Oceans of noise

A WDCS Science report

Editors: Mark Simmonds, Sarah Dolman
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WDCS
Whale and Dolphin Conservation Society

WDCS is the global voice for the protection of whales, dolphins and their environment.

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WDCS is the global voice for the protection of cetaceans (whales, dolphins and porpoises) and their environment.

Offices in: Argentina, Australia, Germany, the UK and the USA.

WDCS is a UK registered charity. No. 1014705

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Author biographies

Sarah Dolman

Sarah first came to work at WDCS as a volunteer whilst still a student at the University of Bath. Later, armed with an Honours degree in Electrical and Communications Engineering, she joined the Society's staff full-time and started to work with the Science Department. This was seven years ago and she is now the WDCS Science Officer - specialising in marine noise pollution - and is based in Canberra, Australia. Her role includes contributing on many different issues, including the coordination of the WDCS Southern Ocean campaign. Sarah has co-authored a number of reports contributed to the International Whaling Commission on environmental threats to cetaceans. She has recently taken part in field work involving visual and passive acoustic studies including humpback whale research off the coast of Queensland, Australia, studies of orca populations in Johnstone Strait, British Columbia, Canada and of small cetaceans off Wales in the UK.

Daniel Owen

Daniel is a barrister at Fenners Chambers in Cambridge, UK. His practice covers all areas of environmental law, but with a particular specialisation in marine environmental law and marine fisheries law at the domestic, European Union, and international levels. His clients include environmental non-governmental organisations, public bodies, and businesses. Prior to joining the Bar, Daniel worked for three years as marine policy officer at the Royal Society for the Protection of Birds (RSPB) and for four years as a technical adviser on marine oil spill response at the International Tanker Owners Pollution Federation (ITOPF). In 1999, he worked for one month as a CCAMLR International Observer on board a toothfish longliner in the South Atlantic, and in 2000 he worked for five months in the legal unit of DG Fisheries at the European Commission in Brussels. Daniel's original degree is a BA in Zoology from the University of Oxford.

E.C.M. (Chris) Parsons

Chris Parsons has been the Director of the Research and Education Departments of the Hebridean Whale and Dolphin Trust (HWDT) since 1998. He is also a research associate at the University Marine Biological Station, Millport and an Honorary Research Fellow at Aberdeen University.

Chris has been involved in whale and dolphin research for over ten years and has conducted projects in South Africa, India and China, as well as the UK. Prior to working at HWDT he carried out research on Indo-Pacific humpback dolphins and finless porpoises in Hong Kong and China, studying the behaviour and ecology of Hong Kong's cetaceans, marine pollution, and its effects on marine life. In Scotland, Chris has been involved in research on the distribution and abundance of cetaceans in West Scotland, whale-watching and marine ecotourism, marine pollution and the conservation of marine mammals. He has been a member of the scientific committee of the International Whaling Commission since 1999. He was awarded a Fellowship by the Royal Geographical Society in 1997, won a Scottish Thistle Award in 2000 for his work in Environmental Tourism, and was acknowledged a young achiever in Scotland for his achievements in cetacean conservation by the Queen and the Duke of Edinburgh in 1999. In addition, Dr Parsons has published over 50 scientific papers, articles and reports.

Mark P. Simmonds

Mark is the Director of Science for the Whale and Dolphin Conservation Society. Before joining WDCS he was a university lecturer and he is currently a guest lecturer at the University College of Wales (Bangor) and a Visiting Research Fellow at the University of Greenwich. Mark specialises in investigating the threats posed to cetaceans by human-made changes in the habitats and has produced over 100 papers, articles and reports on related themes. He has been the chair of the UK Marine Animal Rescue Coalition since 1989 and also currently chairs the Whale Working Group of Wildlife and Countryside Link (the UK's forum for conservation and welfare organisations).

René Swift

René is a research assistant at the University of Aberdeen's Lighthouse Field Station, where he is studying the distribution, behaviour and acoustic environment of large whales in the Faroe Shetland Channel. Before joining the University of Aberdeen, René worked for the International Fund for Animal Welfare's Song of the Whale Research Team and the Hebridean Whale and Dolphin Trust. René has been involved in passive acoustic monitoring / mitigation of seismic surveys and his master's thesis looked at the impact of seismic surveys on sperm whale distribution and behaviour.

Lindy Weilgart

Lindy first became involved in undersea noise issues in 1993, when she raised concerns regarding the ATOC project. She has since written articles, attended workshops and conferences, reviewed several environmental impact statements and other documents, and given numerous lectures on this topic. She has been studying whale sounds since 1982. She received her M.Sc. (Memorial University of Newfoundland) studying pilot whale vocalisations and behaviour, and her Ph.D. (Dalhousie University) researching sperm whale acoustic communication. An NSERC post-doctoral fellowship (Cornell University) allowed her to study the dialects of sperm whales in the South Pacific. She is currently an assistant professor and honorary research associate at the Biology Department, Dalhousie University, Halifax, Nova Scotia.

ANNEX 1

The Application of Marine Pollution Law to Ocean Noise

Daniel Owen[5]

1. Introduction

This paper addresses the application of marine pollution law to the regulation of ocean noise. Of course, other categories of law may also be of assistance in the regulation of ocean noise, but for reasons of space it is not possible to address these here.[6] Likewise, it will not be possible to address relevant principles of international environmental law, despite the clear importance in this context of matters such as the precautionary principle.

2. Global instruments on marine pollution

2.1 The United Nations Convention on the Law of the Sea

The 1982 United Nations Convention on the Law of the Sea ("the LOSC")[7] establishes duties on its contracting parties in respect of pollution of the marine environment "from any source".[8] The nature of these duties will be discussed in more detail below. At this point, it is appropriate to

[5] Barrister, Fenners Chambers, 3 Madingley Road, Cambridge, CB3 0EE, England, UK (e-mail: daniel.owen@fennerschambers.co.uk). The author would like to thank Professor Robin Churchill (University of Wales, Cardiff) for comments on a previous draft of this paper.

[6] Nevertheless, Appendix A of this paper lists some international instruments of actual or potential relevance to protection of cetaceans from ocean noise, other than specifically in relation to pollution. For discussion of the use of some of these instruments in relation to ocean noise, see: H.M. Dotinga & A.G. Oude Elferink, *Acoustic Pollution in the Oceans: The Search for Legal Standards*, Ocean Development & International Law, 31: 151-182, 2000, pp 166-170.

[7] Available at: http://www.un.org/Depts/los/convention_agreements/texts/unclos/closindx.htm (last visited 25.02.03).

consider just the definition of pollution in the treaty. Art 1(1)(4) LOSC states that:

> "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; [Emphasis added]

It is necessary to decide whether the term "energy" in Art 1(1)(4) LOSC may be interpreted to include energy in the form of human-induced ocean noise. Art 31 ("General rule of interpretation") of the Vienna Convention[9] states in paragraph 1 that "[a] treaty shall be interpreted in good faith in accordance with the ordinary meaning to be given to the terms of the treaty in their context and in the light of its object and purpose". Context comprises, *inter alia*, the treaty's text including its preamble.[10] In the current case, context is provided, *inter alia*, by the setting of the term "energy" within a definition of pollution, and by the subsequent use of the term "pollution" in the LOSC (in particular in Part XII). Furthermore, the preamble to the LOSC refers to, *inter alia*, "the desire to settle ... all issues relating to the law of the sea" and to "the desirability of establishing through this Convention ... a legal order for the seas and oceans ...". On the basis of this evidence, it is strongly arguable that human-induced ocean noise should be included within the ordinary meaning of "energy" in Art 1(1)(4) LOSC.

Art 31(3)(b) of the Vienna Convention states that "[t]here shall be taken into account, together with the context ... any subsequent practice in the application of the treaty which establishes the agreement of the parties regarding its interpretation".[11] Sinclair states that Art 31(3)(b) "does not cover subsequent practice in general, but only a specific form of subsequent practice - that is to say, concordant subsequent practice common to all the parties".[12] Consistency of practice is also

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[8] Art 194(1) LOSC; see also Art 194(3) LOSC.
[9] 1969 Vienna Convention on the Law of Treaties; available at: http://fletcher.tufts.edu/multi/texts/BH538.txt (last visited 25.02.03).
[10] Art 31(2).
[11] Art 31(3)(b).
[12] I. Sinclair, *The Vienna Convention on the Law of Treaties*, 2nd edition, Melland Schill Monographs in International Law (Manchester: Manchester University Press, 1984), p 138.

an important factor.[13] The judgement of the International Court of Justice in the *Case concerning Kasikili/Sedudu Island (Botswana/Namibia)*[14] indicates that for a given practice to be considered as "subsequent practice" under Art 31(3)(b), that practice by a party must be linked to a belief by that party that the treaty is to be interpreted as such, and the other parties must be fully aware of, and accepting of, such practice as an interpretation of the treaty.[15] Aust notes that acceptance of a practice by the parties need be tacit only.[16]

There are treaties on marine pollution that expressly cover seismic surveys (i.e. the 1994 Barcelona Protocol and 1989 Kuwait Protocol, both referred to later in this paper). It could be argued that such coverage of seismic surveys demonstrates that "energy" in Art 1(1)(4) LOSC has been interpreted by the parties to include noise. However, although both treaties refer to the LOSC in their respective preambles,[17] they are clearly only regional in their scope and also apply to non-parties to the LOSC.[18] The latter two points can also be made for the Arctic Environmental Protection Strategy, which expressly recognises noise as a pollutant.[19] Furthermore, as noted below, several marine pollution treaties have to date focused on the substances aspect of pollution rather than on the energy aspect[20] and some States have taken measures in respect of ocean noise without necessarily regarding noise expressly as "pollution".

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[13] Sinclair, *ibid*., p 137; see also: A. Aust, *Modern Treaty Law and Practice* (Cambridge: Cambridge University Press, 2000), p 194.
[14] Judgment of 13 December 1999; available at: http://www.icj-cij.org/icjwww/icases/ibona/ibonajudgments/ibona_ijudgment_19991213.htm (last visited 25.02.03).
[15] Paras 73-74.
[16] A. Aust, *Modern Treaty Law and Practice* (Cambridge: Cambridge University Press, 2000), p 195.
[17] The preamble to the Barcelona Protocol reads, *inter alia*: "Bearing in mind the relevant provisions of the United Nations Convention on the Law of the Sea ...". The preamble to the Kuwait Protocol reads, *inter alia*: "Being aware of the Articles 76, 197 and 208 of the United Nations Convention on the Law of the Sea (1982) ...".
[18] The preamble to the Barcelona Protocol reads, *inter alia*: "The Contracting Parties to the present Protocol, Being Parties to the Convention for the Protection of the Mediterranean Sea against Pollution, adopted at Barcelona on 16 February 1976 ...". However, parties to the Barcelona Convention include the following non-parties to the LOSC: Albania, Israel, Libya, Morocco, Syria and Turkey. The preamble to the Kuwait Protocol reads, *inter alia*: "The Contracting States, Being Parties to the Kuwait Regional Convention for Cooperation on the Protection of the Marine Environment from Pollution ...". However, parties to the Kuwait Convention include the following non-parties to the LOSC: Iran and the United Arab Emirates.
[19] 1991 Arctic Environmental Protection Strategy, pp 2 & 12; available at: http://www.arctic-council.org/files/pdf/artic_environment.PDF (last visited 25.02.03). States participating in the Strategy include the following non-parties to the LOSC: Canada, Denmark and the United States.
[20] Of note, the LOSC itself does likewise in some places, despite the environmental protection context of the provision in question and the potential relevance of energy as a source of pollution in that context (see in particular Arts 246(5)(b), 194(3)(a) & 207(5) LOSC).

This evidence therefore suggests that the "subsequent practice" to date does not establish agreement of the parties to the LOSC regarding the interpretation of the term "energy" in Art 1(1)(4) LOSC. However, Brownlie states that "[s]ubsequent practice by individual parties also has some probative value"[21] and Sinclair considers that subsequent practice which does not qualify under Art 31(3)(b) "may nonetheless constitute a supplementary means of interpretation within the meaning of Article 32 of the [Vienna] Convention".[22] It should also be borne in mind that awareness of the environmental impact of ocean noise and the regulatory response to such noise are still very much emerging issues. As the issue matures, State practice will become increasingly valuable as a guide to interpretation of the term "energy" within the definition of pollution in Art 1(1)(4) LOSC.

Art 32 ("Supplementary means of interpretation") of the Vienna Convention allows recourse to, *inter alia*, the preparatory work of the treaty as a supplementary means of interpretation (a) to confirm the meaning resulting from the application of Art 31 or (b) to determine the meaning when the interpretation according to Art 31 leaves the meaning ambiguous or obscure or leads to a result which is manifestly absurd or unreasonable. The definition of "pollution of the marine environment" in Art 1(1)(4) LOSC approximates to definitions adopted initially by the Group of Experts on the Scientific Aspects of the Marine Environment ("GESAMP") and latterly by the 1972 United Nations Conference on the Human Environment.[23] Dotinga and Oude Elferink state:[24]

> Initially, the definition of marine pollution discussed in GESAMP only referred to the introduction of substances. At a later stage the term "energy" was added, apparently to include thermal pollution, since there was evidence available to show that heat in seawater encouraged the development of certain undesirable organisms and interfered with the migration of fish in certain areas.

Thus it is possible that those drafting Art 1(1)(4) LOSC had thermal pollution (rather than noise) specifically in mind when they used the term "energy". However, any evidence along these lines

[21] I. Brownlie, *Principles of Public International Law*, 5th edition (Oxford: Clarendon Press, 1998), p 635.
[22] I. Sinclair, *The Vienna Convention on the Law of Treaties*, 2nd edition, Melland Schill Monographs in International Law (Manchester: Manchester University Press, 1984), p 138.
[23] S.N. Nandan, S. Rosenne & N.R. Grandy (eds.), *United Nations Convention on the Law of the Sea 1982: A Commentary* vol II (Dordrecht: Martinus Nijhoff), p 41.
[24] H.M. Dotinga & A.G. Oude Elferink, *Acoustic Pollution in the Oceans: The Search for Legal Standards*, Ocean Development & International Law, 31: 151-182, 2000, p 158.

in the preparatory work of the LOSC would merely be a supplementary means of interpretation. Most weight should be put on the ordinary meaning of the term "energy" regarding which, as noted above, there is a strong argument for including human-induced ocean noise. Furthermore, it is notable that though the negotiators may have had only thermal pollution specifically in mind at the time of their use of the word "energy", they chose not to use a more specific term like "heat" or "thermal energy". Thus it is arguable that "energy" was chosen to facilitate the treaty indeed being a legal order covering all issues, capable of responding to evolving issues.

For the purposes of this paper, in light of the above, the term "pollution" in the LOSC will be taken as including human-induced ocean noise.[25] The other elements of the LOSC's definition of "pollution of the marine environment" should also be noted: thus to be treated as pollution under the LOSC, ocean noise should result or be likely to result in the specified "deleterious effects", including "harm" to living resources and marine life. If these conditions are met, then the various rights and duties established by the LOSC in relation to pollution of the marine environment should apply to ocean noise.

2.2 Other global instruments

As well as the LOSC, there are two other treaties of global application addressing marine pollution: MARPOL[26] and the London Convention.[27] The London Convention will not be discussed here.[28] There are also some non-treaty instruments, including (a) Chapter 17 of Agenda 21,[29] (b) the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities ("the GPA"),[30] and (c) the UNEP Conclusions of the study of legal aspects concerning the environment related to offshore mining and drilling within the limits of national

[25] See also: H.M. Dotinga & A.G. Oude Elferink, *ibid.*, p 158.
[26] International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto. The text is available in: *MARPOL 73/78 - Consolidated Edition 2002* (London: International Maritime Organization, 2002).
[27] 1972 Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter; available at: http://www.austlii.edu.au/au/other/dfat/treaties/1985/16.html (last visited 25.02.03).
[28] The justification for this is that the London Convention addresses dumping; it is unlikely that dumping in itself constitutes a significant source of ocean noise.
[29] Agenda 21 is the action plan adopted at the 1992 United Nations Convention on Environment and Development; it is available at: http://www.un.org/esa/sustdev/agenda21text.htm (last visited 25.02.03).
[30] 1995 Global Programme of Action for the Protection of the Marine Environment from Land-based Activities; available at: http://www.gpa.unep.org (last visited 25.02.03).

jurisdiction ("the UNEP Conclusions").[31]

Chapter 17 of Agenda 21

Chapter 17 of Agenda 21 refers to "pollution" in the context of marine environmental protection. However, the focus is on substances and effluents,[32] and no express reference is made to energy or noise or similar terms. Nevertheless, the general references to "pollution" are helpful.

GPA

The GPA is a non-binding instrument that deals only with land-based sources of environmental degradation. The list of "contaminants" in the GPA does not include energy or noise or similar terms.[33] However, the GPA does identify, *inter alia*, "military installations", "coastal mining (e.g., sand and gravel)" and "aquaculture" as point sources of degradation.[34] The cited point sources are all potentially sources of ocean noise and the term "degradation" could arguably be interpreted to include the impacts of ocean noise.

UNEP Conclusions

The UNEP Conclusions address "pollution and other adverse effects" from "offshore exploration for and exploitation of hydrocarbons and other minerals, and related activities, within the limits of national jurisdiction".[35] The Conclusions are general in nature. They do not refer expressly to energy or noise or similar terms, and (with one or two exceptions[36]) may be regarded as applying equally to both substances and energy as pollutants. The UNEP Conclusions are non-binding. However, Churchill & Lowe[37] state that "[t]he Conclusions were endorsed as guidelines for State

[31] Reproduced in: P.H. Sand, *Marine Environment Law in the United Nations Environment Programme* (London: Tycooly, 1988), chapter 9.
[32] E.g. see paras 17.18, 17.20, 17.28 and 17.30.
[33] See para 21(b).
[34] See para 21(d)(i).
[35] Para 1.
[36] Para 7 states, *inter alia*, that: "The authorization should provide for concrete requirements on environmental protection. Such authorization should, in particular, require the operator ... to take all necessary measure to ensure that spillage, leakage or wastes resulting from the operations do not endanger public health, fauna and flora and coastal regions" (emphasis added). This represents an emphasis on substances in a context where pollution from ocean noise is potentially equally relevant.
[37] R.R. Churchill & A.V. Lowe, *The Law of the Sea*, 3rd edition, Melland Schill Studies in International Law (Manchester: Manchester University Press, 1999), pp 371-372.

practice by the UNEP Governing Council and the UN General Assembly in 1982".

MARPOL

MARPOL addresses pollution from ships. However, the term "ship" is defined broadly to mean "a vessel of any type whatsoever operating in the marine environment and includes hydrofoil boats, air-cushion vehicles, submersibles, floating craft and fixed or floating platforms".[38] Thus MARPOL applies beyond, say, merchant vessels to installations used in exploration and exploitation of the natural resources of the seabed and subsoil.[39] Under Art 1(1) of MARPOL:

> The Parties to the Convention undertake to give effect to the provisions of the present Convention and those Annexes thereto by which they are bound, in order to prevent the pollution of the marine environment by the discharge of harmful substances or effluents containing such substances in contravention of the Convention.

Thus in contrast to the LOSC, the term "pollution of the marine environment" in MARPOL focuses solely on substances. This focus is reflected in the treaty's six annexes,[40] none of which may be construed even indirectly as dealing with ocean noise. The term "discharge" as used in Art 1(1) is defined in Art 2(3)(a).[41] Arguably, this definition does not exclusively limit the scope of the term to substances. Nevertheless, the scope of Art 1(1), by its wording, is clearly restricted to substances.

To extend the scope of Art 1(1) to include energy or noise, one option would be to retain "discharge" in Art 1(1) in respect of substances but to then add, say, "emission" in respect of energy or noise (with an appropriate definition of "emission"). Another option would be to define the term "substance" such that it includes energy or at least ocean noise. Such an approach does appear to have been taken by the IMO in its *Guidelines for the Identification and*

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[38] Art 2(4).
[39] This is reflected in Annex I - *Regulations for the Prevention of Pollution by Oil* (see Reg 2(1) and Reg 21).
[40] The six annexes are: Annex I: Pollution by Oil; Annex II: Pollution by Noxious Liquid Substances in Bulk; Annex III: Pollution by Harmful Substances Carried by Sea in Packaged Form; Annex IV: Pollution by Sewage from Ships; Annex V: Pollution by Garbage from Ships; Annex VI: Air Pollution from Ships. Annexes IV and VI have not yet entered into force.
[41] Art 2(3)(a): "*Discharge,* in relation to harmful substances or effluents containing such substances, means any release howsoever caused from a ship and includes any escape, disposal, spilling, leaking, pumping, emitting or emptying;".

Designation of Particularly Sensitive Sea Areas.[42] These impliedly refer to noise as a substance.[43] Based on this approach in the Guidelines, it is tempting to suggest that MARPOL need not be amended in order to cover ocean noise. However, the Guidelines are not primarily intended as an interpretation of MARPOL.

For current purposes, it will assumed that in order to use MARPOL to regulate ocean noise, it would be necessary to extend the scope of Art 1(1) to include energy or, more specifically, noise. Of course, the task of generating the necessary political will to effect this change should not be underestimated. But with the scope of Art 1(1) extended as suggested, in principle a new annex to MARPOL on ocean noise could then be drafted.

It is noteworthy that Art 2(3)(b)(ii) of MARPOL currently excludes from the meaning of discharge the "release of harmful substances directly arising from the exploration, exploitation and associated offshore processing of sea-bed mineral resources". The impact of this provision is clear: it avoids MARPOL being used as a general means of regulating operational discharges from the offshore minerals industry. Thus even if the scope of Art 1(1) could be extended as suggested, it is likely that there would be pressure from governments to draft a provision equivalent to Art 2(3)(b)(ii) in respect of emissions of noise from such operations. Clearly, if successful, any such pressure would remove any opportunity for using MARPOL to control noise from important sources such as seismic surveys, construction and drilling.

2.3 Conclusion

The LOSC is the most promising global treaty with potential for the regulation of ocean noise, on account of (a) its definition of pollution including "energy" and (b) its intention to address pollution from all sources. MARPOL too offers possibilities, assuming that the scope of Art 1(1) could be extended to include energy or noise; even then, pressure to introduce an equivalent of Art 2(3)(b)(ii) is likely to be strong.

It is necessary to analyse the provisions within the LOSC in order to assess how they may be used to promote the regulation of ocean noise. The most relevant part of the treaty is Part XII (on

[42] Annex 2 to Resolution A.927(22) adopted on 29 November 2001.
[43] See para 2.2.

protection and preservation of the marine environment). Much of Part XII focuses on six categories of pollution,[44] addressing for each one both standard setting and enforcement. This paper will focus on just three of these categories, referred to in Part XII as: (a) pollution from seabed activities subject to national jurisdiction; (b) pollution from activities in the Area; and (c) pollution from vessels.

3. Applying the Part XII framework to sources of ocean noise

3.1 Pollution from seabed activities subject to national jurisdiction

This is addressed by Arts 208 & 214 LOSC. Art 208 LOSC deals with standard setting. Art 208(1) LOSC states that:

> Coastal States shall adopt laws and regulations to prevent, reduce and control pollution of the marine environment arising from or in connection with seabed activities subject to their jurisdiction and from artificial islands, installations and structures under their jurisdiction, pursuant to articles 60 and 80.

This provision has two elements: (a) pollution "arising from or in connection with seabed activities subject to their [i.e. the coastal States'] jurisdiction" and (b) pollution "arising ... from artificial islands, installations and structures under their [i.e. the coastal States'] jurisdiction, pursuant to articles 60 and 80". Regarding the former, the term "seabed activities" is not defined in the LOSC. For the purposes of this paper, it will be assumed to mean, *inter alia*, exploration and exploitation of the natural resources of the seabed and subsoil (e.g. oil and gas).[45] The term "subject to their jurisdiction" is also open to interpretation. For the purposes of this paper, it will be assumed to mean activities occurring within zones that are under coastal State jurisdiction (i.e.,

[44] Pollution: (a) from land-based sources; (b) from seabed activities subject to national jurisdiction; (c) from activities in the Area; (d) by dumping; (e) from vessels; and (f) from or through the atmosphere.
[45] This view is corroborated by Art 194(3)(c) LOSC which refers to "pollution from installations and devices used in exploration or exploitation of the natural resources of the seabed and subsoil". (Note that Art 77(4) LOSC provides that the term "natural resources" in the context of the legal continental shelf includes not only non-living resources but also sedentary species. As such, the term "seabed activities" in relation to the legal continental shelf could potentially also include exploration and exploitation of sedentary species.)

inter alia, internal waters, the territorial sea, the exclusive economic zone ("EEZ") and the continental shelf).[46] Art 208(1) LOSC requires that laws and regulations should be adopted not just in relation to pollution "arising from" the seabed activities, but also in relation to pollution "in connection with" such activities.

The second element of Art 208(1) LOSC refers to "artificial islands, installations and structures under their [i.e. the coastal States'] jurisdiction, pursuant to articles 60 and 80". Though Art 80 LOSC refers to such objects "on the continental shelf", Art 60 LOSC is much broader in scope. Art 60 LOSC relates to the EEZ (an area beyond and adjacent to the territorial sea but not extending beyond 200 nautical miles from the baselines from which the breath of the territorial sea is measured[47]). Under Art 60(1) LOSC, the coastal State has specified exclusive rights in the EEZ in relation to, *inter alia*, "installations and structures for the purposes provided for in article 56 and other economic purposes". Art 56 LOSC refers to, *inter alia*, "the production of energy from the water, currents and winds". Thus it is arguable that Art 208(1) LOSC, despite the title of the article,[48] may be interpreted to include structures at the sea surface within the EEZ for, say, energy generation or fish farming.[49] This is relevant since such structures have potential to generate ocean noise.[50]

Art 208(2) LOSC states that: "States shall take other measures as may be necessary to prevent, reduce and control such pollution". This provision refers to States in general, rather than to coastal States specifically. The meaning of "other measures" is not entirely clear. However, Art 208(2) LOSC does refer to "such pollution", i.e. the pollution described in Art 208(1) LOSC. One possible interpretation is therefore that, say, flag States of vessels operating under licence in the coastal State's zone (e.g. conducting seismic surveys or servicing installations) likewise have a duty to prevent, reduce and control the pollution.[51]

Art 208 LOSC also makes links to regional and global regimes. Under Art 208(3) LOSC, the laws, regulations and measures referred to in Art 208(1) & (2) LOSC are to be "no less effective

[46] The basis for this view is that the LOSC has a separate provision (Art 209) that applies to "activities in the Area" (i.e. all activities of exploration for, and exploitation of, the resources of the seabed and ocean floor and subsoil thereof, beyond the limits of national jurisdiction [see Art 1(1)(3) & (1) LOSC]).
[47] Arts 55 & 57 LOSC.
[48] The title of Art 208 LOSC is: "Pollution from seabed activities subject to national jurisdiction".
[49] See also: S. Rosenne, A. Yankov & N.R. Grandy (eds.), *United Nations Convention on the Law of the Sea 1982: A Commentary* vol IV (Dordrecht: Martinus Nijhoff, 1991), p 226.
[50] E.g. see section 3.7.3 of the *OSPAR Quality Status Report 2000 for the North-East Atlantic*; available at: http://www.ospar.org (last visited 25.02.03).
[51] See also: S. Rosenne, A. Yankov & N.R. Grandy (eds.), *United Nations Convention on the Law of the Sea 1982: A Commentary* vol IV (Dordrecht: Martinus Nijhoff, 1991), pp 144 & 145.

than international rules, standards and recommended practices and procedures". It is assumed that the term "international" as used here refers to action at both regional and global levels. Under Art 208(4) LOSC, States are to "endeavour to harmonize their policies in this connection at the appropriate regional level". Under Art 208(5) LOSC, States are to establish global and regional rules, standards, practices and procedures, especially "through competent international organizations or diplomatic conference".

Art 214 LOSC deals with enforcement. States are required to (a) enforce their laws and regulations adopted in accordance with Art 208 LOSC and (b) implement "applicable international rules and standards".

In terms of implementation of Art 208 LOSC, it is clear that some States have indeed taken measures in respect of ocean noise from the type of source covered by Art 208 LOSC.[52] However, it is less clear whether this action represents implementation of Art 208(1) & (2) LOSC or whether it is instead motivated by distinct and separate nature conservation duties. For example, the United Kingdom government has issued draft "Guidance Notes" to industry on procedures for, *inter alia*, geological surveys on the UK continental shelf.[53] The proposed procedures are partly aimed at reducing the impact of seismic surveys on marine mammals. However, the Guidance Notes are intended to implement the EC Habitats Directive.[54] The stated aim of this directive is to "contribute towards ensuring bio-diversity through the conservation of natural habitats and of wild fauna and flora"[55] rather than to implement Art 208(1) LOSC.

As far as Art 208(5) LOSC is concerned, the only relevant global treaty is MARPOL. However, its limited scope has already been discussed above. Certain regional treaties are far more relevant. All of the treaties underlying regional seas initiatives[56] (with one exception[57]) define "pollution" to include "energy".[58] Each of the treaties in turn includes a

[52] For material on the application of US environmental legislation to ocean noise, see for example: http://www.nrdc.org/wildlife/marine/sound/sdinx.asp (last visited 25.02.03).
[53] Draft *Guidance Notes for Procedures for Geological Surveys and Shallow Drilling under the Offshore Petroleum Activities (Conservation of Habitats) Regulations 2001*, July 2001; available at: http://www.og.dti.gov.uk/environment/consultations.htm (last visited 25.02.03).
[54] Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora, OJ L 206, 22.7.92, p 7; available at: http://europa.eu.int/comm/environment/nature/legis.htm (last visited 25.02.03). The UK has sought to implement this directive in relation to oil and gas activities on the UK continental shelf through the Offshore Petroleum Activities (Conservation of Habitats) Regulations 2001, SI 2001 No. 1754; available at: http://www.legislation.hmso.gov.uk/si/si2001/20011754.htm (last visited 25.02.03).
[55] See: Art 2(1), EC Habitats Directive.
[56] See Appendix B of this paper. The term "regional seas initiatives" as used here includes initiatives both within and outside the UNEP Regional Seas Programme.
[57] Cartagena Convention - there is no definition of "pollution".

brief framework provision on pollution from seabed activities, or similar.[59] An analysis of these provisions reveals some interesting variations between treaties. There is not space here to provide a comprehensive analysis. However, two examples are given:

(a) **OSPAR Convention**: The contracting parties have a duty to take steps to prevent and eliminate pollution from "offshore sources".[60] This term means "offshore installations and offshore pipelines from which substances or energy reach the maritime area".[61] The term "offshore installation" is in turn defined by reference to "offshore activities".[62] This latter term is defined as those activities carried out "for the purposes of the exploration, appraisal or exploitation of liquid and gaseous hydrocarbons" (emphasis added).[63] This evidently restricts the scope of the duty to act to prevent and eliminate pollution. It was assumed above that the term "seabed activities" in Art 208(1) refers to exploration and exploitation of the natural resources of the seabed and subsoil. Beyond hydrocarbons, there are several such natural resources for which exploration or exploitation may create noise pollution, e.g. aggregates, sedentary species (on the continental shelf)[64] and non-hydrocarbon minerals. Yet pollution from exploration and exploitation of such resources would not be covered by the "offshore sources" duty in the OSPAR Convention.

(b) **Bucharest Convention**: Each contracting party is to take measures in respect of "pollution ... caused by or connected with activities on its continental shelf, including the exploration and exploitation of the natural resources of the continental shelf" (emphasis added).[65] Under the LOSC, the continental shelf "comprises the seabed and subsoil of the submarine areas that extend beyond its territorial sea ...".[66] Therefore, it would appear that the above duty in the Bucharest Convention does not apply to the territorial sea of the contracting parties.

[58] OSPAR Convention - Art 1(4); Helsinki Convention - Art 2(1); Bucharest Convention - Art II(1); Nairobi Convention - Art 2(b); Kuwait Convention - Art I(a); Barcelona Convention - Art 2(a); Jeddah Convention - Art 1(3); Noumea Convention - Art 2(f); Lima Convention - Art 2(a); Abidjan Convention - Art 2(1); Antigua Convention - Art 3(1)(d).
[59] See Appendix C of this paper.
[60] Art 5.
[61] Art 1(k).
[62] Art 1(l).
[63] Art 1(j).
[64] See Art 77(4) LOSC.
[65] Art XI(1).

Four of the twelve regional seas treaties also have annexes or supplementary protocols on seabed activities (or similar). The OSPAR Convention and Helsinki Convention include annexes on pollution from "offshore sources"[67] and "offshore activities"[68] respectively. However, in both cases there is an emphasis on substances.[69] In the case of the OSPAR Convention, this emphasis is surprising in view of the assertion in the convention that the term "offshore sources" means "offshore installations and offshore pipelines from which substances or energy reach the maritime area" (emphasis added).[70] The term "offshore installations" is defined broadly as "any man-made structure, plant or vessel or parts thereof, whether floating or fixed to the seabed, placed within the maritime area for the purpose of offshore activities" (emphasis added).[71] Depending on the interpretation of "placed within", the term "offshore sources" could potentially cover vessels conducting seismic surveys.

In the case of the Helsinki Convention, the annex defines "offshore activity" as "any exploration and exploitation of oil and gas by a fixed or floating offshore installation or structure including all associated activities thereon" (emphasis added).[72] The term "exploration" is in turn defined as including "any drilling activity but not seismic investigations" (emphasis added).[73] Combining these provisions, it is arguable that seismic surveys could still be included as an "offshore activity" on the basis that they are activities associated with exploration. However, it would additionally be necessary to show that a vessel conducting such surveys was a "floating offshore installation or structure".

The discussion above illustrates the influence of definitions. Further to this, it is worth highlighting how the location of definitions within the convention or the annex can affect their influence. In the case of the OSPAR Convention, the definitions are located in the body of the convention itself. Thus the duty in the convention on contracting parties to "take ... all possible steps to prevent and eliminate pollution from offshore sources" is directly constrained by the definition of "offshore sources" in the convention. In the case of the Helsinki Convention, the

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[66] Art 76(1) LOSC.
[67] OSPAR Convention, Annex III.
[68] Helsinki Convention, Annex VI.
[69] Regarding the OSPAR Convention, Annex III, see, *inter alia*, Arts 4 and 10. Regarding the Helsinki Convention, Annex VI, see, *inter alia*, Regulations 4 and 5.
[70] Art 1(k).
[71] Art 1(l).
[72] Annex VI, Reg 1(1).

definitions are located in the annex and are stated as being "[f]or the purposes of this Annex".[74] In other words, and in contrast to the definitions in the OSPAR Convention, they do not affect (expressly, at least) the provision in the main body of the treaty which calls on contracting parties to "take all measures ... to prevent pollution ... resulting from exploration or exploitation of ... the seabed and the subsoil ...".[75]

The Barcelona Convention is supplemented by a *Protocol for the Protection of the Mediterranean Sea against Pollution Resulting from Exploration and Exploitation of the Continental Shelf and the Seabed and its Subsoil* ("the Barcelona Protocol").[76] The protocol defines "exploration activities" to include, *inter alia*, "seismological activities" and "surveys of the seabed and its subsoil".[77] Though several provisions apply generally to pollution (which in turn includes energy[78]) or to "activities" (which in turn includes "exploration activities"), the section in the protocol that addresses particular types of pollutants in turn[79] does so under the heading "wastes and harmful or noxious substances and materials"; not surprisingly in view of this declared scope, there is no mention in this section of pollution by forms of energy. Overall then, it is clear that in the detail, the Barcelona Protocol focuses on substances and materials rather than on energy.

The Kuwait Convention is supplemented by a *Protocol concerning Marine Pollution Resulting from Exploration and Exploitation of the Continental Shelf* ("the Kuwait Protocol").[80] The protocol defines "offshore operations" broadly to include, *inter alia*, "operations ... for the purposes of exploring of oil or natural gas".[81] Several provisions apply generally to pollution (which in turn includes energy) or to "offshore operations". However, with one exception, those provisions that go into detail on particular forms of pollution address only pollution by oil, sewage, garbage and chemicals.[82] The one exception refers expressly to "seismic operations". That provision requires each contracting State to "take appropriate measures to ensure that

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[73] Annex VI, Reg 1(3).
[74] Annex VI, Reg 1.
[75] Art 12(1).
[76] Adopted in 1994 but not yet entered into force; available at: http://www.unepmap.org/ (last visited 05.03.02).
[77] Art 1(d)(ii).
[78] Art 1(e).
[79] Section III.
[80] Adopted in 1989 and entered into force in 1990; available at: http://sedac.ciesin.org/pidb/texts/acrc/ProtKuwait.txt.html (last visited 25.02.03).
[81] Art I(13).
[82] Arts IX, X, & XI(1).

seismic operations in the Protocol Area shall take into account the Guidelines issued by the Organization".[83] It is not known whether any guidelines have in fact been issued.

Mention should also be made of the implementation at the regional level of the second element of Art 208(1) LOSC. It is noteworthy that, with three exceptions, the provisions of the treaties underlying regional seas initiatives do not expressly cover "artificial islands, installations and structures under their jurisdiction, pursuant to articles 60 and 80" other than those associated with the exploration and exploitation of the seabed and subsoil.[84]

The three exceptions are the Lima Convention, the Abidjan Convention and the Antigua Convention. The Lima Convention refers to "[p]ollution from any other installations and devices operating in the marine environment";[85] the Abidjan Convention refers to, *inter alia*, "pollution ... from artificial islands, installations and structures under their [i.e. the contracting parties'] jurisdiction";[86] and the Antigua Convention refers to "[p]ollution caused by ... any other arrangement or installation that operates in the marine environment".[87]

Taking a different approach, the OSPAR Convention and the Jeddah Convention include an article dealing with "pollution from other sources" and "pollution from other human activities", respectively.[88] For example, the article in the OSPAR Convention states that:

> The Contracting Parties shall cooperate with a view to adopting Annexes, in addition to the Annexes mentioned in Articles 3, 4, 5 and 6 above, prescribing measures, procedures and standards to protect the maritime area against pollution from other sources, to the extent that such pollution is not already the subject of effective measures agreed by other international organisations or prescribed by other international conventions.

[83] Art XI(2). The "Organization" referred to is the one established by Art I(c) of the Kuwait Convention, i.e. the "Regional Organization for the Protection of the Marine Environment", headquartered in Kuwait.
[84] See Appendix C of this paper.
[85] Art 4(c).
[86] Art 8.
[87] Art 6(1)(b).
[88] OSPAR Convention - Art 7; Jeddah Convention - Art VIII. See also Art 13 of the Noumea Convention. (Art VIII of the Kuwait Convention is entitled "Pollution from other human activities" but in fact relates only to pollution from "land reclamation and associated suction dredging and coastal dredging".)

Questions arise as to the identity of the "competent international organizations" mentioned in Art 208(5) LOSC. In respect of Art 207(4) LOSC, on land-based sources, Rosenne *et al*. state:[89]

> The plural term "competent international organizations" in this article ... recognizes that in dealing with land-based sources of pollution of the marine environment no particular universal or regional international organization has exclusive competence. As knowledge and technology process, it is becoming increasingly understood that different types of land-based pollution require different functional and legal approaches. In the nature of things, this can implicate different international organizations, both global and regional.

Rosenne *et al*.,[90] in relation to Art 208(5) LOSC and its use of the term "competent international organizations", state that their comments made in connection with article 207 LOSC are applicable. Thus it is arguable that at the regional level such organisations include the various commissions (or similar) established by some of the treaties underlying regional seas initiatives,[91] and that at the global level such organisations include the International Maritime Organization and the United Nations Environment Programme.

[89] S. Rosenne, A. Yankov & N.R. Grandy (eds.), *United Nations Convention on the Law of the Sea 1982: A Commentary* vol IV (Dordrecht: Martinus Nijhoff, 1991), p 133.
[90] *Ibid*., p 146.
[91] E.g. see: OSPAR Convention (Art 10), Helsinki Convention (Art 19), Bucharest Convention (Art XVII), Kuwait Convention (Art XVI), Jeddah Convention (Art XVI).

Conclusion

At the global level, only MARPOL establishes rules and standards in relation to operational pollution from "fixed or floating platforms", but its application to such structures is strictly limited. Similar strict limitations may well remain even if the scope of MARPOL is extended to cover noise pollution. At the regional level, the situation is more promising thanks to the twelve treaties underlying regional sea initiatives. Such treaties (with one exception) define pollution to include energy, and each includes a brief framework provision on pollution from seabed activities (or similar).

Four of the twelve treaties also have annexes or supplementary protocols on seabed activities (or similar). In all four cases, the emphasis in the annex or protocol is currently on pollution by substances, rather than by energy. However, in all four cases there is scope for improving the profile of ocean noise, whether by arguing for insertion of an additional provision on ocean noise or by arguing for measures to be taken with the instrument as it stands. Of the remaining eight treaties, there is clearly scope for protocols addressing pollution from seabed activities including, *inter alia*, ocean noise.

Few of the regional seas treaties address the second element of Art 208(1) LOSC, i.e. pollution from "artificial islands, installations and structures under their jurisdiction, pursuant to articles 60 and 80" beyond those associated with the exploration and exploitation of the seabed and subsoil. However, five of the treaties do contain framework provisions that could be applied to such pollution (e.g. via additional annexes or protocols). The remaining seven treaties have no such framework provision; political will could in the first instance be tested by seeking such a provision.

It should not be forgotten that several regional seas initiatives operate in the absence of an underlying treaty.[92] In those cases, there is still scope for influencing their agenda. However, in respect of all regional sea initiatives, it should be borne in mind that the various initiatives are currently, or are soon likely to be, taking action to implement the Global Programme of Action (see above).[93] This action with respect to land-based activities may be seen as either an

[92] Arctic; East Asian; North-West Pacific; South Asia; South West Atlantic. See: http://www.unep.org/unep/program/natres/water/regseas/regseas.htm and http://www.arctic-council.org/files/pdf/artic_environment.PDF (last visited 25.02.03).
[93] See GPA (Part III) and Report of the First Intergovernmental Review Meeting on the Implementation of the Global Programme of Action for the Protection of the Marine Environment

opportunity for, or a hurdle to, additionally seeking action in relation to Art 208 LOSC and ocean noise in particular.

Finally it should be noted that, in the absence of action at the regional or global level, States should still be encouraged to take unilateral action with regard to noise as a pollutant. As noted earlier, Art 208(1) LOSC requires coastal States to adopt laws and regulations. In terms of standards, the only qualification regarding such domestic legislation is that it must be "no less effective than international rules, standards and recommended practices and procedures" (Art 208(3) LOSC). This qualification is relevant once regional or global instruments exist. But in the absence of such instruments, a coastal State nonetheless has the duty to adopt legislation.

3.2 Pollution from activities in the "Area"

The "Area" is defined in the LOSC as "the seabed and ocean floor and subsoil thereof, beyond the limits of national jurisdiction".[94] Pollution from activities in the Area is addressed by Arts 209 & 215 LOSC, as well as elsewhere in the LOSC and in other instruments.[95] The term "activities in the Area" is defined in the LOSC as "all activities of exploration for, and exploitation of, the resources of the Area".[96] The term "resources" is in turn defined as "all solid, liquid or gaseous mineral resources *in situ* in the Area at or beneath the seabed, including polymetallic nodules".[97] In other words, the term "activities in the Area" has a very specific meaning.

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from Land-Based Activities (Annex III [*Outline Information on Regional Seas Activities*]); available at: http://www.gpa.unep.org (last visited 25.02.03).

[94] Art 1(1)(1) LOSC.

[95] See: (a) Part XI of the LOSC; (b) Agreement Relating to the Implementation of Part XI of the United Nations Convention on the Law of the Sea of 10 December 1982; available at: http://www.un.org/Depts/los/convention_agreements/texts/unclos/closindxAgree.htm (last visited 25.02.03); (c) Regulations on Prospecting and Exploration for Polymetallic Nodules in the Area, approved by the Assembly of the International Seabed Authority on 13 July 2000 (annexed to document ISBA/6/A/18); available at: http://www.isa.org.jm/ (last visited 25.02.03); and (d) Recommendations for the guidance of the contractors for the assessment of the possible environmental impacts arising from exploration for polymetallic nodules in the Area (published as ISBA/7/LTC/1/Rev.1* and Corr.1); available at: http://www.isa.org.jm/ (last visited 25.02.03).

[96] Art 1(1)(3) LOSC.

[97] Art 133(a) LOSC.

Art 209 LOSC focuses on both standard setting at the international level and adoption of laws and regulations at the national level. The former is particularly relevant because of the international nature of the Area and its resources. Art 209(1) LOSC states:

> International rules, regulations and procedures shall be established in accordance with Part XI to prevent, reduce and control pollution of the marine environment from activities in the Area. Such rules, regulations and procedures shall be re-examined from time to time as necessary.

Art 209 LOSC is complemented by, *inter alia*, Art 145 LOSC in Part XI. Art 145 LOSC requires, *inter alia*, that "[n]ecessary measures shall be taken in accordance with this Convention with respect to activities in the Area to ensure effective protection for the marine environment from harmful effects which may arise from such activities". Art 145(a) LOSC requires that to this end the Authority shall adopt appropriate rules, regulations and procedures for:

> the prevention, reduction and control of pollution and other hazards to the marine environment, including the coastline, and of interference with the ecological balance of the marine environment, particular attention being paid to the need for protection from harmful effects of such activities as drilling, dredging, excavation, disposal of waste, construction and operation or maintenance of installations, pipelines and other devices related to such activities;

Art 145(a) LOSC refers not only to pollution but also to "other hazards". Thus if there were doubt about whether ocean noise is covered by the definition of "pollution of the marine environment" in Art 1(1)(4) LOSC, it could instead be considered as falling under "other hazards". Though many of the activities listed in Art 145(a) LOSC have the potential to generate ocean noise, it is less clear whether the list extends to activities early on in the exploration process (e.g. seismic surveys). However, the listed activities are those meriting "particular attention" rather than exclusive attention.

Though exploitation is many years away, prospecting and exploration are taking place now.[98] The International Seabed Authority ("the Authority") has so far sought to implement Arts 209 &

[98] See for example document ISBA/8/A/5, paras 36-37; available at: http://www.isa.org.jm/ (last visited 25.02.03).

145 LOSC in respect of polymetallic nodules. In 2000 the Assembly approved Regulations,[99] and in 2001 the Legal and Technical Commission prepared Recommendations.[100] Space does not permit an analysis of these instruments in respect of ocean noise. However, two points will be made.

First, the Regulations do apply, *inter alia*, to prospecting.[101] This is significant because the definition of "activities in the Area" in Art 1(1)(3) LOSC does not refer to prospecting and hence it is unclear whether Arts 209 & 145 LOSC apply to this activity. Yet (a) prospecting for resources is likely to involve noise-generating seismic surveys and (b) prospecting is recognised by the LOSC as a human activity that is undertaken in relation to resources of the Area.[102] The Authority's readiness to regulate prospecting is therefore promising from the point of view of control of ocean noise.[103]

Secondly, and in contrast to the previous point, the Recommendations include "bottom and sub-bottom acoustic ... without the use of explosives" amongst a list of activities which are deemed to have no potential for causing serious harm to the marine environment. Though the list appears to be primarily influenced by US domestic legislation,[104] it may also reflect the emphasis in Art 145(a) LOSC on activities more closely associated with the latter stages of exploration and beyond.

The discussion so far has focused on the legislative jurisdiction of the Authority. However, a State acting in the capacity of a flag State or sponsoring State has a power to apply environmental laws and regulations that are more stringent than those established by the Authority. Thus Annex III LOSC Art 21(3) states that:

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[99] Regulations on Prospecting and Exploration for Polymetallic Nodules in the Area, approved by the Assembly of the International Seabed Authority on 13 July 2000 (annexed to document ISBA/6/A/18); available at: http://www.isa.org.jm/ (last visited 25.02.03).

[100] Recommendations for the guidance of the contractors for the assessment of the possible environmental impacts arising from exploration for polymetallic nodules in the Area (published as ISBA/7/LTC/1/Rev.1* and Corr.1); available at: http://www.isa.org.jm/ (last visited 25.02.03).

[101] See Part II of the Regulations.

[102] See: Art 160(2)(f)(ii) LOSC; 162(2)(o)(ii) LOSC; Annex III LOSC.

[103] The activities constituting prospecting must, however, be considered in context. Many of these activities may equally fall within "marine scientific research" ("MSR"), covered mainly by Part XIII of the LOSC. The Authority has no express control over MSR. As such, an entity conducting such activities may instead opt to describe its work as "MSR" rather than as "prospecting", and hence evade any regulations imposed by the Authority.

[104] *United States Deep Seabed Mining Regulations for Exploration Licences* (15 CFR Part 970), s. 701; available at: http://www.access.gpo.gov/nara/cfr/cfr-retrieve.html#page1 (last visited 25.02.03).

> No State Party may impose conditions on a contractor that are inconsistent with Part XI. However, the application by a State Party to contractors sponsored by it, or to ships flying its flag, of environmental or other laws and regulations more stringent than those in the rules, regulations and procedures of the Authority adopted pursuant to article 17, paragraph 2(f), of this Annex shall not be deemed inconsistent with Part XI.

Annex III LOSC Art 17(2)(f) relates to the Authority's duty to "adopt ... rules, regulations and procedures ... on ... mining standards and practices, including those relating to ... the protection of the marine environment".[105] As such, it is not focused expressly on pollution. However, it is reasonable to assume that the principle of unilateral action established by Annex III LOSC Art 21(3) applies by implication to rules, regulations and procedures of the Authority adopted to prevent, reduce and control pollution. Of note, the reference to "ships flying its flag" is broad enough to apply to prospectors.

Art 215 LOSC relates to enforcement jurisdiction. It states that:

> Enforcement of international rules, regulations and procedures established in accordance with Part XI to prevent, reduce and control pollution of the marine environment from activities in the Area shall be governed by that Part.

Under Part XI and Annex III, the Authority, State Parties and international organisations have duties with regard to ensuring compliance.[106] The Authority is also provided with express powers in this regard.[107] Some such powers and duties have been elaborated on in the Regulations.[108] It is not known whether the Authority has yet exercised its enforcement powers in relation to prospectors or contractors undertaking exploration.

Conclusion

The legal framework provided by the LOSC appears broad enough to apply to noise pollution caused by activities in the Area. Furthermore, an international organisation (the International

[105] See Annex III LOSC Art 17(1).
[106] See: Arts 139 LOSC; Art 153(4) LOSC; and Annex III LOSC Art 4(4).
[107] See for example Art 153(5) LOSC.
[108] See for example: Reg 3(4)(d)(2); Reg 11(3)(f); Reg 29(4); and Regs, Annex 4, section 14.

Seabed Authority) has been established with an express duty to adopt rules, regulations and procedures for the prevention, reduction and control of pollution of the marine environment. Despite doubt over whether the term "activities in the Area" includes prospecting, the Authority has shown its readiness to regulate prospecting through the Regulations. Preliminary indications from the Recommendations, however, suggest that the Authority may not regard seismic surveys, at least those conducted without the use of explosives, to have potential for causing serious harm to the marine environment. It remains to be seen how the Authority will (a) regard other potential sources of ocean noise from activities in the Area and (b) address such sources in view of its legislative and enforcement jurisdiction. However, the Authority should meanwhile be encouraged to take the impact and regulation of ocean noise seriously. It should also be remembered that flag States and sponsoring States may apply environmental laws and regulations that are more stringent than those adopted by the Authority.

3.3 Pollution from vessels

This is addressed by Art 211 LOSC and by Art 217 LOSC *et seq*. Art 211 LOSC deals with standard setting. Art 211(1) LOSC requires States "acting through the competent international organization or general diplomatic conference" to "establish international rules and standards to prevent, reduce and control pollution of the marine environment from vessels ...". It is generally acknowledged that the competent international organisation is the International Maritime Organization.[109] This duty has been implemented in respect of some forms of pollution.[110] However, it has not yet been implemented in respect of ocean noise.

Of note, Art 211(1) LOSC also requires States to "promote the adoption ... wherever appropriate, of routeing systems designed to minimize the threat of accidents which might cause pollution of the marine environment, including the coastline, and pollution damage to the related interests of

[109] See, for example: (a) S. Rosenne, A. Yankov & N.R. Grandy (eds.), *United Nations Convention on the Law of the Sea 1982: A Commentary* vol IV (Dordrecht: Martinus Nijhoff, 1991), p 200 & 201; (b) R.R. Churchill & A.V. Lowe, *The Law of the Sea*, 3rd edition, Melland Schill Studies in International Law (Manchester: Manchester University Press, 1999), pp 346-347; and (c) E. Franckx (ed.), *Vessel-source Pollution and Coastal State Jurisdiction* (The Hague: Kluwer, 2001), pp 19-20.

[110] Notably: (a) the forms of pollution covered by the annexes to MARPOL; and (b) organotins used in anti-fouling systems (under the 2001 International Convention on the Control of Harmful Anti-fouling Systems on Ships). Note too that a draft International Convention for the Control and Management of Ships' Ballast Water and Sediments is currently under consideration by IMO.

coastal States". This formulation suggests that the "pollution damage to the related interests of coastal States" must arise from threat of accidents. If so, the applicability of this part of Art 211(1) LOSC to ocean noise is doubtful, in that ocean noise is more typically a product of routine operations rather than of accidents.[111] The IMO's *General Provisions on Ships' Routeing*[112] appear to support the former interpretation, since the term "routeing system" is defined as "[a]ny system of one or more routes or routeing measures aimed at reducing the risk of casualties ..." (emphasis added).[113]

Art 211 LOSC goes on to place duties on flag States and give qualified powers to coastal States. Under Art 211(2) LOSC, flag States are to adopt laws and regulations for the prevention, reduction and control of pollution of the marine environment from their vessels, and these are to have at least the same effect as that of "generally accepted international rules and standards established through the competent international organization or general diplomatic conference". In the current absence of such rules and standards in respect of ocean noise from vessels, the impact of this duty is clearly limited. Nevertheless, the duty on flag States to adopt laws and regulations remains applicable, and flag States should therefore be encouraged to take unilateral action with regard to noise as a pollutant.

Under Art 211(4) LOSC, a coastal State may adopt laws and regulations for the prevention, reduction and control of marine pollution from foreign vessels in its territorial sea.[114] However, such regulations "shall not apply to the design, construction, manning or equipment of foreign ships unless they are giving effect to generally accepted international rules or standards".[115] Since some solutions to ocean noise from vessels are likely to lie in design, construction or equipment and IMO rules and standards in this area do not currently exist, the coastal State must currently find other ways of managing ocean noise in its territorial sea.

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[111] In this respect, ocean noise shares similarities with many other forms of pollution from vessels, e.g.: operational oil pollution, operational chemical pollution, air pollution, pollution by sewage, garbage, ballast water and anti-fouling chemicals.

[112] 7th edition, 1999. Based on Resolution A.572(14) (as amended), and "established pursuant to regulation V/8 of the SOLAS Convention" (i.e. the 1974 International Convention for the Safety of Life at Sea, as amended).

[113] Para 2.1.1; see also para 1.1.

[114] See also Art 21(1)(f) LOSC, under which a coastal State may adopt laws and regulations relating to innocent passage in respect of "the preservation of the environment of the coastal State and the prevention, reduction and control of pollution thereof".

[115] Art 21(2) LOSC.

One possibility is the adoption by the coastal State of laws and regulations in respect of "the regulation of maritime traffic".[116] For example, a coastal State may wish to establish a prohibition on vessel movements in an acoustically-sensitive area. However, any laws and regulations adopted by the coastal State for the prevention, reduction and control of pollution are not to hamper innocent passage.[117] Measures for the regulation of maritime traffic in the territorial sea have been established in the past (e.g. around Orkney in the United Kingdom); hence such measures are not automatically to be construed as hampering innocent passage. A coastal State does not, with some exceptions, need the approval of IMO for such measures in its territorial sea.[118] In practice, however, a coastal State may prefer to obtain such approval in order to improve the efficacy of the measure and perhaps to be reassured that innocent passage is not deemed by other States to have been hampered.

Under Art 211(5) LOSC a coastal State may adopt laws and regulations for the prevention, reduction and control of marine pollution from foreign vessels in its EEZ. However, such laws and regulations must conform to and give effect to "generally accepted international rules and standards established through the competent international organization or general diplomatic conference".[119] This implies that in the absence of international rules and standards on ocean noise, the coastal State may not adopt laws and regulations for the prevention, reduction and control of such noise from foreign vessels in its EEZ.

However, Art 211(5) LOSC is supplemented by Art 211(6) LOSC under which the coastal State may, in certain circumstances, take "mandatory measures" in "special areas" within its EEZ. At the outset, other States concerned must be consulted through the IMO. Next the proposal must be submitted to the IMO for its consideration. The role of the IMO is to determine whether (a) "the international rules and standards ... are inadequate to meet special circumstances" and (b) the particular part of the EEZ in question "is an area where the adoption of special mandatory measures for the prevention of pollution from vessels is required for recognized technical reasons in relation to its oceanographical and ecological conditions, as well as its utilization or the protection of its resources and the particular character of its traffic".

[116] Art 21(1)(a) LOSC.
[117] Art 211(4) LOSC.
[118] See: (a) paras 3.14-3.16 of *General Provisions on Ships' Routeing*; and (b) Art 22(3)(a) LOSC.
[119] Art 211(5) LOSC.

If the IMO makes this determination, the coastal State may then "adopt laws and regulations for the prevention, reduction and control of pollution from vessels implementing such international rules and standards or navigational practices as are made applicable, through the [IMO], for special areas". In principle, the coastal State may also adopt additional laws and regulations, subject to agreement by the IMO. In relation to ocean noise: (a) there is no reason in principle why a coastal State should not submit a proposal for a special area in view of concerns about ocean noise (in view of the broad definition of "pollution" in the LOSC and the inadequacy of international rules and standards on ocean noise) and (b) if the IMO agreed to the identification of a given area as an ocean noise special area, the onus would therefore be on the coastal State to propose appropriate laws and regulations.

As noted above, some solutions to ocean noise from vessels are likely to lie in vessel design, construction or equipment. However, Art 211(6)(c) LOSC specifies that any additional laws and regulations adopted by the coastal State for the special area "may relate to discharges or navigational practices but shall not require foreign vessels to observe design, construction, manning or equipment standards other than generally accepted international rules and standards". In the absence of generally accepted international rules and standards on these matters, the power of the coastal State is therefore restricted. The coastal State may instead wish to propose "navigational practices", e.g. a prohibition on vessel movements in an acoustically-sensitive area. As with any additional measure for an Art 211(6) LOSC special area, such a prohibition would require agreement from the IMO. However, it is not clear whether a proposal to prohibit vessel movements to minimise the impact of operational pollution would be accepted in view of the implied non-application the IMO's *General Provisions on Ships' Routeing* to operational pollution (see above).

Looking beyond Art 211 LOSC, there are two tools developed by the IMO that may be of assistance. The first is routeing measures (notably in respect of zones other than the territorial sea, e.g. the EEZ and the high seas). However, the implied lack of application of the IMO's *General Provisions on Ships' Routeing* to operational pollution has already been mentioned. It is arguable that the scope of the General Provisions should be clarified in order to facilitate a broader application of routeing systems.

The second, and currently more promising, tool is that of "particularly sensitive sea areas" ("PSSAs"). By Resolution A.927(22), the IMO Assembly in 2001 adopted *Guidelines for the*

Identification and Designation of Particularly Sensitive Sea Areas ("the PSSA Guidelines").[120] The PSSA Guidelines identify noise as an operational pollutant from vessels.[121] They define a PSSA as:[122]

> an area that needs special protection through action by IMO because of its significance for recognized ecological, socio-economic, or scientific reasons and because it may be vulnerable to damage by international shipping activities.

The criteria for the identification of a PSSA are laid down in the Guidelines.[123] In order to be identified as a PSSA, the area in question should meet at least one of the listed criteria and should additionally "be at risk from international shipping activities".[124] The listed ecological criteria are uniqueness or rarity, critical habitat, dependency, representativeness, diversity, productivity, spawning or breeding grounds, naturalness, integrity, vulnerability, and bio-geographic importance.[125] In principle, using at least one of these criteria, coupled with demonstrating a risk from international shipping activities, there is no reason why a State should not submit a proposal for a PSSA in view of concerns about ocean noise.

However, the question arises as to what may in turn be done to manage a noise problem. On that point, the PSSA Guidelines take two approaches. Initially, they state that "associated protective measures for PSSAs are limited to actions within the purview of IMO and include the following options", listed as:[126]

> 6.1.1 designation of an area as a Special Area under Annexes I, II or V, or a SOx emission control area under Annex VI of MARPOL 73/78, or application of special discharge

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[120] See Annex 2 to Resolution A.927(22). The PSSA Guidelines are stated to "supersede chapter 3 of the Annex to resolutions A.720(17) and A.885(21)". The annex to Resolution A.720(17) contains *Guidelines for the Designation of Special Areas and the Identification of Particularly Sensitive Sea Areas*, of which chapter 3 addresses PSSAs. Annex I to Resolution A.885(21) contains *Procedures for the Identification of Particularly Sensitive Sea Areas and the Adoption of Associated Protective Measures*, of which chapter 3 addresses *Application by a Proposing Member Government for Identification of a PSSA and the Adoption of Associated Protective Measures*.

[121] See para 2.2. See also para 1.2.2, para 1.2.11 and Table 1 of the annex to Resolution A.720(17); these parts have not been superseded by Resolution A.927(22).

[122] Para 1.2.

[123] Section 4.

[124] Para 4.4. Factors to be taken into consideration in deciding whether the area is "at risk from international shipping activities" are listed in section 5.

[125] Para 4.4.

[126] Section 6.1.

restrictions to vessels operating in a PSSA. [...]

6.1.2 adoption of ships' routeing and reporting systems near or in the area, under the International Convention for the Safety of Life at Sea (SOLAS) and in accordance with the General Provisions on Ships' Routeing and the Guidelines and Criteria for Ship Reporting Systems. For example, a PSSA may be designated as an area to be avoided or it may be protected by other ships' routeing or reporting systems;

6.1.3 development and adoption of other measures aimed at protecting specific sea areas against environmental damage from ships, such as compulsory pilotage schemes or vessel traffic management systems.

Later the Guidelines state:[127]

(a) The application [by the proposing Member Government(s)] should identify the proposed [associated protective] measures which may include:

(i) any measure that is already available in an existing instrument; or
(ii) any measure that does not yet exist but that should be available as a generally applicable measure and that falls within the competence of IMO; or
(iii) any measure proposed for adoption in the territorial sea or pursuant to Article 211(6) of the United Nations Convention on the Law of the Sea.

(b) These measures may include ships' routeing measures; discharge restrictions; operational criteria; and prohibited activities, and should be specifically tailored to meet the need of the area at risk.

In a PSSA established to manage ocean noise, the objective should clearly be to reduce or eliminate ocean noise from vessels. To reduce or eliminate ocean noise, options include, *inter alia*, (a) setting speed restrictions, (b) prohibiting vessels or certain categories of vessel from using the area, (c) applying special restrictions on the "discharge" of noise (e.g. decibel limits), and (d) requiring the use of certain equipment (e.g. propeller nozzles). Of these, "(a)" is likely to be the least problematic. With respect to "(b)", the implied non-application of the IMO's *General*

[127] Section 7.4.2.1.

Provisions on Ships' Routeing to operational pollution has already been mentioned. With respect to "(c)" and "(d)", there are vessel design/construction implications.[128] However, it is also unclear what is meant when the PSSA Guidelines (as cited above) refer to "any measure that does not yet exist but that should be available as a generally applicable measure and that falls within the competence of IMO" (emphasis added).[129]

Conclusion

There are currently no "generally accepted international rules and standards established through the competent international organization or general diplomatic conference" in respect of noise pollution from vessels. Such rules and standards could potentially be introduced by (a) extending the scope of Art 1(1) of MARPOL appropriately and then drafting a new annex on ocean noise or (b) drafting a new stand-alone treaty (as has been done with the 2001 International Convention on the Control of Harmful Anti-fouling Systems on Ships). Of course, significant political will would be necessary to bring about either of these multilateral options. Meanwhile, however, flag States should still be encouraged to take unilateral action with regard to noise as a pollutant.

The legislative power provided to coastal States under Art 211(4)-(6) LOSC is currently more promising, and coastal States should be encouraged to make use of these powers in respect of ocean noise. In the territorial sea, the coastal State's legislative powers are relatively strong on account of the sovereignty it enjoys in that zone. However, coastal States are nonetheless constrained here by the current lack of generally accepted international rules and standards on vessel design, construction and equipment in respect of ocean noise. They may nonetheless undertake "the regulation of maritime traffic" (e.g. by establishing prohibitions on vessel movements in acoustically-sensitive areas) to the extent that innocent passage is not hampered. Subject to the same constraint, they may take other measures to preserve their environment or to prevent, reduce and control pollution (e.g. placing restrictions on vessel speed through certain areas, in order to reduce noise pollution).

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[128] Note though that para 3.8.3 in chapter 3 of the Annex to Resolution A.720(17) (albeit now superseded) states that "[o]ther measures which could be considered [in a PSSA] include special construction requirements ...".

[129] See para 7.4.2.1(a)(ii). It is unclear who has the task of judging whether a measure "should be available", and what criteria are to be used in reaching this judgment. Secondly, the term "generally applicable" is not used in the LOSC. In contrast, the terms "applicable" and "generally accepted" are used in Part XII of the LOSC (notably in Art 211 and in Arts 213, 214, 216-220 & 222), and much has been written on these terms.

In the EEZ, in comparison to the territorial sea, the coastal State's legislative powers are relatively weak. The current absence of "generally accepted international rules and standards established through the competent international organization or general diplomatic conference" in respect of noise pollution from vessels renders the coastal State unable to legislate in general in respect of its EEZ under Art 211(5) LOSC. Instead, Art 211(6) LOSC provides the coastal State with the option of seeking "special area" status for particular parts of the EEZ, but only where specified criteria are judged by the IMO to have been met. This option is available in respect of ocean noise. In current circumstances, measures proposed by the coastal State may relate "to discharges or navigational practices". In contrast to routeing measures for the territorial sea, any routeing measures for special areas in the EEZ are subject to IMO approval.

Two IMO tools may be of assistance: routeing measures and "particularly sensitive sea areas" ("PSSAs"), both of which may also apply beyond areas under national jurisdiction. However, it is strongly arguable that IMO-approved routeing measures do not, because of the wording of the IMO's *General Provisions on Ships' Routeing*, address operational noise pollution. This weakness is incompatible with the IMO's increasing desire to use routeing systems and reporting systems to help protect the environment. PSSAs show more promise. There is no reason why a State should not submit a proposal for a PSSA in view of concerns about ocean noise. The scope for routeing measures as an associated protective measure may be limited, in view of the point made above. However, there is scope for speed restrictions and perhaps for special construction requirements. There is currently a resurgence of interest by States in PSSAs, and States should be encouraged to establish and manage PSSAs in respect of ocean noise concerns.

4. Conclusion

This paper has analysed the regulation of ocean noise from the point of view of noise as a pollutant. It has focused on just three categories of pollution, referred to in Part XII of the LOSC as (a) pollution from seabed activities subject to national jurisdiction, (b) pollution from activities in the Area, and (c) pollution from vessels. The conclusion varies depending on which of these sources is considered. With regard to pollution from seabed activities subject to national jurisdiction, there are twelve regional seas treaties with strong potential to cover noise pollution, albeit that over the next few years the focus in respect of many of these treaties is likely to be the regulation of land-based activities. Unilateral action by coastal States is also possible. In relation to pollution from activities in the Area, the International Seabed Authority has already demonstrated its willingness to regulate for environmental protection, though noise pollution appears to have been somewhat overlooked so far. Unilateral application by sponsoring States and flag States of more stringent environmental legislation is also a possibility. With regard to pollution from vessels, there is need for "generally accepted international rules and standards" in respect of noise pollution in order to give more meaning to flag State legislative duties and coastal State legislative powers. In the meantime, unilateral action by flag States is possible. Furthermore, some action by coastal States in respect of their territorial seas and exclusive economic zones is also possible, as is action by States to establish and manage "particularly sensitive seas areas" in response to ocean noise concerns.

Appendix A - Some international instruments of actual or potential relevance to protection of cetaceans from ocean noise (other than specifically in relation to pollution)

Global

Instrument	Adopted	Entry into force
International Convention for the Regulation of Whaling	1946	1948
Convention Concerning the Protection of the World Cultural and Natural Heritage	1972	1975
Convention on Wetlands of International Importance especially as Waterfowl Habitat	1972	1975
Convention on the Conservation of Migratory Species of Wild Animals ("Bonn Convention")	1979	1983
United Nations Convention on the Law of the Sea [see, *inter alia*: Parts V, VII and XI; and Art 194(5) of Part XII]	1982	1994
Convention on Biological Diversity	1992	1993

Regional

Instrument	Adopted	Entry into force
Convention on the Conservation of European Wildlife and Natural Habitats	1979	1982
Convention on the Conservation of Antarctic Marine Living Resources	1980	1982
Protocol on Environmental Protection to the Antarctic Treaty - Annex V	1991	not yet

Instruments adopted under Bonn Convention:		
Agreement on the Conservation of Small Cetaceans of the Baltic and North Seas	1992	1994
Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea, and Contiguous Atlantic Area	1996	2001
Regional sea conventions:		
Convention for the Protection of the Marine Environment of the North-East Atlantic [see, *inter alia*, Art 2(1); see also Annex V *On the Protection and Conservation of the Ecosystems and Biological Diversity of the Maritime Area*; and Appendix 3 on *Criteria for Identifying Human Activities for the Purpose of Annex V*]	1992	1998
Convention on the Protection of the Marine Environment of the Baltic Sea Area [see, *inter alia*, Art 15]	1992	2000
Convention on the Protection of the Black Sea against Pollution [see, *inter alia*, Art V(5)]	1992	1994
Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region [see, *inter alia*, Arts 4(1) & 10]	1983	1986
Convention for the Protection, Management, and Development of the Marine and Coastal Environment of the Eastern African Region [see, *inter alia*, Arts 4(1) & 10]	1985	1996
Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean [see, *inter alia*, Arts 4(1) & 10]	1995	not yet
Regional Convention for the Conservation of the Red Sea and Gulf of Aden Environment [see, *inter alia*, Art III(1)]	1982	1985
Convention for the Protection of the Natural Resources and Environment of the South Pacific Region [see, *inter alia*, Arts 5(1), 13 & 14]	1986	1990

Convention for the Protection of the Marine Environment and Coastal Area of the South-East Pacific [see, *inter alia*, Art 3(1)]	1981	1986
Convention for Co-operation in the Protection and Development of the Marine and Coastal Environment of the West and Central African Region [see, *inter alia*, Arts 4(1) & 11]	1981	1984
Convention for Cooperation in the Protection and Sustainable Development of the Marine and Coastal Environment of the Northeast Pacific [see, *inter alia*, Art 6(2)]	2002	not yet
Protocols pursuant to regional seas conventions:		
Protocol Concerning Protected Areas and Wild Fauna and Flora in the Eastern African Region	1985	1996
Protocol for the Conservation and Management of the Protected Marine and Coastal Areas of the South-East Pacific	1989	1994
Protocol Concerning Specially Protected Areas and Wildlife to the Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region	1990	2000
Protocol Concerning Specially Protected Areas and Biological Diversity in the Mediterranean	1995	1999
European Community law:		
Council Directive (21.5.1992) on the conservation of natural habitats and of wild fauna and flora (92/43/EEC) OJ L 206, 22.7.92, p 7	1992	

Appendix B - Treaties underlying regional seas initiatives

Treaty	Adopted	Entry into force
Convention for the Protection of the Marine Environment of the North-East Atlantic ("OSPAR Convention") Available at: http://www.ospar.org/eng/html/convention/	1992	1998
Convention on the Protection of the Marine Environment of the Baltic Sea Area ("Helsinki Convention") Available at: http://www.helcom.fi/helcom/convention.html	1992	2000
Convention on the Protection of the Black Sea against Pollution ("Bucharest Convention") Available at: http://www.blacksea-environment.org/	1992	1994
Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region ("Cartagena Convention") Available at: http://www.cep.unep.org/pubs/legislation/cartxt.html	1983	1986
Convention for the Protection, Management, and Development of the Marine and Coastal Environment of the Eastern African Region ("Nairobi Convention") Available at: http://www.unep.ch/seas/main/eaf/eafconv.html	1985	1996
Kuwait Regional Convention for Co-operation on the Protection of the Marine Environment from Pollution ("Kuwait Convention") Available at: http://sedac.ciesin.org/entri/texts/kuwait.marine.pollution.1978.html	1978	1979
Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean ("Barcelona Convention"; [1995 amendment not yet in force]) Available at: http://sedac.ciesin.org/pidb/texts/mediterranean.pollution.1976.html	1976	1978
Regional Convention for the Conservation of the Red Sea and Gulf of Aden Environment ("Jeddah Convention")	1982	1985

Available at: http://www.unep.ch/seas/main/persga/convtext.html		

Convention for the Protection of the Natural Resources and Environment of the South Pacific Region ("Noumea Convention") See: http://sedac.ciesin.org/pidb/texts/natural.resources.south.pacific.1986.html	1986	1990
Convention for the Protection of the Marine Environment and Coastal Area of the South-East Pacific ("Lima Convention") Available at: **Error! Bookmark not defined.**	1981	1986
Convention for Co-operation in the Protection and Development of the Marine and Coastal Environment of the West and Central African Region ("Abidjan Convention") Available at: **Error! Bookmark not defined.**	1981	1984
Convention for Cooperation in the Protection and Sustainable Development of the Marine and Coastal Environment of the Northeast Pacific Available at: http://www.unep.ch/seas/main/nep/nepconve.html	2002	not yet

Appendix C - Selected provisions of regional seas treaties

Treaty	Provision (emphasis added)
OSPAR Convention	**Article 5** **Pollution from offshore sources** The Contracting Parties shall take, individually and jointly, all possible steps to prevent and eliminate pollution from offshore sources in accordance with the provisions of the Convention, in particular as provided for in Annex III. **Article 1** **Definitions** For the purposes of the Convention: [...] (j) "Offshore activities" means activities carried out in the maritime area for the purposes of the exploration, appraisal or exploitation of liquid and gaseous hydrocarbons. (k) "Offshore sources" means offshore installations and offshore pipelines from which substances or energy reach the maritime area. (l) "Offshore installation" means any man-made structure, plant or vessel or parts thereof, whether floating or fixed to the seabed, placed within the maritime area for the purpose of offshore activities. (m) "Offshore pipeline" means any pipeline which has been placed in the maritime area for the purpose of offshore activities. [...]
Helsinki Convention	**Article 12** **Exploration and exploitation of the seabed and its subsoil** 1. Each Contracting Party shall take all measures in order to prevent pollution of the marine environment of the Baltic Sea Area resulting from exploration or exploitation of its part of the seabed and the subsoil thereof or from any associated activities thereon as well as to ensure that adequate preparedness is maintained for immediate response actions against pollution incidents caused by such activities. 2. In order to prevent and eliminate pollution from such activities the Contracting Parties undertake to implement the procedures and measures set out in Annex VI, as far as they are applicable.