terms.
 - (ii) Enforcement action by the Regulating Authority is triggered. Unless emergency steps are required to prevent serious accidents or damage occurring, at first instance lighter sanctions are imposed, e.g. conducting an inspection, compiling a report, preparing an action plan, and giving the DSM operator official notice and a direction to comply with the action plan. This is then followed by increased monitoring and inspections.

- (iii) Continued non-compliance, or new failure to comply with the action plan would lead to further and more serious enforcement action or penalty, such as, operations being stopped until further notice; the DSM operator being fined; the DSM exploration or exploitation rights or permit being cancelled; or the DSM operator's Directors or other personnel being personally sued or prosecuted.

15. DECISION-MAKING

15.1 As indicated in section 14, the Regulating Authority will be responsible for assessing an applicant's pre-requisite qualifications, and then its subsequent application for a licence to conduct DSM activities within the P-ACP State's national jurisdiction, or in the Area under its sponsorship – and either taking a decision on that application or tender; or making recommendations to another decision-maker (usually the responsible Minister). Either the primary legislation, or regulations made under the legislation, should set out how the decision will be made; considering timescales and processes, as well as the relevant factors that will be taken into account and the principles that will be applied. Such factors should include a benefit-cost analysis. A degree of consistency across P-ACP States of these factors and principles would assist in achieving regional harmonisation.

15.2 The following staged approach is recommended [Key: RA = Regulating Authority]:

The Area		National jurisdiction
Submission of due diligence information and evidence by the DSM operator to the RA		
Decision by the RA that pre-requisite criteria have been met by the DSM operator		
Sponsorship agreement entered into between the State and the DSM operator		Clearance given to the DSM operator to proceed to application stage
Application for exploration/exploitation in the Area by the DSM operator to the ISA (with State's backing)		Application for exploration / exploitation of the State's CS by the DSM operator to the RA
Recommendations by the ISA Legal and Technical Committee		
Approval by the ISA Council		Public notification of application
Signing of contract between the ISA and the DSM operator	Application by the DSM operator to the State for a licence or further agreement to permit the specific DSM exploration / exploitation activity in the Area being conducted under the sponsorship agreement	
Decision-making process, including where necessary or appropriate: <ul style="list-style-type: none"> - review of application/advice to the RA from an independent expert - written representations on the application by interested parties and/or (in particular circumstances) public hearing of application - promulgation of a decision on the application in writing, with a record of the reasons for the decision and a Law Officer/Auditor opinion, if required - Appeal process against the decision to an independent and impartial court or adjudicator established by law (see paragraphs 15.5 and 17.1). 		
Grant of licence/agreement to the DSM operator by the RA		
Reporting by the DSM operator to the ISA and to the RA; and monitoring of the DSM operator by the ISA and the RA		Reporting by the DSM operator to the RA; and monitoring of the DSM operator by the RA

15.3 The process for a particular application to conduct activities could be tied in with EIA procedures (see paragraph 18.6), as it may be considered unnecessary to have a full public notification or hearing process for a 'minor' activity that has been assessed to have little negative social or environmental impact. If marine or coastal stakeholders are identified through the application

and EIA processes, DSM operators should be encouraged to obtain free and prior informed consent from those persons as part of its application, or at least prior to commencing operations.

- 15.4** The Regulating Authority, with assistance from an advisory Board, other Government focal points (e.g. Treasury and Environment) and/or third party experts or delegated administrators where necessary, will follow prescribed processes to review and assess the application, and to make a decision. Granting too much discretion to individual officers should be avoided.
- 15.5** The decision will be (i) to decline the application; (ii) to give consent to the application on the terms of the plan of work submitted; or (iii) to give consent to the application on terms set by the Regulating Authority that are different from those of the plan of work submitted. An appeal process to an independent decision-maker should be made available (see paragraph 17.1).
- 15.6** P-ACP States may also wish to make record-keeping a function of the Regulating Authority – requiring a registry of applications received, decisions taken, licences granted, and reports received in an appropriate form (and in line with any national freedom of information or data protection requirements). This register, or parts of it as appropriate, may also be made available to members of the public for inspection; for example, either on personal attendance at the Regulating Authority’s office, by post in hard copy (upon payment of a reasonable charge to cover administrative costs), or electronically on the Regulating Authority’s website.

16. PUBLIC PARTICIPATION

- 16.1** 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 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;
 - 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.
- 16.2** Principle 10 of the Rio Declaration 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”.

- 16.3** 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. P-ACP 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 licences. 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.
- 16.4** 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 organisations, 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.
- 16.5** The establishment of independent Citizens' Advisory Councils 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 organisations, 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 programme).
- 16.6** 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, as suggested in section 17. Consideration should also be given to mechanisms to avoid delays or obstructions caused by purely vexatious or frivolous interventions.

17. JUDICIAL OVERSIGHT OF DECISION-MAKING

- 17.1** DSM legislation should establish procedures to review decisions and provide rights of appeal against DSM decisions to a court with appellate jurisdiction or to other independent organs that may review the actions of the decision-maker. This may be through the establishment of a specialist Adjudicator or Tribunal, or through existing judicial mechanisms and legislation that establishes the national court system. Arbitration may also be an option.

- 17.2** Access to justice for members of the public or other affected persons via appeal mechanisms should not be unduly restricted, but reasonable provision could be made to avoid vexatious intervention, by specifying:
- limited periods in which appeals may be brought (for example 3 months from discovery of the damage alleged, or the decision appealed against);
 - decisions which are appealable (for example a decision to grant or decline a licence, the conditions of a granted licence, a decision to review or cancel a licence, the issuing or terms of an enforcement notice, or a prosecution for a criminal offence);
 - grounds on which objections may be raised (for example appeals on points of law, procedural irregularity, or material errors of fact); and/or
 - parties who may appeal or intervene in proceedings (for example the DSM operator or an individual who is the subject of the decision; or those with a demonstrable interest, which may include non-governmental organisations promoting environmental protection or representing affected communities).
- 17.3** P-ACP States should take appropriate measures to ensure that such appeal procedures, notification requirements and intervention opportunities are equitable, timely, not prohibitively expensive, and sufficiently comprehensive, so as to enable informed and timely responses that can be acted upon.
- 17.4** Transparency and accountability to the public can also be promoted by making appropriate information about DSM activities, licences and finances publicly available, and by embedding this requirement to collect, retain and publish relevant categories of information into public policy, and/or into the terms of the application process or licence/agreement itself. In relation to sponsored activities in the Area, the ISA will also play a role in obtaining, holding and making relevant data public.
- 17.5** In determining what information is published and when, public policy principles of transparency and accountability should be prioritised; however, this needs to be balanced against the need to protect confidentiality of commercial information, and intellectual property rights. This may be dealt with specifically in national DSM legislation and regulations (if it is not already adequately covered elsewhere in the State's law). The ISA's model is to issue a general public notification that an application has been made, without disclosing the exact coordinates of the prospecting or exploration area. For national jurisdiction, an indication of the location of the site (if not its exact coordinates) would assist public understanding of, and ability to engage meaningfully with, the application. It will also assist other DSM operators to know which sites are already under application.

18. ENVIRONMENTAL MANAGEMENT

- 18.1 Environmental Impact Assessment requirement:** Most DSM projects are likely to have an impact on the environment, certainly at localised 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 (see paragraphs 18.15 to 18.23). 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.

- 18.2** 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 values. An ‘Ecosystem Services’ approach is recommended. This recognises 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.
- 18.3** **Defining ‘Environment’ for EIA purposes:** 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.
- 18.4** 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”
 - EU Directive on the assessment of the effects of certain public and private projects on the environment (85/337/EEC), concerns the effect upon:
 - “- human beings, fauna and flora;
 - soil, water, air, climate and the landscape;
 - material assets and the cultural heritage;
 - the interaction between the factors mentioned in the first, second and third indents.”
 - In the Espoo Convention on Environmental Impact Assessment in a Transboundary 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.
 - 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.

²⁸ See the Economics of Ecosystems and Biodiversity Project Synthesis Report for more information, accessible at: <http://www.teebweb.org/TEEBSynthesisReport/tabid/29410/Default.aspx>

- 18.5** It is anticipated that P-ACP 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.
- 18.6** 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 categorised 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.
- 18.7** An effects-based approach: (i) avoids generalisation 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.
- 18.8** 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'.
- 18.9** 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.
- 18.10** 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 emphasised.

- 18.11** 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.
- 18.12** 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.
- 18.13** 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.
- 18.14** The P-ACP State 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.
- 18.15 Application of the precautionary approach:** 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.”
- 18.16** Principle 15 of the (non-binding) Rio Declaration 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 recognised the customary law value of the precautionary approach (ITLOS Advisory Opinion).

- 18.17** Another formulation is: 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.
- 18.18** 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 practised 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 cognisant of unknown potential impacts, with appropriate checks and risk-minimising 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.
- 18.19** The precautionary approach 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 DSM (as detailed in section 16 – and in Principle 10 of the Rio Declaration) 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.
- 18.20** 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” (e.g. Article 206), or “major harm”; and otherwise the terms “harm” or “harmful” (e.g. Article 1(4) or 145). 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 generations²⁹; and recognition of the need to address ecological debts³⁰.
- 18.21** 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 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

²⁹ 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.

³⁰ 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 Transboundary 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”.

operator (i.e. the company carrying out the activity), who should demonstrate safety to human health and ecosystems; take financial responsibility for precautionary behaviour; 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.

18.22 Adaptive management: which could be described as ‘learning by doing’ – is appropriate where there is uncertainty and so is a principle that P-ACP States can follow in their 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. Adaptive management is 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.

18.23 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 licence, 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 (see Footnote 32).
- 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 programmes, 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 authorising commercial-scale activity.

18.24 Best environmental practice: It is also an international law requirement³¹ of States involved with DSM activities to ensure the employment of ‘best environmental practice’, which can be summarised 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 focussed 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.

18.25 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

³¹ 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.

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.

18.26 It should be established by the legislation, regulations and licence 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 licence. 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.

18.27 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 licence 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;
- standardisation 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.

18.28 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.

- 18.29** Historically, marine and coastal resource management have been characterised 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.
- 18.30** A number of spatial management tools exist³², which P-ACP 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.

19. OCCUPATIONAL HEALTH AND SAFETY

- 19.1** 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.
- 19.2** International shipping law obligations will apply to vessels used in DSM operations. As noted in paragraphs 6.13 to 6.15, there are various international Conventions relating to maritime activities, to which P-ACP States are signatories. 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 P-ACP State).

³² Such as:

- Strategic Environmental Assessment (SEA), a systematic process for evaluating the long-term environmental consequences and other impacts of multiple actions (or plans, policies, legislation) within a certain site or ecosystem or policy area; the environmental and other impacts of plans, policies, even legislation.
- Marine Spatial Planning (MSP), which maps what activities can be undertaken where, manages conflicts between competing marine activities, and reduces environmental impact by analysing current and anticipated uses of the ocean. This may include the demarcation of reserved ‘buffer’ areas around known sites of mineral occurrences; or for areas of particular ecological or cultural sensitivity.
- Marine Protected Areas (or ‘Marine Managed Area’ or ‘Seabed Protected Area’) can be defined as any area of the coastal zone or open ocean/deep seabed, which has been accorded a level of protection for the purpose of managing the use of resources and ocean space, or protecting vulnerable or threatened habitats and species. Such reserves should be carefully selected: at locations and scales which recognise the intrinsic importance of the species, habitats and biotypes that they will encompass, and which maximise their value to protect and preserve the marine environment.

- 19.3** 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”.
- 19.4** It is presumed that P-ACP States will each already have national legislation and procedures in place to incorporate these IMO Conventions and the LOSC shipping standards. P-ACP 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 P-ACP 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 licence, 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 licence monitoring processes and prohibited from sailing until they do comply.
- 19.5** P-ACP States should also specifically include employee and visitor health and safety information as a mandatory criterion, before any licence is granted. The licence 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 labour laws³³.

20. DUE REGARD TO OTHER SEA USES/ IMPACT ON FISHERIES

- 20.1** Surrounded by vast ocean spaces, most P-ACP States rely for their livelihoods upon sustainable use of the sea and its living resources. DSM exploitation represents a new potential ocean activity, but States will be keen to ensure that it does not unduly interfere with the various existing uses.
- 20.2** Regional and local consultations in the Pacific have revealed a primary concern amongst those consulted to be the potential for DSM to affect adversely fish populations. International and

³³ P-ACP States may find it useful to refer to the November 1999 International Maritime Organisation’s Resolution A.891(21) on Recommendations on Training of Personnel on Mobile Offshore Units, which provide an international standard for the training of such personnel to ensure that levels of safety and protection of the marine environment are complementary to what is required under the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers. The Resolution addresses all categories of personnel on Mobile Offshore Units, including the maritime crew, special personnel and visitors.

regional instruments to which P-ACP States are Parties³⁴ also contain provisions relating to fisheries (e.g. LOSC Articles 61-68, the UN Fish Stocks Agreement, the Nauru Agreement and others), and emphasise the importance to conserve such living resources, and to maximise 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 P-ACP 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 emphasised by P-ACP 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.

20.3 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)).

20.4 Indeed each P-ACP 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 endeavours, petroleum, transport and communication, energy facilities (e.g. solar, wave, nuclear), waste disposal plants, recreation and tourism, and cultural activities.

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

20.6 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.

20.7 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.

20.8 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 recognised sea lanes essential to international navigation or areas of intense fishing or tourism activity.

³⁴ Vanuatu is not a Party to the UN Fish Stocks Agreement.

- 20.9** A provision should also be included in DSM legislation and/or licences 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).

21. MARINE SCIENTIFIC RESEARCH

- 21.1** DSM operators should have 'exclusive rights' to the seabed under licence. Nevertheless, States are obliged under international law to promote and facilitate the development and conduct of MSR by other States and international organisations. DSM law and policy should take this into account, by:

- ensuring that the terms of any licence 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.

- 21.2** The term 'Marine Scientific Research' is not defined by the LOSC. 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.

22. DUE REGARD TO OTHER STATES

- 22.1** Provision for consideration of trans-boundary impacts should be included in national DSM legislation. 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 procedures. The International Law Commission's Articles on the Prevention of Transboundary

Harm from Hazardous Activities (accessible online at the following URL: http://untreaty.un.org/ilc/texts/instruments/english/draft%20articles/9_7_2001.pdf) may be useful precedent in this regard.

- 22.2** Other States also have qualified rights in a P-ACP 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 LOSC. Further 'high seas' rights will exist, where the DSM licence 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.
- 22.3** As highlighted in paragraph 10.9 and section 24, respectively; information-sharing and co-operation between neighbouring States can also be an important means of facilitating the regulation of DSM activities.

23. CAPACITY-BUILDING

- 23.1** It is recognised that there are capacity gaps within P-ACP countries, 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.
- 23.2** 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.
- 23.3** P-ACP States are therefore encouraged to maximise the opportunities that may arise to build such capacity, 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).
- 23.4** The potential for DSM activities to build technical capacity in-country can be realised through legislative provisions. Subject to each P-ACP's trade and discrimination laws, the DSM legislation or the terms of the licence 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 – recognising the forward planning, cost and limited capacity onboard of any voyage at sea.
- 23.5** The DSM industry might also provide direct employment opportunities for P-ACP 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 P-ACP States. Potential training programmes could be established to fill highly skilled or technically specialised 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 P-ACP 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 P-ACP State. So these possible secondary benefits (additional to the main economic benefit anticipated, through royalties and standard fees) should perhaps not be overstated.

- 23.6** 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 programme, 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. P-ACP States may consider incentivising the support of DSM operators for development initiatives, through tax breaks or exemptions for their investment in such schemes.
- 23.7** P-ACP 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.
- 23.8** Another model for maximising 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.

24. REGIONAL CO-OPERATION

- 24.1** The importance of a regional approach to DSM regulation was stated in the introduction to this RLRF (see paragraph 1.4). Regional co-operation will also be key to maximising the potential that DSM may bring to P-ACP States, and avoiding a ‘race to the bottom’ scenario. The Pacific Plan promotes the concept of Pacific Island countries working together for their joint and individual benefits.
- 24.2** Given limited resources, P-ACP States are likely to benefit from putting together their financial, human, technical, and knowledge resources to improve the management of DSM issues. P-ACP States may benefit from regional, sub-regional, or bilateral collaboration on policy development (including via the regional support provided by the DSM Project). Where some States are further advanced in their engagement with DSM mining, other P-ACP States can learn from their experiences.
- 24.3** Such an approach has an intrinsic value, as it will send a clear message to private sector investors that have an interest in engaging in DSM activities in the region, and who will seek to invest against a backdrop of a stable, predictable, and transparent operating environment. While the approach ultimately adopted by P-ACP States may differ in the detail of their rules,

and in the incentives offered to investors (reflecting different levels of mineral prospectivity or commercial development); it is hoped that a regionally-agreed set of standards will assist P-ACP States to develop regulatory regimes that are comprehensive, efficient, workable, and consistent with international obligations, rules and standards. In addition, it will be particularly useful to have harmonised environmental standards and equivalent regulatory requirements in the event of potential transboundary effects between different national jurisdictions, or between national and international waters. Indeed, some aspects of regulation in practice (e.g. expert review of MSR and EIA reports, or independent monitoring of mining sites) may be more efficiently approached at a joint regional level, rather than on a country-by-country basis. This will be more feasible if the respective national legislative regimes of the participating P-ACP share common features and standards.

- 24.4** The potential benefit of establishing a regional regulator for DSM, who can perform some of the required regulatory and administrative functions for DSM activities, on behalf of P-ACP States, has been highlighted (see paragraph 14.16). There is precedent, and clear benefit, for some administering functions of such regulatory institutions to be delegated to a regional body, or another third party. Delegating functions to a regional body or another third party, would not only plug national capacity gaps, provide specialist expertise not found in-country, and avoid proliferation of national institutions. It would also avoid the perception of bias, and provide checks and balances against undue influence and conflicts of interest. It is also likely to bring cost benefits, if it allows for consolidation of infrastructure and administrative mechanisms on a regional basis. Regional co-operation for this type of activity is endorsed in the LOSC Articles 276 and 277 and also enshrined in relevant provisions of the Pacific Plan. The extensive cooperation achieved in fisheries within the framework of the FFA could also be considered as a starting point and possible model from which to draw.
- 24.5** Under such a model, P-ACP States may delegate DSM administrative functions (e.g. reviewing applications and EIAs, recommending the issuance of licences, assessment of and reporting on data, monitoring compliance, providing policy and technical advice) to a regional or sub-regional body. Alternatively Governments may look to contract suitably qualified private third parties to administer the aforementioned regulatory functions.
- 24.6** Any delegation of DSM regulatory functions would be exercised subject to retention by the P-ACP State of decision-making power in its own national interests. It does not imply any limitation on national sovereignty, nor replacement of national programmes. A regional approach in relation to DSM regulation however is likely to support and add value to national efforts. As highlighted in paragraph 10.9, this would also be an effective means of addressing a situation where a mining vessel or support vessels move from one jurisdiction to, or through, another.
- 24.7** There is also potential for New Zealand's new Environmental Protection Authority, a well-staffed, well-resourced, expert entity already existing in the region, to offer its assistance to P-ACP States embarking upon DSM regulation, on a costs recovery basis.

25. TRANSITIONAL PROVISIONS

- 25.1** It would be best practice for a P-ACP State to have law in place before site allocation and the granting of licences for DSM activity. That said, it is recognised that there is a high probability that some activities may occur within P-ACP States' jurisdiction before a comprehensive legislative and regulatory regime has been enacted, and appropriate administrative bodies and functions have been set up.

- 25.2** Where this has occurred already, the national DSM law should address how pre-existing licences 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 licences 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.
- 25.3** 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.
- 25.4** 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.
- 25.5** 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 licence 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.
- 25.6** It is also recognised that the proper finalisation of Government Policy and the passage of Bills through Parliament can be a time-consuming process. DSM operators are commercial enterprises. Their interest in investment may be time-specific and limited. There may, therefore, be applications to undertake DSM activities made to P-ACP States after the work on DSM legislation has begun, but before it has been finalised and implemented. P-ACP 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 authorisation (licence) 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 programmes are successful in putting such a system into place within 12 to 36 months.
- 25.7** 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 licences) as soon as the new DSM regulatory regime is in force.

26. MODEL TEMPLATE FOR A NATIONAL DSM REGULATION BILL

- 26.1 Annex 2 contains a suggested model template for national DSM primary legislation.
- 26.2 This is provided to put the above framework in context. It merely gives headings and brief content suggestions, and would require significant fleshing out, and further wording that takes account of the various issues specific to each P-ACP State.
- 26.3 As stated earlier, a national DSM Policy should be developed, before any legislation is enacted. Furthermore any legislative framework will need to be supplemented with secondary legislation (i.e. regulations), and operational guidance, to give detail to the regulatory regime.

ANNEX 1

Process by which the RLRF was Developed

1. The principal author of the RLRF is the DSM Project Legal Advisor, Hannah Lily, who with oversight from the DSM Project Manager, Akuila Tawake, and consultant Robert Makgill (of North-South Environmental Law, New Zealand), created a first draft of this document. This was sent to Government representatives in each of the fifteen participating Project countries and more than three hundred stakeholders in January 2012. The recipients were asked to comment on the RLRF by providing any points or suggestions for the document as a basis for improvement during the RLRF's next revision.
2. The DSM Project received endorsement for the RLRF from the 15 P-ACP countries it supports, and some 44 additional substantive contributions from the scientific, legal and academic fields, as well as from both the public and private sectors (please see Annex 3 for a complete list of contributors). These comments have been reviewed and implemented into the RLRF by DSM Project Legal Advisor, Hannah Lily, and a Project intern, Amy Ponton.
3. All contributors' time and efforts reviewing the RLRF, and comments provided, are extremely gratefully acknowledged. Additional thanks are extended to:
 - The esteemed members of the DSM Project Technical Steering Committee (Elaine Baker, Yannick Beaudoin, Malcolm Clark, Daniel Dumas, Chuck Fisher, Jim Hein, Robert Heydon, Harry Kore, Michael Lodge, Linwood Pendleton, Sven Petersen, Julian Roberts, Charles Roche, Samantha Smith, Anne Solgaard, Jan Steffen, Akuila Tawake) whose contributions to other Project deliverables have been used also in the RLRF.
 - Dr Robin Warner and Robert Makgill for their hard work producing the working paper on legislative issues, at the ISA/DSM Project Fiji International Workshop on Environmental Management Needs for Exploration and Exploitation of Deep Seabed Minerals, held in Nadi in November 2011.
 - Trevor Durbin, Andrew Kennedy and Tim Carruthers of SPREP for their comprehensive and thoughtful drafting of a discussion paper on the Precautionary Principle, specifically to inform the RLRF.
 - Professor James Otto, for not only providing comments, but also for forwarding additional relevant reading materials, including a pre-publication chapter of his book "The Regulation of Mineral Enterprises", which proved extremely useful.
 - The members of the Mining Law Committee of the International Bar Association, responsible for the drafting of the Model Mine Development Agreement, which was a useful source for the RLRF.
4. Consultations with participating Project countries and relevant stakeholders are also a key part of the development of this RLRF. The Project Manager, Akuila Tawake, and Project Legal Advisor, Hannah Lily, have and will continue to consult directly with P-ACP Governments and interested stakeholders in relation to the RLRF during their country visits throughout 2012, and the national DSM workshops held during those Project visits. These events will also be an opportunity to engage in discussions on how to tailor the RLRF for the benefit of each country.
5. The DSM Project is also able to offer technical assistance (upon request) to P-ACP States, in relation to legislative drafting via its Project Legal Advisor, Hannah Lily.

ANNEX 2

Suggested Template for a DSM Regulation Bill

1 (1) Introduction

- Title
- Commencement
- Definitions (suggestions for terms that may require definition include: activity, adaptive management, best environmental practice, confidential information, deep sea minerals, environment, effect, EIA, exploitation, exploration, impact, independent expert, licence (or permit or consent), marine management regime, MSR, mining area, mining operation, minor effect, precautionary approach, project, prospecting, significant effect etc.) Consistency across the region, and with the ISA's defined terms (in its Regulations), would be sensible.
- Declaration of maritime boundaries
- Statement of rights over seabed mineral resources on the CS, and/or access rights to seabed mineral resources in the International Seabed Authority Area

1 (2) Overview

- Purpose of Act
- Must be interpreted consistently with international obligations (including the LOSC and internationally protected human rights)
- Statement of overarching principles
- Statement that decision-makers must recognise and adhere to these principles in order to achieve the purpose of the Act

1 (3) Duties and responsibilities on individuals

- Restrictions on activities in EEZ – which can only be undertaken if authorised by Regulations or a licence issued by the regulating authority
- Duty on all persons to avoid, remedy, or mitigate the adverse effects of their activities on the environment
- Duty on licence holders to provide sufficient training, supervision and resources to their employees to ensure compliance with the Act

1 (4) Creation of regulating authority

- Status, e.g.:
 - how the authority is constituted/legal personality
 - to whom the authority is accountable
 - how the authority is funded
 - independence from Government policy implementation
- Objectives, e.g.:
 - an environmental protection objective: to protect and preserve the marine environment
 - a standard-setting objective, to clarify and communicate requisite legal requirements and standards
 - a compliance objective: to secure compliance by DSM operators with their legal obligations in exercising control and management of the administration of their activities
 - a health and safety objective: to protect the well-being of the public and persons working on DSM operations

- o an accountability objective: to enhance the accountability of DSM operators to Government, to stakeholders, and to the general public
- o a national interest objective, to promote the conduct of DSM to maximise benefits to the nation
- Duties, e.g.:
 - o in performing its functions, to act in a way which is compatible with its objectives, and which it considers most appropriate for the purpose of meeting those objectives.
 - o so far as is reasonably practicable, in performing its functions to act in a way which is compatible with (i) the encouragement of investment in and performance of DSM activities in the State's jurisdiction or control; (ii) the principles of best regulatory practice (including the principles under which regulatory activities should be proportionate, accountable, consistent, transparent and targeted only at cases in which action is needed); (iii) desirability of facilitating innovation in relation to DSM and best environmental practices; and (iv) generally accepted principles of good corporate governance
 - o A requirement to keep records and publish information
- Powers, e.g.:
 - o Delegation powers (and limits upon delegation)
 - o Information-gathering powers
 - o Cost-recovery provisions
 - o Amendment or enforcement of licensing terms
 - o General power to do anything necessary and expedient in furtherance of its objectives
- Functions, e.g.:
 - o conduct due diligence enquiry into potential DSM operators
 - o develop standards for DSM operators
 - o receive and assess applications to explore or mine the deep seabed under Government's control or sponsorship
 - o review and approval of EIA
 - o decide whether or not such DSM activity is to be permitted, and to set the terms of permitted activities and to issue licences detailing these
 - o receive and assess reporting documents from licensed operators
 - o monitor their compliance with the terms of the licence
 - o take action to amend the terms of licences or suspend activities if necessary
 - o enforce sanctions for non-compliance

2 (1) Regulations and types of activities

- Power to make Regulations for:
 - o environment management plans, and classifying and providing for (may include closing) areas of the EEZ that have features that require a location-specific approach
 - o allocation of exploration and mining sites
 - o classifying activities as permitted, discretionary (allowed with a licence), or prohibited; and prescribing administrative requirements
 - o fiscal regime
 - o required content of applications and EIA
 - o conditions for approval, and imposition of conditions
 - o licence format and content
 - o information-handling
 - o enforcement orders
 - o other sanctions
- Process for developing Regulations – consultation and public participation
- Matters to take into account in developing Regulations – potential adverse effects of activities – including cumulative effects of all activities in the area – on the environment and existing interests (including other sea uses)

- Permitted activity may be undertaken without specific consent, provided activity complies with terms and conditions of the Regulations; discretionary activity is allowed with a licence from the regulating authority; prohibited activity cannot be undertaken

2 (2) Licensing

- Requirement for provision of pre-requisite due diligence information about the operator, before an application for activity will be accepted by the regulating authority
- Process for application/tendering and requirements for content – includes prescribed form, full description of proposal, EIA requirement, public (and interested party) notice requirement, interested party submissions/hearings permitted and processes detailed, timeframe set, disclosure and information-sharing provisions (e.g. application information shared with every submitter, submissions shared with applicant)
- Regulating authority can invite applicant and submitter to discuss/mediate matter
- EIA requirements:
 - o refer to International Seabed Authority template
 - o description of activity, current state of the area and its local environment, effects of the activity on the environment and existing interests where effect will occur, whose interests are likely to be adversely affected, consultation undertaken, copies of any written approvals obtained, alternative methods/locations to avoid, remedy, or mitigate adverse effects on environment
 - o level of detail must reflect scale and significance of the effects that the activity may have
 - o approval of EIA required before licence granted/activities are permitted to commence
- Regulating authority decision-making
 - o can grant or refuse licence, and may impose conditions, including requirement for a bond to secure the performance of another condition (e.g. ongoing monitoring and reporting, appointment of an approved independent observer to monitor activity and effects)
 - o must deal with applications promptly; may request further information concerning the application (with time limit), and/or may return applications (within time limit) if insufficient information (and can be re-submitted as a new application)
 - o can commission report relating to activity/application, seek independent review of the EIA, seek advice from any person – such report/advice must be made available to applicant and submitters
 - o importance of public notification and participation, and notification and opportunity to participate to another State, where potential transboundary issues arise
 - o must take into account all submissions and information received in relation to application, adverse effect of an activity, best practice in relation to the industry or activity, value of applicant's investment in the activity
- Licences and the conditions can be reviewed, amended, extended or cancelled in some (listed) circumstances (including request from consent-holder) – and process of review prescribed
- Maximum duration of a licence to be [15] years, duration to take into account appropriate factors, if less than [15] years, procedure to request extension (and licence term may continue until decision)
- Licence will lapse if not acted upon in first/preceding [5] years, and no application made not to lapse
- Nature of licence (can it be assigned, transferred, sold, or used as security?)

3 (1) Objections, appeals

- Objections to regulating authority permitted by certain parties (applicant, submitter, consent-holder) in certain circumstances – procedure
- Appeal to High Court against regulating authority decision, and permitted grounds for this

3 (2) Monitoring, Reporting, Enforcement

- Regulatory authority will require (and can compel provision of) prescribed information from licence-holders
- Regulatory authority will independently verify licence-holder's conduct, adherence to the licence, progress with licensed activities, and assessment and monitoring of impacts
- Regulating authority can appoint enforcement officers, by warrant of appointment under which the powers must be exercised, to include entry and inspection of a place or vessel for purpose of checking compliance with Act, regulations, consent or enforcement order
- Enforcement order may be applied for by regulating authority (or enforcement officer) and may be made by Court, in relation to a contravention of the Act, regulations or a licence, and procedure set out
- It may require a person to stop doing something, not to start something, to do something, to pay money to another person to cover reasonable costs incurred due to failure to comply; or may change or cancel consent
- Offences (strict liability civil offences, also criminal offences), and penalties (fines, suspension of licence, enforcement order, imprisonment for individuals)

4 Miscellaneous

- Regulating authority can recover its costs in performing its functions; with method and amount of charges to be set by regulations that must have regard to the principles of equity, efficiency, justification and transparency
- Service of documents
- Information-handling, establishing what information held by the Regulatory authority may be published and in what circumstances
- Transitional provisions
- Impact on other Acts – with detail of consequential amendments, if these are necessary

ANNEX 3

Contributors to the RLRF

In addition to the primary author/review team: Hannah Lily, Akuila Tawake and Amy Ponton of SOPAC, and Robert Makgill of North-South Environmental Law; contributions were received from the following, listed in the order received; earliest at the top.

STAKEHOLDERS

Name	Organisation
1. James R. Hein	Senior Scientist, United States Geological Survey
2. Shaswat Sapkota	United Nations Economic and Social Commission for Asia and the Pacific
3. Margreet Wewerinke	Human Rights Lawyer, European University Institute in Italy
4. Timo Koivurova	Professor, Arctic Centre, University of Lapland
5. Barry Barton	Professor, Waikato University (energy, natural resources and environmental law)
6. Mike Patrick	Resource & Environmental Management Ltd
7. Elana Geddis	Lawyer (barrister and international legal consultant) Harbour Chambers, Wellington, New Zealand
8. Norman Barth	Embassy of the United States of America, Suva, Fiji [partial response]
9. Veikila Vuki	University of Guam/Gender Climate Coalition
10. Laiakini Waqanisau	United Nations Development Programme (Environment Associate)
11. Graeme Hancock	Consultant (Economist)
12. James Otto	Consultant (Attorney and Economist)
13. Leonard Harris	Chair for the Society for Mining, Metallurgy and Exploration (SME)
14. Richard Steiner	Conservation and Sustainability Consultant, Oasis Earth, University of Alaska, Anchorage Alaska
15. Karen Scott	Associate Law Professor, University of Canterbury
16. John Hayden	Director, Society for Mining, Metallurgy and Exploration, Inc. (includes IMMS)
17. George Niumataiwalu	Consultant (Mining Engineer and Economist)
18. Danny Alberdi	Neptune Minerals/Bluewater (Environmental Manager)
19. Linwood Pendleton	Director of Ocean and Coastal Policy, Duke's Nicholas Institute, and Acting Chief Economist, US National Oceanic and Atmospheric Administration (NOAA)
20. Robert Heydon	Offshore Mining Council
21. Ian Graham	Director of Research, GNS Science, New Zealand
22. Philomène Verlaan	Academic oceanographer/lawyer (representing School of Ocean and Earth Sciences and Technology, University of Hawai'i and IUCN Commission on Environmental Law)
23. Winston Rocher	Company Advisor of the Poseidon Offshore Mining Company in Chile
24. Lindsay Parson	Consultant (Lawyer, Law of the Sea and marine geology specialist)
25. Seni Nabou (and colleagues)	Greenpeace

26.	Michael Cruickshank	Consulting Marine Mining Engineer and Researcher Emeritus, University of Hawai'i
27.	Caroline Foster	Senior Lecturer, Faculty of Law, University of Auckland
28.	Sarah Gardner	Manager of Consenting, Environmental Protection Authority, New Zealand
29.	Simona Timmins	Senior Legal Officer, International Law, Attorney-General's Office, Australia
30.	Samantha Smith and other unnamed colleagues	Environmental Manager Nautilus Minerals
31.	David Billett	National Oceanography Centre, University of Southampton/ International Seabed Authority Legal and Technical Commission
32.	Kerry Tetzlaff	Lecturer, School of Law, University of the South Pacific (Law of the Sea, International and Pacific Fisheries Law)
33.	Clark Peteru Tim Carruthers, Sefanaia Nawadra Trevor Durbin Andrew Kennedy	Legal Advisor Coastal and Marine Advisor Director Environmental Monitoring and Governance Secretariat of the Pacific Regional Environment Programme (SPREP)
34.	Paul Hibberd	Consultant (Lawyer, Law of the Sea and Regulatory Law)
35.	Joyce Van Heijzen	OceanFLORE Ocean Resource Extraction
36.	Lorraine Kershaw Scott Hook Linda Kaua William Morrell	International Legal Adviser Economic Infrastructure Adviser Economic Reform Officer Natural Resources Adviser Pacific Island Forum Secretariat (PIFS)
37.	William Edeson	Legal Adviser, Forum Fisheries Agency
38.	Kening Zhang Michael Lodge Adam Cook	Senior Legal Officer Legal Counsel Marine Scientist International Seabed Authority
39.	Joshua Brien Daniel Dumas	Legal Adviser (Natural Resources) Adviser and Head of Economic and Legal Section, Special Advisory Services Division Commonwealth Secretariat
40.	Sandra Bernklau Greg Lyons Daiana Buresova	Programme Manager Curriculum Coordinator Senior Legal Research Officer SPC – Pacific Regional Rights Resources Team (RRRT)
41.	Virginie Tassin	Doctor in law (the Sorbonne, and Melbourne University) and former Associate Legal Officer at the International Tribunal for the Law of the Sea
42.	Bryan Land	Senior Oil, Gas and Mining Specialist, World Bank
43.	Robert Makgill	Director, North-South Environmental Law, Auckland, New Zealand
44.	Sonia E. Rolland	Associate Professor, Northeastern University School of Law, Boston, Massachusetts, United States of America

P-ACP COUNTRIES

Country	Name of Respondent
1. Cook Islands	Darryl Thorburn, Seabed Minerals Adviser; Richard Neves, Financial Secretary, Ministry of Finance and Economic Management
2. Federated States of Micronesia	Marion Henry, Secretary of the Department of Resources and Development; Justin Rose, Environmental Law Adviser, Office of Environment and Emergency Management; and Jun Bacalando, Staff Attorney, Department of Justice
3. Fiji	Malakai Finau, Director, Mineral Resources Department
4. Kiribati	Ruria Iteraera, Attorney-General's Representative; and Tearinaki Tanielu, and Tebete England, Minerals Unit, Ministry of Fisheries and Marine Resources Development
5. Nauru	Ivan Batiouk, Ministry for Commerce, Industry and Environment; and Catriona Steel, Assistant Parliamentary Counsel
6. Niue	Nina Heka, Crown Counsel
7. Palau	Victorio Uherbelau, Presidential Assistant, Office of International Affairs (and AG)
8. Papua New Guinea	Shadrach Himata, Acting Secretary, Department of Mineral Policy and Geohazards Management
9. Republic of Marshall Islands	Filimon Manoni, Attorney-General; and Thomas Kijiner, Jr., Secretary of Resources and Development
10. Samoa	Lameko Talia, Principal Scientific Officer – Geology, Ministry of Natural Resources and Environment
11. Solomon Islands	Daniel Damilea, Senior Crown Counsel
12. Timor Leste	Norberta Soares da Costa, Director for Geology and Minerals, Secretariat of State for Natural Resources
13. Tonga	Kate McPherson, Department of Environment and Climate Change
14. Tuvalu	Eselealofa Apinelu, Attorney General
15. Vanuatu	Toney Tevi, Head of Mineral Division; and Brooks Rakau, Minerals Co-ordinator, Department of Geology, Mines and Water Resources



Applied Geoscience and Technology Division (SOPAC)

