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THE DEEP SEABED AND ENVIRONMENTAL LAW

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OVERVIEW OF KEY SCHOLARSHIPS

Applicability of international environmental law principles to the conduct of activities in the Area

1. Gwénaëlle, L. G., “Environmental Impact Assessment and the International Seabed Authority” in Kees B., and T. Koivurova, *Theory and Practice of Transboundary Environmental Impact Assessment* (Leiden/Boston: Martinus Nijhoff Publishers, 2008).
2. French D., “From the Depths: Rich Pickings of Principles of Sustainable Development and General International Law on the Ocean Floor—the Seabed Disputes Chamber’s 2011 Advisory Opinion” (2011) 26:4 *International Journal of Marine and Coastal Law* 525-568.

Environmental provisions of the deep seabed mining regime under UNCLOS, the Part XI Implementation Agreement and the International Seabed Authority’s Mining Code

3. Lodge W. M., “International Seabed Authority’s Regulations on Prospecting and Exploration for Polymetallic Nodules in the Area” (2002) 20:3 *Journal of Energy and Natural Resources Law* 270.
4. Nelson C. J., “The Contemporary Seabed Mining Regime: a Critical Analysis of the Mining Regulations Promulgated by the International Seabed Authority” (2005) 16:1 *Colorado Journal of International Environmental Law and Policy* 27-76.

Environmental responsibilities of relevant actors in the area including the international seabed authority, exploration contractors and sponsoring states

5. Wood, C. M., “The International Seabed Authority: The First Four Years” (1999) 3 *Max Planck Yearbook of United Nations Law* 173-241.
6. Wood C. M., “The International Seabed Authority: Fifth to Twelfth Sessions” (2007) 11 *Max Planck Yearbook of United Nations Law* 47-98.
7. Handl G., “Responsibilities and Obligations of States Sponsoring Persons and Entities with Respect to Activities in the Area: The International Tribunal of the Law of the Sea’s Recent Contribution to International Environmental Law” (2011) 20:2 *Review of European Community, International and Comparative Law* 208-213.

8. Anton, D., R. Makgill, and P. Cymie, “Seabed Mining – Advisory Opinion on Responsibility and Liability” (2011) 41:2 Environmental Policy and Law 60.

Background

Deep seabed mining beyond the limits of national jurisdiction is governed by the 1982 *United Nations Convention on the Law of the Sea* (UNCLOS). Under UNCLOS, the seabed, ocean floor and subsoil beyond national jurisdiction is known as the Area. The basic regulatory framework for deep seabed mining in the Area is contained in Part XI and Annex III of UNCLOS. The provisions of Part XI and Annex III were modified by the Agreement relating to the Implementation of Part XI of UNCLOS (Part XI Implementation Agreement) in 1994. The two instruments are to be interpreted and applied together as a single instrument. In the event of any inconsistency between them, the Part XI Implementation Agreement prevails. Other parts of UNCLOS are relevant to the conduct of activities in the Area, including Part VII on the legal status of the waters above the Area and Part XII on the protection and preservation of the marine environment. A growing body of international environmental law principles are also relevant to the conduct of activities in the Area. As scientific knowledge of the deep sea is still limited, the regulatory framework for environmental protection of the Area is still evolving. The following selected readings explore: the applicability of international environmental law principles to the conduct of activities in the Area; the environmental provisions of the deep seabed mining regime under UNCLOS, the Part XI Implementation Agreement and the International Seabed Authority’s Mining Code; and the environmental responsibilities of relevant actors in the Area including the International Seabed Authority, exploration contractors and sponsoring States.

Applicability of international environmental law principles to the conduct of activities in the Area

1. In her book chapter entitled, *Environmental Impact Assessment and the International Seabed Authority*, L. G. Gwenaelle provides an excellent overview of the International Seabed Authority’s progressive elaboration of a legal and scientific framework to protect the marine environment of the Area from harmful effects that may arise from seabed mining activities. She underscores the anticipatory nature of the regulatory regime which is being developed prior to the commencement of commercial mining and the occurrence of severe damage to the marine environment. This offers the opportunity to develop progressive interpretations of international environmental law principles such as the precautionary approach in conjunction with exploration contractors, sponsoring States and the marine scientific community. These have been implemented in the exploration phase through processes such as environmental baselines studies and environmental impact assessment. She discusses the environmental obligations of exploration contractors under the *International Seabed Authority’s 2000 Polymetallic Nodules regulations*, the development of Guidelines on environmental impact assessment for

exploration contractors and the future work programme of the International Seabed Authority.

2. **D. French's *From the Depths: Rich Pickings of Principles of Sustainable Development and General International Law on the Ocean Floor—the Seabed Disputes Chamber's 2011 Advisory Opinion*** explores the normative implications of the International Tribunal on the Law of the Sea's 2011 advisory opinion on the obligations of States sponsoring persons and entities in the Area for emerging rules associated with the principle of sustainable development. He argues that the Seabed Disputes Chamber of ITLOS has significance beyond the mere elucidation of the rights and responsibilities of sponsoring States in the Area and has in fact strengthened certain principles of international environmental and general international law through its clarification of those rights. He points to the Chamber's positive assertion of the existence of a procedural right to enforce *erga omnes* obligations such as the protection of the global commons. He also discusses the Chamber's affirmation and extension of the International Court of Justice's understanding of due diligence, the obligation to undertake prior environmental impact assessment and the precautionary approach. Finally he highlights the Chamber's view that the principle of common but differentiated responsibility should be constrained in its application to the Area and that the level of development should not be used to compromise the environmental integrity of the deep seabed mining regime by the creation of sponsoring States "of convenience."

Environmental provisions of the deep seabed mining regime under UNCLOS, the Part XI Implementation Agreement and the International Seabed Authority's Mining Code

3. **M. Lodge's *International Seabed Authority's Regulations on Prospecting and Exploration for Polymetallic Nodules in the Area*** sets out the key provisions of Part XI of UNCLOS, Annex III and the Part XI Implementation Agreement. He explains how these provisions have been given substance in the Polymetallic Nodules Regulations. He details the Authority's obligations to establish and keep under review environmental rules, regulations and procedures to ensure effective protection for the marine environment from harmful effects which may arise from activities in the Area and to apply a precautionary approach to these activities. For exploration contractors he outlines their obligation to prevent, reduce and control pollution and other hazards to the marine environment from activities in the Area using the best technology available to them. He points out that the specific content of this obligation has been elaborated in the Regulations highlighting requirements to gather environmental baseline data and conduct prior environmental impact assessments for proposed exploration sites. He concludes that the regulations provide a firm basis for the further elaboration of a comprehensive code of environmental regulation for the Area.

4. **J. Nelson's** article entitled, *The Contemporary Seabed Mining Regime: a Critical Analysis of the Mining Regulations Promulgated by the International Seabed Authority*, critically analyses the Authority's first set of Regulations on Prospecting and Exploration for Polymetallic Nodules in the Area adopted in 2000 arguing that they contain some deficiencies in relation to addressing the environmental risks associated with seabed mining exploration. He makes a number of recommendations including the adoption of a risk assessment procedure to aid prospectors and the Authority in assessing the potential for adverse environmental impacts and the issuing of credentialing standards and a list of approved scientific research organizations to assist exploration contractors in establishing environmental baselines as required in the Polymetallic Nodule Regulations. He argues that because of the more intrusive mining techniques utilised in cobalt crust and polymetallic sulphide mining, the proximity of rare and fragile species to polymetallic sulphides at hydrothermal vents and the still developing state of knowledge of the biological communities surrounding cobalt rich crusts, that the Authority's regulations for the prospecting and exploration of these two types of mineral resources should be developed separately and remain flexible and amenable to change as the scientific community continues to learn about ecosystems in crust and sulphide areas.

Environmental responsibilities of relevant actors in the area including the international seabed authority, exploration contractors and sponsoring states

5. and 6. In his articles, *International Seabed Authority: The First Four Years* and *The International Seabed Authority: Fifth to Twelfth Sessions*, **M. Wood** provides a comprehensive description and analysis of the organisational and substantive work of the International Seabed Authority in its formative period from 1995 to 2007. While spanning the entire compass of the Authority's work during this period they also contain a number of important clarifications relating to the Authority's environmental responsibilities under UNCLOS and the Part XI Implementation Agreement. **Wood** emphasises that the Authority is an international organization with precisely defined and limited powers essentially concerned with exploration for and exploitation of the mineral resources of the Area, not to activities under the deep seabed in general. He explains that the Authority does not have a general mandate as regards the protection of the marine environment in the Area but that its mandated role under Article 145 of UNCLOS and the Part XI Implementation Agreement is limited to protecting the environment from the harmful effects of seabed mining in the Area. He alludes to the strong environmental focus of the Authority's first set of Regulations on Prospecting and Exploration for Polymetallic Nodules in the Area adopted in 2000 and the issuance of Guidelines to Exploration Contractors for polymetallic nodules on the assessment of possible environmental impacts.

7. **G. Handl's** article, entitled *Responsibilities and Obligations of States Sponsoring Persons and Entities with Respect to Activities in the Area: The International Tribunal of the Law of the Sea's Recent Contribution to International Environmental Law*, analyses the key elements of the ITLOS advisory opinion on Sponsoring States responsibilities and obligations with respect to Activities in the Area and its observations on international environmental law concepts. He highlights the Tribunal's characterization of the precautionary approach as an integral part of the sponsoring States general due diligence obligations in relation to sponsored exploration contractors and its view that there is a trend towards making the precautionary approach part of customary international law. He also notes that the Tribunal's opinion calls for the application of "best environmental practices" as the common standard for all seabed mining operations. In relation to environmental impact assessment (EIA), he discusses the Tribunal's comments that the sponsoring State has an obligation to ensure that its exploration contractors comply with express EIA obligations set out in the Annex to the Part XI Implementation Agreement. In relation to sponsoring State and contractor liability for damage to the Area, its resources and the marine environment, he notes the Tribunal's views that these would be generally compensable under international law and that potential claimants could be the international Seabed Authority, entities engaged in deep seabed mining, other users of the sea and coastal States.

8. The essay in **D. Anton, R. Makgill and C. Payne's** *Seabed Mining – Advisory Opinion on Responsibility and Liability* highlights the principal features of the Opinion and its implications for the development of international environmental law. It explains in detail the Tribunal's interpretation of the general international law due diligence obligation not to cause harm to the environment beyond national jurisdiction in the context of States sponsoring persons and entities engaged in seabed mining activities in the Area. The Sponsoring State's obligation is to ensure that the activities of sponsored entities and contractors in the Area comply with Part XI of UNCLOS, relevant Annexes to the Convention, the Part XI Implementation Agreement, rules and regulations of the Authority, the exploration contract and any other obligations under UNCLOS. The authors explain that this due diligence obligation is an obligation of conduct rather than result, and requires the sponsoring State to adopt laws and regulations and take administrative measures within the framework of its legal system that are reasonably appropriate to secure compliance by persons under its jurisdiction. These laws and regulations must be regularly enforced by monitoring and inspection and must be no less effective than international rules regulations and procedures. The article makes the point that these requirements will challenge developing States who may look to sponsored entities to finance the implementation and administration of these rules or alternatively may partner with developed States that have established legal monitoring and enforcement capabilities.

Discussion Topics and Questions

1. Exploitation Phase – The International Seabed Authority has begun the process of developing a comprehensive code of environmental regulation for activities in the Area during the exploration phase of seabed mining. What additional areas of environmental regulation will need to be addressed before the exploitation phase begins?
2. Strategic Environmental Assessment–Prior environmental impact assessment is an established obligation for exploration contractors proposing a plan of work for the Area under the Authority’s three sets of Regulations. This relates to individual contractors exploration sites and plans for work. How could a more strategic approach be adopted in relation to assessing the environmental impacts of plans, programmes and policies for the Area? Would it be possible to implement an overarching process of strategic environmental assessment in the Area?
3. Deep Sea Restoration – Once deep sea mining begins on a commercial scale how will the restoration of areas of the deep seabed which have been subject to substantial adverse impacts be approached? Restoration is the subject of two of the Aichi Biodiversity Targets adopted by the Conference of the Parties of the *Convention on Biological Diversity*: by 2020, ecosystems that provide essential services, including services related to water, and contribute to health, livelihoods and well-being, are restored and safeguarded; and by 2020, ecosystem resilience and the contribution of biodiversity to carbon stocks has been enhanced, through conservation and restoration, including
4. restoration of at least 15% of degraded ecosystems, thereby contributing to climate change mitigation and adaptation. How can these goals be implemented in the Area?
5. Conservation and Sustainable Use of Biodiversity beyond National Jurisdiction-what role will the International Seabed Authority play in any new regime designed to regulate the conservation and sustainable use of marine biodiversity in areas beyond national jurisdiction in a potential Implementing Agreement under UNCLOS or stand-alone international instrument?

The Area and Environmental Law - Terms and Definitions

1. “Area” means the seabed and ocean floor and subsoil thereof, beyond the limits of national jurisdiction.
2. “Authority” means the International Seabed Authority.
3. “Activities in the Area” means all activities of exploration for and exploitation of, the resources of the Area.
4. “Benthic” means pertaining to the ocean bottom.
5. “Benthos” means the forms of marine life that live on, or in, the ocean bottom.
6. “Best environmental practice” means the application of the most appropriate combination of environmental control measures and strategies for the deep seabed mining sector.
7. “Cobalt-rich crusts” means one of the resources of the Area consisting of hydroxide/oxide deposits of cobalt-rich iron/manganese (ferromanganese) crust formed from direct precipitation of minerals from seawater onto hard substrates containing minor

but significant concentrations of cobalt, titanium, nickel, platinum, molybdenum, tellurium, cerium, other metallic and rare earth elements.

8. “Common heritage of mankind” is a principle of international law which states that some elements of the earth and cosmos are common to humankind. The seabed and ocean floor beyond national jurisdiction (the Area) are part of the common heritage of mankind. No State may claim or exercise sovereignty or sovereign rights over any part of the Area or its resources. All rights in the resources of the Area are vested in mankind as a whole.
9. “Epifauna” means animals that live on the bottom, either attached to the sea floor or freely moving over it.
10. “Epipelagic” refers to the upper region of the ocean depths above the mesopelagic and generally below the oxygen minimum zone.
11. “Exploitation” means the recovery for commercial purposes of resources in the Area and the extraction of minerals therefrom, including the construction and operation of mining, processing and transportation systems, for the production and marketing of metals.
12. “Exploration” means searching for deposits of resources in the Area with exclusive rights, the analysis of such deposits, the use and testing of recovery systems and equipment, processing facilities and transportation systems, and conducting studies of the environmental, technical, economic, commercial and other factors that must be taken into account in exploitation.
13. “Exploration area” means that part of the Area allocated to the contractor for exploration; this may be reduced from time to time in accordance with reduction schedules specified by the Authority.
14. “High seas” means all parts of the sea that are not included in the exclusive economic zone, in the territorial sea or in the internal waters of a State, or in the archipelagic waters of an archipelagic State.
15. “Infauna” means organisms that live within the sediment.
16. “Macrofauna” means animals large enough to be seen by the naked eye, up to 2 cm long.
17. “Megafauna” means animals large enough (larger than 2cm) to be identified in photographs. They are proposed as key taxa (see “taxonomy”) for environmental impact assessment in deep sea mining.
18. “Meiofauna” means animals of the benthic community that are intermediate in size between macrofauna and microfauna.
19. “Microfauna” means organisms invisible to the naked eye, smaller than meiofauna.
20. “Marine environment” means the physical, chemical, geological and biological components, conditions and factors which interact and contribute to determining the productivity, state, condition and quality of the marine ecosystems and their biodiversity, the waters of the seas and oceans and the airspace above those waters, as well as the seabed and ocean floor and subsoil thereof.
21. “Mining Code” means the rules, regulations and procedures of the Authority.

22. "Parallel system" refers to a system under which the Area may be explored and exploited simultaneously by the Enterprise and by State-sponsored entities.
23. "Part XI Implementation Agreement" means the Agreement relating to the Implementation of Part XI of the United Nations Convention on the Law of the Sea of 10 December 1982
24. "Pelagic" means pertaining to the water column of the open ocean.
25. "Plume" means a dispersion of seawater that contains dense sediment particles. A benthic plume is a stream of water containing suspended particles of seafloor sediment, abraded manganese nodules (sulphides) (crusts) and macerated benthic biota that emanates from the mining collector or related equipment (e.g. pumping station) as a result of collector disturbance of the seafloor and transportation of material and spreads in a zone close to the seafloor. A surface plume is a stream of water containing suspended particles of seafloor sediment, abraded manganese nodules (sulphides) (crusts) and macerated benthic biota resulting from the separation, on board the mining ship, of the nodules (sulphides) (crusts) from the water carrier and spreads in a zone close to the ocean surface, within the photic or lower photic zone.
26. "Pollution of the marine environment" means the introduction by man, directly or indirectly, of substances or energy into the marine environment, including estuaries, which results or is likely to result in such deleterious effects as harm to living resources and marine life, hazards to human health, hindrance to marine activities, including fishing and other legitimate uses of the sea, impairment of quality for use of sea water and reduction of amenities.
27. "Polymetallic nodules" means one of the resources of the Area consisting of any deposit or accretion of nodules, on or just below the surface of the deep seabed, which contain manganese, iron, nickel, cobalt, copper and zinc.
28. "Polymetallic sulphides" means one of the resources of the Area consisting of hydrothermally formed deposits of sulphides and accompanying mineral resources in the Area which contain concentrations of metals including, inter alia, copper, lead, zinc, gold and silver.
29. "Precautionary approach" refers to the following emerging principle of international environmental law: Where there are threats of serious or irreversible damage to the environment lack of full scientific certainty shall not be used as a reason for postponing cost effective measures to prevent environmental degradation (Note that this definition is still being refined in international law).
30. "Programme of activities" means the programme of activities of an exploration contractor as it may be adjusted from time to time in accordance with the Authority's regulations.
31. "Prospecting" means the search for deposits of resources in the Area, including estimation of the composition, size and distribution of deposits and their economic values, without any exclusive rights to the resources accruing to the prospector.

32. "Reserved area" means an area which has been designated by the Authority as a reserved site in which activities may be conducted by the Authority through the Enterprise either alone, or in association with developing States, or by a developing State that has applied for an exploration contract in a reserved area.
33. "Resources" means all solid, liquid or gaseous mineral resources in situ in the Area at or beneath the seabed, including polymetallic nodules, polymetallic sulphides and cobalt-rich crusts. "Resources" when recovered from the Area are referred to as "minerals."
34. "Serious harm to the marine environment" means any effect from activities in the Area on the marine environment which represents a significant adverse change in the marine environment determined according to the rules, regulations and procedures adopted by the Authority on the basis of internationally recognized standards and practices.
35. "States Parties" means States which have consented to be bound by the United Nations Convention on the Law of the Sea of 10 December 1982 and for which this Convention is in force.
36. "Taxonomy" means the orderly classification of animals or plants according to their presumed natural relationship.
37. "UNCLOS" means the United Nations Convention on the Law of the Sea of 10 December 1982.
38. "UNCLOS III" means the Third United Nations Conference on the Law of the Sea.