



ISA TECHNICAL STUDY NO. 25



Competencies of the International Seabed Authority and the International Maritime Organization in the context of activities in the Area



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ISA TECHNICAL STUDY NO. 25




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EXECUTIVE SUMMARY

This report studies the interface of competencies of the International Seabed Authority (ISA) and the International Maritime Organization (IMO) with respect to activities in the international seabed area (the Area). The study is undertaken within the context of Part XI of the United Nations Convention on the Law of the Sea (UNCLOS), 1982 the Part XI Implementation Agreement, 1994 and the Seabed Disputes Chamber's Advisory Opinion on *Responsibilities and Obligations of States with respect to Activities in the Area*, 2011. The report has been prepared against the backdrop of the agreement on cooperation concluded between ISA and IMO in 2016.

Under UNCLOS, ISA is the competent international organization with respect to the regime of the Area and IMO is the competent international organization for international shipping and navigation. The report explains the mandates of ISA and IMO with respect to the regulation of seabed mining in the Area and international shipping. Shipping will provide a platform for mining and transportation of extracted minerals to markets. Several specific areas of interface are identified and discussed and include maritime safety (human safety and navigation safety), marine environment protection (operational vessel-source pollution, anti-fouling systems, ballast waters, dumping or disposal of wastes), seafarer training standards, accommodation of activities in the Area, and the development of responsibility and liability regimes. The report discusses relevant provisions of UNCLOS, the 1994 Agreement, mining exploration regulations

and draft exploitation regulations in connection with pertinent international maritime conventions and codes. It sets out findings, identifies issues and flags issues that require further research.

The report concludes that the competencies of ISA and IMO with respect to the regulation of activities in the Area and the regulation of related shipping are highly complementary. The Advisory Opinion has helped identify the contours of seabed mining regulation. ISA exploration and draft exploitation regulations have benefitted from referential incorporation of maritime regulation as needed to enhance safety and pollution prevention. It is possible there could be occasional regulatory overlaps, despite the generally clear allocation of competencies by the instruments concerned and the Advisory Opinion. ISA and IMO have the agreement on cooperation as a useful framework to consult on a periodical basis and address overlaps on a case-by-case basis as needed.

IMO has a range of regulatory and area-based management tools developed for international shipping that could be useful to enhance the safety of seabed mining. Further, IMO has extensive regulatory experience that could be useful to ISA as it continues to develop new regimes, regulations and guidelines for seabed mining. These include guidelines for the assessment and disposal of wastes and civil liability and compensation schemes for pollution damage to the marine environment developed under various maritime law conventions.

ACRONYMS AND ABBREVIATIONS

AFS Convention	International Convention on the Control of Harmful Antifouling Systems
Area (the)	International seabed area
Bunker Convention	International Convention on Civil Liability for Bunker Oil Pollution Damage
BWM Code	Ballast Water Management Code
BWM Convention	International Convention for the Control and Management of Ships' Ballast Water and Sediments
CHM	Common heritage of mankind
CLC Convention	International Convention on Civil Liability for Oil Pollution Damage
Cobalt Regulations	Regulations on Prospecting and Exploration for Cobalt-Rich Crusts
COLREGS	Convention on the International Regulations for Preventing Collisions at Sea
DOALOS	Division for Ocean Affairs and the Law of the Sea (UN)
Draft Exploitation Regulations	Draft Regulations on Exploitation of Mineral Resources in the Area
FPSO	Floating Production Storage and Offloading
FSU	Floating storage unit
HNS Convention & Protocol	International Convention on Liability and Compensation for Damage in Connection with the Carriage of Hazardous and Noxious Substances by Sea, 1996 as amended by Protocol of 2010 to Amend the International Convention on Liability and Compensation for Damage in connection with the Carriage of Hazardous and Noxious Substances by Sea, 1996
IAEA	International Atomic Energy Agency
ILO	International Labour Organization
IMO	International Maritime Organization
IOPC Funds Convention	International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage
IOPC Supplementary Fund	Protocol of 2003 to the International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage, 1992
ISA	International Seabed Authority
ISM Code	International Management Code for the Safe Operation of Ships and for Pollution Prevention (International Safety Management Code)
ITLOS	International Tribunal for the Law of the Sea
LL Convention	International Convention on Load Lines

LLMC	Convention on Limitation of Liability for Maritime Claims
London Convention	Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter
London Protocol	Protocol to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter
LTC	Legal and Technical Commission
UNCLOS	United Nations Convention on the Law of the Sea
MARPOL	International Convention for the Prevention of Pollution from Ships
MLC	Maritime Labour Convention
MODU	Mobile offshore drilling unit
MODU Code	Code for the Construction and Equipment of Mobile Offshore Drilling Units
Nodules Regulations	Regulations on Prospecting and Exploration for Polymetallic Nodules in the Area
OSV	Offshore supply vessel
OSV Code	Code of Safe Practice for the Carriage of Cargoes and Persons by Offshore Supply Vessels
SAR	Search and rescue
SAR Convention	International Convention on Maritime Search and Rescue
SOLAS	International Convention for the Safety of Life at Sea
SPS Code	Code of Safety for Special Purpose Ships
Sulphides Regulations	Regulations on Prospecting and Exploration of Polymetallic Sulphides in the Area
STCW Code	Seafarers' Training, Certification and Watchkeeping Code
STCW Convention	International Convention on Standards of Training, Certification and Watchkeeping for Seafarers
SUA Convention	Convention for the Suppression of Unlawful Acts Against the Safety of Maritime Navigation as amended by the 1988 Protocol of 2005 to the Convention for the Suppression of Unlawful Acts Against the Safety of Maritime Navigation
SUA Protocol	Protocol for the Suppression of Unlawful Acts Against the Safety of Fixed Platforms Located on the Continental Shelf as amended by the 2005 Protocol for the Suppression of Unlawful Acts Against the Safety of Fixed Platforms Located on the Continental Shelf

I. INTRODUCTION

This report was commissioned by ISA in collaboration with IMO to assist the identification of the scope of the respective competencies of ISA and IMO in the context of activities in the international seabed area (Area), as set out in Part XI of the United Nations Convention on the Law of the Sea, 1982 (UNCLOS),¹ the Agreement relating to the Implementation of Part XI of UNCLOS (1994 Agreement)² and the International Tribunal for the Law of the Sea (ITLOS) Seabed Disputes Chamber's Advisory Opinion on *Responsibilities and Obligations of States with respect to activities in the Area (Seabed Advisory Opinion)*.³ Professor Aldo Chircop of Dalhousie University was engaged in the preparation of this report.

The Area consists of 'the seabed and ocean floor and subsoil thereof, beyond the limits of national jurisdiction'.⁴ The Area and its non-living resources are the common heritage of mankind.⁵ The ISA is the competent international organization with respect to the regulation of activities in the Area and IMO is the competent international organization on the regulation of international shipping.

Pursuant to their agreement on cooperation,⁶ ISA and IMO agreed to exchange information on best practices and explore issues connected to the scope of the competence and activities of each organization to facilitate the ongoing development and implementation of the regulatory framework of activities in the Area. The two organizations consider it useful to identify the scope of their competencies based on the notion of 'activities in the Area'. Technical teams of the two organizations convened in a first meeting in June 2018 to exchange views and thought it would be useful to work on the development of a matrix identifying and describing their respective competencies under UNCLOS and other instruments.

This report explores and explains the interface of ISA's and IMO's competencies with respect to activities in the Area. Following this introduction, the report sets out methodological considerations including sources, relationships between instruments, the notion of 'competent international organization', the notion of 'activities in the Area', and the notion of

1 United Nations Convention on the Law of the Sea, adopted 10 December 1982 (entered into force 16 November 1994) 1833 UNTS 3 (UNCLOS).

2 General Assembly resolution 48/263 and the Agreement relating to the implementation of Part XI of the United Nations Convention on the Law of the Sea of 10 December 1982, adopted 28 July 1994 (entered into force 16 November 1994) 1836 UNTS 3 (Implementation Agreement).

3 *Responsibilities and Obligations of States with respect to Activities in the Area, Advisory Opinion*, 1 February 2011, ITLOS Reports 2011, 10 (Seabed Advisory Opinion), para 57.

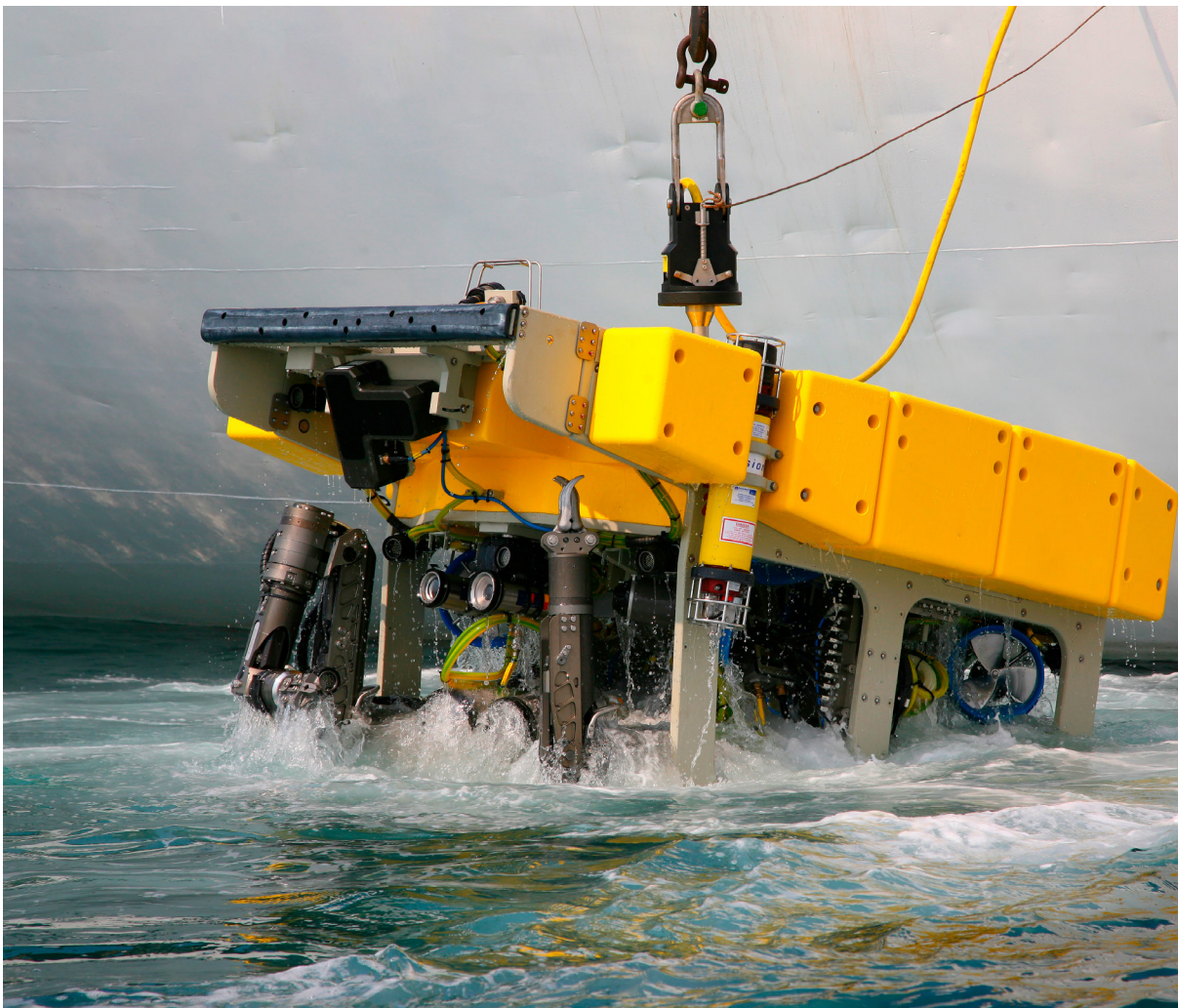
4 UNCLOS (n 1) art 1(1)(1).

5 *Ibid* art 136.

6 Agreement of Cooperation between the International Maritime Organization (IMO) and the International Seabed Authority (ISA), signed 23 February and 1 March 2016, online: <<https://ran-s3.s3.amazonaws.com/isa.org.jm/s3fs-public/documents/EN/Regs/IMO.pdf>> (IMO-ISA Agreement).

'interface of competencies with respect to activities in the Area.' This is followed by descriptions of the mandates of ISA and IMO with respect to activities in the Area and related supporting activities. The report next explores the areas of interface of the respective competencies and division of responsibilities of the two organizations with respect to activities in the Area, focusing on maritime safety (human safety, navigation safety and maritime security), marine environment protection (operational vessel-source pollution, anti-fouling systems, ballast waters, dumping/disposal of wastes), seafarer training standards, accommodation of activities in the Area, and the development of responsibility and liability regimes.

Maritime security concerns are addressed only briefly and will require future in-depth studies. The findings, issues and matters for further research are summarized before the report concludes. The report includes three annexes to provide supplementary details to the report's text. **Annex I** sets out the *Seabed Advisory Opinion's* understanding of the notion of activities in the Area. **Annex II** describes the principal UNCLOS provisions where IMO appears to be implicitly assigned competencies with respect to the regulation of international shipping through the use of rules of reference. **Annex III** lists the principal UNCLOS provisions pertinent to ISA's regulatory competence and possible interface with IMO regulatory competence.



2. METHODOLOGICAL CONSIDERATIONS

2.1 Sources

The principal sources of this report are treaty instruments, namely UNCLOS, the 1994 Agreement and international maritime conventions. The provisions of UNCLOS and the 1994 Agreement are interpreted and applied together as a single instrument while bearing in mind that in the event of any inconsistency between the two instruments, the 1994 Agreement prevails.⁷ Where treaty interpretation is required, the report is generally guided by the Vienna Convention on the Law of Treaties, 1969⁸ and international cases and arbitration awards as appropriate. In particular, the *Seabed Advisory Opinion* provides valuable guidance on the interpretation of 'activities in the Area.'⁹ The report is further guided by ISA's regulations as adopted chronologically:

- Regulations on Prospecting and Exploration for Polymetallic Nodules in the Area adopted 13 July 2000 and updated and adopted 25 July 2013 (Nodules Regulations);¹⁰
- Regulations on Prospecting and Exploration for Polymetallic Sulphides in the Area adopted 7 May 2010 (Sulphides Regulations);¹¹ and
- Regulations on Prospecting and Exploration for Cobalt-Rich Crusts adopted 27 July 2012 (Cobalt Regulations).¹³

The most recent version of the draft regulations on exploitation of mineral resources in the Area (Draft exploitation regulations) was also consulted. It is expected that ISA will finalize and adopt these regulations by 2020. The ITLOS has

7 1994 Agreement (n 2), art 2(1).

8 Vienna Convention on the Law of Treaties, adopted 23 May 1969 (entered into force 27 January 1980) 1155 UNTS 331, arts 31-33. The International Tribunal for the Law of the Sea (ITLOS) has invariably, implicitly and explicitly applied the Vienna Convention's rules of interpretation. *Seabed Advisory Opinion* (n 3) para 57. See also "*Volga*" (*Russian Federation v. Australia*), *Prompt Release, Judgment*, ITLOS Reports 2002, p. 10, para 77.

9 *Seabed Advisory Opinion* (n 3).

10 Regulations on Prospecting and Exploration for Polymetallic Nodules in the Area adopted 13 July 2000 and updated and adopted 25 July 2013, online: <https://ran-s3.s3.amazonaws.com/isa.org.jm/s3fs-public/files/documents/isba-19c-17_0.pdf> (Nodules Regulations).

11 Regulations on Prospecting and Exploration for Polymetallic Sulphides in the Area adopted 7 May 2010, online: <https://ran-s3.s3.amazonaws.com/isa.org.jm/s3fs-public/files/documents/isba-16a-12rev1_0.pdf> (Sulphides Regulations).

12 Regulations on Prospecting and Exploration for Cobalt-Rich Crusts adopted 27 July 2012, online: <https://ran-s3.s3.amazonaws.com/isa.org.jm/s3fs-public/files/documents/isba-18a-11_0.pdf> (Cobalt Regulations).

13 Draft Regulations on Exploitation of Mineral Resources in the Area, Prepared by the Legal and Technical Commission, ISBA/25/C/WP.1, Unedited Advance Text (25 March 2019), online: <<https://ran-s3.s3.amazonaws.com/isa.org.jm/s3fs-public/files/documents/25c-wp1-en-advance.pdf>> (Draft Exploitation Regulations).

applied the Vienna Convention's rules of interpretation by analogy to guide its interpretation of ISA's mandatory regulations on prospecting and exploration of minerals.¹⁴ The ITLOS statute provides for the tribunal to apply, in addition to the provisions in Article 293, *inter alia* 'the rules, regulations and procedures of ISA adopted in accordance with UNCLOS.'¹⁵ Other official ISA sources are consulted as needed.

The principal international maritime conventions consulted are presented below by type and in chronological order of adoption:

(a) Constitutive

- Convention on the International Maritime Organization, 1948 (IMO Convention).¹⁶

(b) Maritime safety and security

- International Convention on Load Lines, 1966 (LL Convention);¹⁷
- Convention on the International Regulations for Preventing Collisions at Sea, 1972 (COLREGS);¹⁸
- International Convention for the

Safety of Life at Sea, 1974 (SOLAS);¹⁹

- International Convention on Maritime Search and Rescue, 1979 (SAR Convention);²⁰ and
- Convention for the Suppression of Unlawful Acts Against the Safety of Maritime Navigation, 1988 as amended by Protocol of 2005 to the Convention for the Suppression of Unlawful Acts Against the Safety of Maritime Navigation (SUA Convention);²¹ Protocol for the Suppression of Unlawful Acts Against the Safety of Fixed Platforms Located on the Continental Shelf, 1988 as amended by Protocol of 2005 to the Protocol for the Suppression of Unlawful Acts against the Safety of Fixed Platforms Located on the Continental Shelf, 2005 (SUA Protocol).²²

(c) Pollution prevention

- Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 1972

¹⁴ *Seabed Advisory Opinion* (n 3) para 60.

¹⁵ UNCLOS (n 1) annex VI, art 38.

¹⁶ Convention on the International Maritime Organization, adopted 6 March 1948 (entered into force 17 March 1958) 289 UNTS 3, as amended (IMO Convention).

¹⁷ International Convention on Load Lines, adopted 5 April 1966 (entered into force 21 July 1968) 640 UNTS 133, as amended (LL Convention).

¹⁸ Convention on the International Regulations for Preventing Collisions at Sea, adopted 20 October 1972 (entered into force 15 July 1977) 1050 UNTS 16, as amended (COLREGS).

¹⁹ International Convention for the Safety of Life at Sea, adopted 1 November 1974 (entered into force 25 May 1980) 1184 UNTS 2 (SOLAS).

²⁰ International Convention on Maritime Search and Rescue, adopted 27 April 1979 (entered into force 22 June 1985) 1405 UNTS 97 (SAR Convention).

²¹ Convention for the Suppression of Unlawful Acts Against the Safety of Maritime Navigation, adopted 10 March 1988 (entered into force 1 March 1992) 1678 UNTS 201, as amended by Protocol for the Suppression of Unlawful Acts Against the Safety of Fixed Platforms Located on the Continental Shelf, adopted 10 March 1988 (in force 1 March 1992), 1678 UNTS 201 (SUA 1988 Protocol) (SUA Convention).

²² Protocol of 2005 to the Convention for the Suppression of Unlawful Acts Against the Safety of Maritime Navigation, adopted 14 October 2005 (entered into force 28 July 2010), IMO Doc LEG/CONF 15/21 (1 November 2005), as amended by Protocol for the Suppression of Unlawful Acts Against the Safety of Fixed Platforms Located on the Continental Shelf, adopted 14 October 2005 (in force 28 July 2010) IMO Doc LEG/CONF 15/22 (1 November 2005). (SUA Protocol).

(London Convention)²³ and Protocol to the Convention on the Prevention of Marine Pollution by Dumping Wastes and Other Matter, 1996 (London Protocol);²⁴

- International Convention for the Prevention of Pollution from Ships, 1973/78 (MARPOL);²⁵
- International Convention on the Control of Harmful Antifouling Systems, 2001, (AFS Convention);²⁶
- International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004 (BWM Convention); and²⁷
- Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships, 2009 (Hong Kong Convention).²⁸

(d) Seafarer training

- International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, 1978 (STCW Convention).²⁹

(e) Civil liability and compensation

- Convention on Limitation of Liability for Maritime Claims, 1976 (LLMC);³⁰
- International Convention on Civil Liability for Oil Pollution Damage, 1992 (CLC Convention);³¹
- International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage, 1992 (IOPC Funds Convention);³² Protocol of 2003 to the International Convention on the Establishment of an International

23 Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, adopted 29 December 1972 (entered into force 30 August 1975) 1046 UNTS 120, as amended (London Convention).

24 Protocol to the Convention on the Prevention of Marine Pollution by Dumping Wastes and Other Matter, adopted 7 November 1996 (entered into force 24 March 2006), (1997) 36 ILM 1, as amended (London Protocol). The London Protocol replaced the London Convention for States Parties to both instruments.

25 International Convention for the Prevention of Pollution from Ships, adopted 2 November 1973 (not in force), 1340 UNTS 184 as amended by the Protocol of 1978 relating to the International Convention for the Prevention of Pollution from Ships of 1973, adopted 17 February 1978 (entered into force 2 October 1983) 1340 UNTS 61, and the Protocol of 1997 to amend the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978, adopted 26 September 1997 (entered into force 19 May 2005), Can TS 2010 No 14 (MARPOL).

26 International Convention on the Control of Harmful Anti-fouling Systems, adopted 5 October 2001 (entered into force 17 September 2008) Can TS 2010 No 15, as amended (AFS Convention).

27 International Convention for the Control and Management of Ships' Ballast Water and Sediments, adopted 13 February 2004 (entered into force 8 September 2017), IMO Doc BWM/CONF/36 (16 February 2004), as amended (BWM Convention).

28 Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships, adopted 15 May 2009 (not yet in force) IMO Doc SR/CONF/45 (19 May 2009) (Hong Kong Convention).

29 International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, adopted 7 July 1978 (entered into force 28 April 1984) 1361 UNTS 2 as amended (STCW Convention).

30 Convention on Limitation of Liability for Maritime Claims, adopted 19 November 1976 (in force 1 December 1986) 1456 UNTS 221 as amended by Protocol of 1996 to Amend the Convention on Limitation of Liability for Maritime Claims, 1976, adopted 2 May 1996 (entered into force 13 May 2004) Can TS 2008 No 18 (LLMC).

31 International Convention on Civil Liability for Oil Pollution Damage, adopted 29 November 1969 (entered into force 19 June 1975) 973 UNTS 3, as amended by Protocol to Amend the International Convention on Civil Liability for Oil Pollution Damage, 1969, adopted 27 November 1992 (entered into force 30 May 1996) 1956 UNTS 255 (CLC Convention).

32 International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage, adopted 18 December 1971, entered into force 16 October 1978) 1110 UNTS 57, as amended by the Protocol of 1992 to Amend the International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage, 1971, adopted 27 November 1992 (entered into force 30 May 1996) 1953 UNTS 330 (IOPC Funds Convention).

Fund for Compensation for Oil Pollution Damage, 1992³³ (IOPC Supplementary Fund);

- International Convention on Liability and Compensation for Damage in Connection with the Carriage of Hazardous and Noxious Substances by Sea, 1996 and Protocol of 2010 (HNS Convention and Protocol),³⁴ and
- International Convention on Civil Liability for Bunker Oil Pollution Damage, 2001 (Bunker Convention).³⁵

Other IMO conventions, subsidiary instruments and additional official sources are consulted as appropriate. Consideration of selected IMO regulatory codes is tentative at this stage. The application of IMO codes to ships supporting activities in the Area will ultimately depend on the actual classes of ships deployed and their operations and at which time in-depth consideration of pertinent codes will likely be necessary.

2.2 Relationships between instruments

The Vienna Convention provides that 'as between treaties, the later treaty will prevail to the extent of any incompatibility, unless either treaty specifies that it is subject to the other, in which case the intent of the parties will prevail.'³⁶ However, chronology alone is not sufficient to

determine the relationship of UNCLOS to other instruments. UNCLOS has several important provisions outside Part XI governing the relationship between it and other international agreements, instruments and practices which may have a bearing on identifying and understanding issue areas of interface between the competencies of ISA and IMO.

Article 197 of UNCLOS includes an obligation for States Parties to cooperate on a global basis 'directly or through competent international organizations, in formulating and elaborating international rules, standards and recommended practices and procedures consistent with this Convention, for the protection and preservation of the marine environment.' This obligation has been pursued by States Parties *inter alia* through IMO public and international maritime conventions on the impacts of ships on the marine environment.

Article 237(1) of UNCLOS provides that the provisions of Part XII are without prejudice to '*the specific obligations assumed by States under special conventions and agreements concluded previously which relate to the protection and preservation of the marine environment and to agreements which may be concluded in furtherance of the*

33 Protocol of 2003 to the International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage, 1992, adopted 16 May 2003 (entered into force 3 March 2005) Can TS 2010 No 4 (IOPC Supplementary Fund).

34 International Convention on Liability and Compensation for Damage in Connection with the Carriage of Hazardous and Noxious Substances by Sea, adopted 2 May 1996 (not in force) 35 ILM 1406 as amended by Protocol of 2010 to Amend the International Convention on Liability and Compensation for Damage in connection with the Carriage of Hazardous and Noxious Substances by Sea, 1996, adopted on 30 April 2010 (not in force) IMO Doc LEG/CONF.17/10 (4 May 2010) (HNS Convention & Protocol) (consolidated text).

35 International Convention on Civil Liability for Bunker Oil Pollution Damage, adopted 23 March 2001 (entered into force 21 November 2008) Can TS 2010 No 3 (Bunker Convention).

36 Vienna Convention (n 8) arts 30(2)-(3).

general principles set forth in this Convention.' This provision is relevant for the discussion of IMO conventions concerning pollution from ships and dumping.

Article 311(2) of UNCLOS provides that UNCLOS '*shall not alter the rights and obligations of States Parties which arise from other agreements compatible with this Convention and which do not affect the enjoyment by other States Parties of their rights or the performance of their obligations under this Convention.*' A recent arbitration award observed that '[T]hese provisions mirror the general rules of international law concerning the interaction of different bodies of law, which provide that the intent of the parties to a convention will control its relationship with other instruments.'³⁷

UNCLOS also contains rules of reference by virtue of which other rules of international law, such as those contained in IMO conventions, are incorporated into the prescriptions of particular provisions. Through the agency of UNCLOS, such instruments become applicable also to States that are not parties to them. Some of these are directly relevant for this report. For example, in the context of the obligations of the flag State to exercise effective jurisdiction and control over its ships on the high seas, Article 94(5) of UNCLOS provides that in taking the prescribed measures to ensure safety at sea, the flag State 'is required to conform to generally accepted international

regulations, procedures and practices and to take any steps which may be necessary to secure their observance.' These include standards established in and under the various IMO conventions identified in this report. A rule of reference to a maritime instrument was recently applied to the COLREGS.³⁸ Provisions in Part XII contain several pertinent rules of reference.

Finally, in the event of disputes, Article 293(1) of UNCLOS further speaks to the relationship between the UNCLOS and other international instruments by providing that '[a] court or tribunal having jurisdiction under this section shall apply this Convention and other rules of international law not incompatible with this Convention.'

2.3 The notion of 'competent international organization'

The relationship between UNCLOS and other international instruments has implications for competencies of international organizations. UNCLOS assigns tasks to competent international organizations in numerous provisions aimed at facilitating cooperation among States Parties. The provisions make various uses of the terms 'competent international organizations', 'appropriate international organizations', 'international organizations' and 'specialized agencies', among other references and occasionally particular organizations are named. In a study conducted by the United Nations Division for Ocean Affairs and the Law of the Sea (DOALOS) pursuant to its role as secretariat responsible for UNCLOS, and following consultations with relevant international organizations, a matrix was prepared to identify international organizations having

³⁷ *In the Matter of the South China Sea Arbitration (Republic of the Philippines v. People's Republic of China)*, PCA Case No. 2013-19, Award (12 July 2016), at para 237.
³⁸ *Ibid* at para 1090.

competencies with respect to specific provisions of UNCLOS.³⁹ The matrix is not described as authoritative, but as indicative to facilitate understanding and acknowledges that other international organizations may acquire competencies in the future.⁴⁰ In fact, it does not cover all provisions of UNCLOS, examples of which, for the purposes of identifying interfaces in this report, include the Articles 145, 146 and 235.

Not all organizations perform the same roles. Some references are made to 'the' competent international organization on specific issues, suggesting a lead role for a particular organization. Particular organizations are explicitly or implicitly assigned regulatory responsibilities or the taking of measures, entailing the possibility that they will have instruments to administer in relationship to UNCLOS. Other organizations have competence on an issue addressed by a UNCLOS provision and may only have a consultative or advisory role.

ISA and IMO are 'competent international organizations' with respect to tasks assigned to them by UNCLOS. As observed at the outset of this report, ISA is 'the' competent international organization with respect to activities in the Area and is specifically named in numerous provisions. In comparison, IMO is 'the' competent international organization with respect to international shipping and dumping of wastes at sea and its competencies in UNCLOS are referred to implicitly, rather than by name. In fact, IMO is referred to by name in UNCLOS only once.⁴¹ Accordingly, in referring to the respective

competencies of the two organizations, it is important to bear in mind that ISA, as a 'statutory creation' in UNCLOS, is usually named as the competent organization in specific provisions, whereas IMO's role is usually inferred by reason of the subject-matter of the provisions concerned. There are also provisions where the role of ISA as a competent international organization, although not mentioned by name, can be inferred.⁴²

2.4 The notion of 'activities in the Area'

2.4.1 Functions of the term

In understanding what is comprehended by 'activities in the Area', it is useful to point out the functions that appear to be performed by the phrase used as a legal term in the context of Part XI. First, by defining the scope of activities the term sets out the nature and boundaries of the legal regime of the Area.⁴³ Second, it serves to identify the activities captured by the common heritage of mankind and provides a basis for distinguishing these from other activities on the high seas that are not subject to the common heritage of mankind principle, such as the laying of submarine cables. Third, the term serves to inform the spatial and functional scope of ISA's mandate. Fourth, it serves to identify the subject-matter of seabed mining regulation.

2.4.2 Meaning of the term

'Activities in the Area' are governed by Part XI of UNCLOS.⁴⁴ The term is defined as 'all activities of exploration for, and exploitation of, the resources of the Area'.⁴⁵

39 "'Competent or Relevant International Organizations" under the United Nations Convention on the Law of the Sea', *Law of the Sea Bulletin No. 31*, at 79-95, online: <http://www.un.org/depts/los/doalos_publications/LOSBulletins/bulletinpdf/bulletinE31.pdf> (DOALOS Report).

40 Ibid Introductory Note at 79.

41 UNCLOS (n 1) annex VIII, art 2(2) concerning the maintenance of a list of experts for arbitration.

42 Ibid art 235(3).

43 Ibid art 134(2).

44 Ibid.

45 Ibid art 1(1)(3).

UNCLOS does not define ‘exploration’ and ‘exploitation’, but the word ‘resources’ is defined to mean ‘all solid, liquid or gaseous mineral resources *in situ* in the Area at or beneath the seabed, including polymetallic nodules’⁴⁶ and ‘when recovered from the Area are referred to as “minerals”’.⁴⁷

The *Seabed Advisory Opinion* observed that other UNCLOS provisions may assist in developing an understanding of what is comprehended by ‘activities in the Area.’ **Annex 1** sets out the Chamber’s understanding of the term. The Chamber referred to the Part XI mandate of the Enterprise to carry out activities in the Area ‘**as well as the transporting, processing and marketing of minerals recovered from the Area**’ (emphasis added) in Article 1(1) of **Annex IV**.⁴⁸ The Chamber observed a distinction between the Enterprise’s Part XI mandate and the Enterprise’s **Annex IV** activities with the effect that the latter activities are not included in the former.⁴⁹ The Chamber further observed that

Article 145 of UNCLOS ... which prescribes the taking of “[n]ecessary measures . . . with respect to activities in the Area to ensure responsibilities and obligations of States with respect to effective protection for the marine environment from harmful effects which may arise from such activities”, indicates the activities in respect of which ISA should adopt rules, regulations and procedures. These activities include: “drilling, dredging, excavation, disposal of waste, construction and operation or maintenance of installations, pipelines and other devices related to such activities”. In the view of the Chamber, these activities are included in the notion of “activities in the Area”.⁵⁰

The Chamber further noted that ISA’s marine environmental regulatory power provides further indications.⁵¹ Set out in a provision in **Annex III**, this power reads as follows:

Rules, regulations and procedures shall be drawn up in order to secure effective protection of the marine environment from harmful effects directly **resulting from activities in the Area or from shipboard processing immediately above a mine site of minerals derived from that mine site, taking into account the extent to which such harmful effects may directly result from drilling, dredging, coring and excavation and from disposal, dumping and discharge into the marine environment of sediment, wastes or other effluents.**⁵² (emphasis added)

This analysis led the Chamber to conclude that the above and other provisions confirm that processing on land to extract metals from minerals and transportation of minerals on the high seas are excluded from the notion of activities in the Area. The purpose of those provisions is to set out lists of activities producing harmful effects from activities in the Area.

These lists may be seen as an indication of what the Convention considers as included in the notion of “activities in the Area”. These activities include: **drilling, dredging, coring, and excavation; disposal, dumping and discharge into the marine environment of sediment, wastes or other effluents; and construction and operation or maintenance of installations, pipelines and other devices related to such activities.**⁵³

46 Ibid art 133(a). The ITLOS commented on these definitions. *Seabed Advisory Opinion* (n 3) para 82.

47 UNCLOS (n 1) art 133(b).

48 *Seabed Advisory Opinion* (n 3) at para 84.

49 Ibid.

50 Ibid at para 85.

51 Ibid at para 86.

52 UNCLOS (n 1) annex III, art 17(2) f).

53 *Seabed Advisory Opinion* (n 3) at para 87.

The Chamber observed that 'shipboard processing immediately above a mine site of minerals derived from that mine site' is considered as part of the same kind of activities that may produce harmful effects in the Area.⁵⁴

The Chamber then proceeded to analyze identical provisions defining exploration and exploitation in the Nodules Regulations⁵⁵ and Sulphides Regulations in which it observed that the notion of 'exploration' appeared to be broader than 'activities in the Area' as set out in Annex IV of UNCLOS, as the regulations on exploration included the 'testing of processing facilities and transportation systems and in that of exploitation, the construction and operation of processing and transportation systems.'⁵⁶ In giving primacy to the narrower provisions of UNCLOS over the broader provisions of the regulations,⁵⁷ the Chamber determined that (a) exploration and exploitation include the recovery of minerals from the seabed and lifting them to the surface,⁵⁸ (b) activities separating water from minerals, separation of minerals and disposal at sea are included in activities of the Area, whereas processing is excluded,⁵⁹ (c) transportation *in situ* (connected with

extraction and lifting) between installations and vessels on the high seas above the Area is included in activities in the Area, whereas transportation *ex situ* to unloading points on land is clearly excluded to avoid conflict with the high seas regime.⁶⁰ Effectively, the Chamber read down the scope of application of the exploration regulations. This is important as it helps guide an important aspect of the interface between the respective competencies of ISA and IMO.

Finally, the Chamber noted that prospecting, which does not require State Party sponsorship, is not included in activities in the Area. UNCLOS and the Nodules and Sulphides Regulations (and for that matter also the Cobalt Regulations) distinguish this activity from exploration and exploitation. However, the Chamber observed that 'considering that prospecting is often treated as the preliminary phase of exploration in mining practice and legislation, the Chamber considers it appropriate to observe that some aspects of the present Advisory Opinion may also apply to prospecting.'⁶¹

In summary, 'activities in the Area' generally refer to exploration and exploitation of

54 Ibid at para 88, in referring to UNCLOS (n 1), annex III, art 17(2)(f).

55 Nodules Regulations (n 10) reg 1(3)(b) and (a); Sulphides Regulations, (n 11) reg 1(3)(b) and (a):

"Exploration" means searching for deposits of polymetallic nodules in the Area with exclusive rights, the analysis of such deposits, the testing of collecting systems and equipment, processing facilities and transportation systems, and the carrying out of studies of the environmental, technical, economic, commercial and other appropriate factors that must be taken into account in exploitation.

"Exploitation" means the recovery for commercial purposes of polymetallic nodules 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.

56 *Seabed Advisory Opinion* (n 3) at paras 91-92.

57 Ibid para 93. The Chamber observed that "The aforementioned articles of the Convention and of Annexes III and IV, all belong to the same legal instrument. They were negotiated by the same parties and adopted at the same time. It therefore seems reasonable to assume that the meaning of an expression (or the exclusion of certain activities from the scope of that expression) in one provision also applies to the others. The Regulations are instruments subordinate to the Convention, which, if not in conformity with it, should be interpreted so as to ensure consistency with its provisions. They may, nevertheless be used to clarify and supplement certain aspects of the relevant provisions of the Convention." Ibid.

58 Ibid para 94.

59 Ibid para 95.

60 Ibid para 96.

61 Ibid at para 98.



non-living resources on the seabed and subsoil of the Area and more specifically comprise of:

- drilling, dredging, coring, and excavation and lifting minerals to the surface;
- separating water from minerals;
- disposal, dumping and discharge into the marine environment of sediment, wastes or other effluents;
- *in situ* transportation, such as between an installation and a vessel; and
- construction and operation or maintenance of installations, pipelines and other devices related to such activities.

For the purposes of this report, it is useful to underscore that activities in the Area may be supported or complemented by other activities regulated by other competent international organizations, potentially producing an interface between competencies. In fact, the conduct of State Parties in the Area is expressly governed

⁶² Ibid art 138.

by Part XI, UN Charter principles and other rules of international law, which include, *inter alia*, applicable international maritime conventions.⁶²

2.5 The notion of ‘interface’ of competencies with respect to activities in the Area

While the *Seabed Advisory Opinion* is helpful in providing a conceptual framework for determining the meaning of ‘activities in the Area’ and identifying the consequential regulatory responsibilities for ISA, for the purposes of this report, it is necessary to overlay other regimes. In particular, shipping, including international shipping as regulated (primarily) by IMO, is expected to provide support for activities in the Area. Also relevant in some respects is the regime for the dumping of wastes at sea whose scope is broader than shipping, but for which, outside activities in the

Area, IMO performs secretariat functions. The activities in the Area identified by the Seabed Disputes Chamber require the use of installations and ships as platforms for safe prospecting, exploration and exploitation and they will produce a range of operational wastes and further may interact with other navigational uses.

A variety of classes of vessels will be used to conduct activities in the Area or to provide support services and they may be registered in the sponsoring State or in another flag State. If the vessels are engaged on international voyages, that is the port of departure and port of arrival are not ports in the same State, a variety of international maritime rules and standards will apply to those ships depending on the instrument concerned. Vessels will also be used on cabotage service, which is domestic shipping with ports of departure and return in the same State. Although a range of rules and standards apply to these vessels, the sponsoring State as the cabotage jurisdiction would likely need to consider the extension of the full range of rules and standards applicable to international shipping. The applicable regulations concern maritime safety, environment protection, labour standards and seafarer training. Maritime security regulation may also be applicable. There will likely be new classes of ships which might necessitate the adaptation of existing or

adoption of new international standards. Otherwise the range of vessels subject to maritime regulation include transport (e.g., bulk carriers), special purpose ships, offshore supply vessels (OSV), as well as offshore installations (e.g., drillships, semi-submersibles, platforms, etc., as mobile offshore drilling units – MODUs). Special purpose ship is defined as ‘a ship of not less than 500 gross tonnage which carries more than 12 special personnel, i.e., persons who are specially needed for the particular operational duties of the ship and are carried in addition to those persons required for the normal navigation, engineering and maintenance of the ship or engaged to provide services for the persons carried on board.’⁶³ MODU is defined as ‘a vessel capable of engaging in drilling operations for the exploration for or exploitation of resources beneath the seabed such as liquid or gaseous hydrocarbons, sulphur or salt.’⁶⁴ Not all aspects and activities of MODUs are necessarily subject to IMO regulation. For example, whereas construction of MODUs is subject to an IMO standard, the activity of drilling on board is not. Similarly, whereas the seafaring crew of a drillship are subject to STCW requirements, the drilling crew are not. However, it is arguable that the International Labour Organization (ILO)’s Maritime Labour Convention, 2006 (MLC), would apply to the crew of a drillship.⁶⁵ The vessels employed may be manned

63 Code of Safety for Special Purpose Ships, adopted by Maritime Safety Committee Resolution MSC.266(84) on 13 May 2008 (SPS Code), reg 3.

64 Code for the Construction and Equipment of Mobile Offshore Drilling Units, adopted by Assembly Resolution Res.A.1023(26) on 2 December 2009 (MODU Code), reg 1.3.

65 This convention defines ‘seafarer’ as ‘any person who is employed or engaged or works in any capacity on board a ship to which this Convention applies.’ Maritime Labour Convention, adopted 23 February 2006 (entered into force 20 August 2013), Can TS 2013 No 16 (MLC), art II(1)(f). The designation would apply if the place of work of the drill worker is a ‘ship’. In case of doubt as to whether the MLC applies to drill workers, or for that matter workers employed in seabed mining and working on board of vessels conducting activities in the Area, the MLC leaves a State Party some latitude. Art II(3) provides that ‘[I]n the event of doubt as to whether any categories of persons are to be regarded as seafarers for the purpose of this Convention, the question shall be determined by the competent authority in each Member after consultation with the shipowners’ and seafarers’ organizations concerned with this question.’ Additionally, art II(5) provides ‘[I]n the event of doubt as to whether this Convention applies to a ship or particular category of ships, the question shall be determined by the competent authority in each Member after consultation with the shipowners’ and seafarers’ organizations concerned.’

or unmanned, remotely operated or automated or autonomous, and for which there are IMO as well as industry standards. There will also be a range of other technologies, not easily captured by the definition of 'ship' if at all, such as seabed excavators, collectors and pipelines. They are not addressed by IMO regulations and might raise new regulatory challenges for ISA. Submersibles are covered in some respects (e.g., for pollution prevention in MARPOL), but not in the COLREGS. The latter generally apply to surface vessels and should there be a substantial growth in the use of submersibles, potential interactions between surface and subsurface vessels might also increase. With the limited exception of a COLREGS rule concerning visibility of lights on inconspicuous partly submerged vessels,⁶⁶ at this time there are no international rules and standards to guide such interactions.

The consequence of using ships and installations to support activities in the Area is that two different regimes in UNCLOS, deep seabed mining in Part XI and navigation and shipping (which cuts across UNCLOS), are juxtaposed

and overlaid. Moreover, the regime for activities in the Area may interface with the more general regime for dumping at sea.

The notion of 'interface' in this report is used where there is actual or potential interaction of the different regimes and consequential competencies. Identification of an interface is not per se indicative of lead or supportive roles. As the DOALOS report illustrates,⁶⁷ there are numerous provisions in UNCLOS where multiple organizations are competent with respect to the same provision. This means that various organizations have something to contribute because their mandates and expertise position them to facilitate the purposes of the provision and possibly as instruments of inter-State cooperation. Determination of distribution of responsibilities requires, first and foremost, further textual interpretation to ascertain if the intent of the provision is to assign the lead role, for example by expressly naming the competent organization or by using the definite article ('the') in referring to competent organization by function, and the context of the provision.

⁶⁶ COLREGS (n 18) rule 22(d). The rule prescribes 'In inconspicuous, partly submerged vessels or objects being towed; a white all-round light, 3 miles.'

⁶⁷ DOALOS Report (n 39).

3. MANDATE OF THE INTERNATIONAL SEABED AUTHORITY

The ISA was formally established by UNCLOS in Part XI and all 168 Parties to date are ipso facto members.⁶⁸ The ISA is set up as 'the organization' through which States Parties shall 'organize and control activities in the Area'⁶⁹ on behalf of mankind in accordance with Part XI and the 1994 Agreement.⁷⁰ As a creature of UNCLOS, ISA's powers and functions are limited to those expressly conferred.⁷¹ However, UNCLOS and the 1994 Agreement also provide for incidental powers. Reflecting a UNCLOS provision,⁷² the 1994 Agreement

provides that '[T]he Authority shall have such incidental powers, consistent with the Convention, as are implicit in, and necessary for, the exercise of those powers and functions with respect to activities in the Area.'⁷³

The rights in the resources of the Area are vested in mankind and may not be alienated. It is only the minerals recovered from the Area that may be alienated and only in accordance with Part XI and the rules, regulations and procedures of ISA.⁷⁴



Photo: ISA

68 UNCLOS (n 1) art 156(1)-(2).

69 Ibid art 157(1); Implementation Agreement (n 2) annex, s 1(1).

70 UNCLOS (n 1) arts 137(2) and 153(1).

71 Ibid art 157(2).

72 'The Authority shall have such incidental powers consistent with this Convention, as are implicit in and necessary for the exercise of those powers and functions with respect to activities in the Area.' Ibid art 157(2).

73 Implementation Agreement (n 2), Annex, Section 1, para 1. Compared to UNCLOS art 157(2), the Implementation Agreement provision uses the same text, but employs more commas to break up the clauses, possibly for emphasis as well as better sentence structure.

Activities in the Area are to be carried out for the benefit of mankind and ISA is mandated to provide equitable sharing criteria for this purpose.⁷⁵ UNCLOS provides for activities in the Area to be guided by a range of policies aiming at specified outcomes. Policies having specific relevance to this report include those related to resource development and the orderly, safe and rational resource management and the efficient conduct of activities to avoid unnecessary waste.⁷⁶ The ISA is also to be guided by a production policy, whose parameters are articulated in the 1994 Agreement and is to be guided by sound commercial principles and international trade law.⁷⁷ The ISA's policy concerning economic assistance to developing countries whose export earnings suffer as a result of activities in the Area is further guided by the 1994 Agreement.⁷⁸ In exercising its powers and functions, ISA shall avoid discrimination, including in the granting of opportunities in the Area; however, special consideration of developing countries (and particular consideration of land-locked and geographically disadvantaged States among them) is permitted as specifically provided in Part XI.⁷⁹

The activities in the Area are organized, carried out and controlled by ISA.⁸⁰ The actual exploration and exploitation activities are to be carried out by the Enterprise (when operational) and 'in association with ISA by States Parties, or state enterprises or natural or juridical persons which possess the nationality of States Parties or are effectively controlled by them or their nationals, when sponsored

by such States, or any group of the foregoing which meets the requirements' provided in Part XI and Annex III.⁸¹ Activities in the Area are required to be carried out in accordance with a formal plan of work complying with Annex III, reviewed by the Legal and Technical Commission (LTC) and approved by the Council. Where the activities are to be carried by the entities specified in UNCLOS, the plan of work will be in the form of a contract and may include joint arrangements.⁸²

As seen in the above discussion of the *Seabed Advisory Opinion's* understanding of 'activities in the Area', ISA has broad powers to accomplish its mandate:

4. The ISA shall exercise such control over activities in the Area as is necessary for the purpose of securing compliance with the relevant provisions of this Part [Part XI] and the Annexes relating thereto, and the rules, regulations and procedures of the ISA, and the plans of work approved ...
5. The ISA shall have the right to take at any time any measures provided for under this Part to ensure compliance with its provisions and the exercise of the functions of control and regulation assigned to it thereunder or under any contract. The ISA shall have the right to inspect all installations in the Area used in connection with activities in the Area.⁸³

It has extensive regulatory power under Article 160. In Annex III, UNCLOS further

74 UNCLOS (n 1) art 137(2).

75 Ibid art 140.

76 Ibid art 150(a)-(b).

77 Implementation Agreement (n 2, Annex, Section 6; UNCLOS (n 1) art 151, subject to Implementation Agreement, Annex, Section 6.

78 Implementation Agreement (n 2), Annex, Section 7.

79 UNCLOS (n 1) art 152.

80 UNCLOS (n 1) art 153(1).

81 Ibid art 153(2).

82 Ibid art 153(3).

83 Ibid.

expounds on ISA's power to adopt and uniformly apply rules, regulations and procedures⁸⁴ in exercising its functions on a number of matters and include, *inter alia*:

Rules, regulations and procedures shall be drawn up in order to secure effective protection of the marine environment from harmful effects directly resulting from activities in the Area or from shipboard processing immediately above a mine site of minerals derived from that mine site, taking into account the extent to which such harmful effects may directly result from drilling, dredging, coring and excavation and from disposal, dumping and discharge into the marine environment of sediment, wastes or other effluents.⁸⁵

The structures of ISA are the Assembly, as the supreme organ consisting of the entire membership; the Council as the executive organ; the Secretariat; and the Enterprise as the organ through which ISA undertakes activities in the Area directly. The subsidiary organs of the Council are the Economic Planning Commission,⁸⁶ the LTC⁸⁷ and the Finance Committee.⁸⁸ The 1994 Agreement stipulates an 'evolutionary' approach to the operationalization of ISA's organs and subsidiary bodies, guided by cost-effectiveness. For this purpose, the 1994 Agreement provided for the initial performance of the functions of the

Economic Planning Commission by the LTC 'until such time as the Council decides otherwise or until the approval of the first plan of work for exploitation'.⁸⁹ Unlike the other two subsidiary organs, the Finance Committee was established by the 1994 Agreement.⁹⁰

The organs have specific powers and functions that are pertinent to this report. The Assembly has the power to adopt general policies on any matter within ISA's competence, in conformity with UNCLOS, and, *inter alia*, to approve the Council's recommendations of rules, regulations and procedures.⁹¹ These include regulations and procedures relating to, *inter alia*, prospecting, exploration and exploitation in the Area.⁹² The Assembly is empowered to undertake a general and systematic review of the operation in practice of the regime of the Area every five years since the entry into force of UNCLOS.⁹³ The Council has 'the power to establish, in conformity with this Convention and the general policies established by the Assembly, the specific policies to be pursued by the Authority on any question or matter within the competence of the Authority'.⁹⁴ Further, it has the responsibility to 'supervise and coordinate the implementation of the provisions of this Part on all questions and matters within the competence of ISA and invite the attention of the Assembly to cases of noncompliance'.⁹⁵ The Council approves plans of work⁹⁶ and has the power to 'exercise control over activities

84 Ibid annex III, art 17(2)(1).

85 Ibid annex III, art 17(2)(f).

86 Ibid art 164. Members have qualifications in mining, management of mineral resource activities, international trade or international economics. This Commission is not operational.

87 Ibid art 165. Members have qualifications and expertise on exploration, exploitation and processing of mineral resources, oceanology, marine environment protection, economic and legal matters relating to ocean mining and related fields of expertise.

88 Implementation Agreement (n 2), Annex, Section 9.

89 Ibid annex, Section 1, para 4.

90 Ibid annex, Section 1, para 1. Members have qualifications and expertise in financial matters.

91 Ibid art 160(1)-(2)(f).

92 Ibid art 160(2)(f)(ii).

93 Ibid art 154.

94 Ibid art 162(1).

in the Area in accordance with article 153, paragraph 4, and the rules, regulations and procedures of the Authority'.⁹⁷ The Assembly and the Council also have the power to request advisory opinions from the Seabed Disputes Chamber 'on legal questions arising within the scope of their activities'.⁹⁸ The LTC has terms of reference that include regulatory tasks pertinent to this report. In particular, the LTC is tasked to:

- (a) formulate and submit to the Council the rules, regulations and procedures referred to in article 162, paragraph 2(o) of UNCLOS, taking into account all relevant factors including assessments of the environmental implications of activities in the Area;
- (b) keep such rules, regulations and procedures under review and recommend to the Council from time to time such amendments thereto as it may deem necessary or desirable.⁹⁹

The Finance Committee plays a vital role in advising the Assembly and Council. For example, the decisions of the Assembly

and Council concerning draft financial rules, regulations and procedures of the organs shall take into account the recommendations of the Finance Committee.¹⁰⁰

In addition to its mining regulatory mandate, ISA has been allocated various other responsibilities and powers to enable it to address specific concerns pertinent to activities in the Area, such as consulting with affected coastal States,¹⁰¹ marine scientific research,¹⁰² technology transfer,¹⁰³ protection of the marine environment,¹⁰⁴ protection of human life¹⁰⁵ and accommodation of activities.¹⁰⁶ The latter three are of particular relevance in exploring areas of potential interface between ISA's and IMO's competencies in the Area and are discussed in detail below. In addition to the development of primary rules on the protection of the marine environment of the Area, ISA, as well as IMO, appears to have implicit competence to facilitate inter-State cooperation on the development of secondary rules concerning responsibility and liability, also discussed below.¹⁰⁷

⁹⁵ Ibid art 162(2)(a).

⁹⁶ Implementation Agreement (n 2) section 3(11)(a), read together with section 1(6)-(11) in accordance with UNCLOS (n 1) annex III, art 6.

⁹⁷ Ibid art 162(2)(l).

⁹⁸ Ibid at art 191.

⁹⁹ Ibid art 165(2).

¹⁰⁰ Implementation Agreement (n 2), Annex, Section 9, para 7(a).

¹⁰¹ UNCLOS (n 1) art 142.

¹⁰² Ibid art 143(2)-(3).

¹⁰³ Ibid art 144; Implementation Agreement (n 2), annex, section 5(1).

¹⁰⁴ UNCLOS (n 1) art 145.

¹⁰⁵ Ibid art 146.

¹⁰⁶ Ibid art 147.

¹⁰⁷ Ibid art 235(3).

4. MANDATE OF THE INTERNATIONAL MARITIME ORGANIZATION

IMO was created as a specialized agency of the United Nations in 1948.¹⁰⁸ Today IMO has 174 member States and three associate members. Its structure includes the Assembly, Council, Secretariat and five committees, of which the most significant for this report are the Maritime Safety Committee (MSC) and Marine Environment Protection Committee (MEPC) together with their subcommittees, and the Legal Committee (LEG).

To identify where and how IMO's competencies in international navigation and shipping might interface with ISA's with respect to activities in the Area, it is necessary to set out the main sources of purposes and functions for which IMO is responsible and to consider these in turn. They arise from several instruments, including:

- (a) the general mandate set out in its constitutive instrument, i.e., IMO Convention;
- (b) international maritime conventions delegating a function to IMO for their maintenance and development of subsidiary instruments; and
- (c) specific provisions in UNCLOS implying a thematic function for IMO

as 'the' or 'a' competent international organization.¹⁰⁹

The purposes and functions in (a) consist of the core mandate of IMO as an instrument of cooperation among its member States. Under IMO's Convention, IMO has a broad mandate:

To provide machinery for co-operation among Governments in the field of governmental regulation and practices relating to technical matters of all kinds affecting shipping engaged in international trade; to encourage and facilitate the general adoption of the highest practicable standards in matters concerning the maritime safety, efficiency of navigation and prevention and control of marine pollution from ships; and to deal with administrative and legal matters related to the purposes set out in this article.¹¹⁰

The mandate has expanded significantly since IMO was established and today covers virtually every regulatory aspect of international shipping. Other aspects of shipping, including the private international law of carriage of goods by sea, are addressed by yet other international organizations.¹¹¹ IMO's powers include,

¹⁰⁸ IMO Convention (n 16).

¹⁰⁹ These functions are discussed in depth by Aldo Chircop, 'The International Maritime Organization', in D.R. Rothwell, A. Oude Elferink, K.N. Scott & T. Stephens (eds), *Oxford Handbook on the Law of the Sea* (Oxford: Oxford University Press, 2015), 416-438.

¹¹⁰ IMO Convention (n 16) art 1(a). This provision is the basis for the mission in the IMO strategic plan. See Strategic Plan for the Organization (2018-202), Assembly Resolution A.1110(30) adopted 8 December 2017.

¹¹¹ Namely the United Nations Commission on International Trade Law (UNCITRAL) and United Nations Conference on Trade and Development (UNCTAD).



inter alia, provision for the 'the drafting of conventions, agreements, or other suitable instruments, and recommend these to governments and to intergovernmental organizations, and convene such conferences as may be necessary.'¹¹² IMO is also empowered to consider and make recommendations on matters remitted to it by any intergovernmental organization,¹¹³ such as ISA.

With respect to the functions in (b), IMO has adopted and/or oversees over 50 international conventions and protocols on maritime safety, environment protection, maritime security, trade facilitation, and civil liability and compensation.¹¹⁴ These instruments include the principal international maritime conventions considered in this report and which delegate secretariat and other functions to IMO. Most importantly, the maritime safety and environmental conventions

enable IMO, through the MSC and MEPC, to maintain oversight of those instruments and provide for their amendment and adoption of further subsidiary instruments, such as mandatory and voluntary codes, guidelines and resolutions. These instruments provide substantive content to the jurisdictional schemes and prescriptions for cooperation on international navigation and shipping in UNCLOS, as well as helping maintain public order on the high seas. The LEG Committee similarly oversees the conventions on civil liability.

The functions in (c) concern the regulatory role IMO plays in an implicit manner through several rules of reference in several UNCLOS provisions. These are summarized in **Annex 2**. With respect to high seas areas, and of relevance to activities in the Area, the role of IMO competencies is particularly visible in Part

¹¹² IMO Convention (n 16) art 2(b).

¹¹³ Ibid art 2(a).

¹¹⁴ See Comprehensive Information on the Status of Multilateral Conventions and Instruments in Respect of which the International Maritime Organization or its Secretary-General Performs Depositary or other Functions (IMO, 21 February 2019), online: <<http://www.imo.org/en/About/Conventions/StatusOfConventions/Documents/Status%20-%202019.pdf>>.

VII of UNCLOS in setting the international standards and rules against which flag State obligations are benchmarked. Flag States enjoy exclusive jurisdiction over their ships on the high seas and have a due diligence obligation to exercise effective jurisdiction and control in administrative, technical and social matters.¹¹⁵ This obligation includes: 'manning of ships, labour conditions and the training of crews, taking into account the applicable international instruments',¹¹⁶ which consist of the STCW Convention and the MLC¹¹⁷; ensuring safety at sea by taking measures so that the 'master, officers and, to the extent appropriate, the crew are fully conversant with and required to observe the applicable international regulations concerning the safety of life at sea, the prevention of collisions, the prevention, reduction and control of marine pollution, and the maintenance of communications by radio',¹¹⁸ essentially referring to rules in several IMO conventions including, STCW, SOLAS, COLREGS, SAR, MARPOL, AFS and BWM; and in taking 'the measures called for in paragraphs 3 and 4 [which include all of the above as well as: ship construction, equipment, and seaworthiness; preliminary and regular surveying of ships; on board charts, nautical publications and equipment; ship in charge of qualified master, officers and sufficient crew] each State is required to conform to generally accepted international regulations, procedures and practices',¹¹⁹ implicitly referring to the above maritime conventions again.

Other rules of reference in Part XII of UNCLOS engage IMO general competence in the protection and preservation of the marine environment from vessel-source pollution, potentially

interfacing with ISA competence when vessels are used to support activities in the Area. Article 211 concerning pollution from vessels contains rules of reference to IMO conventions. The opening provision sets out a general duty for States, but also a general mandate for IMO:

*States, acting through **the competent international organization** or general diplomatic conference, shall establish international rules and standards to prevent, reduce and control pollution of the marine environment from vessels and promote the adoption, in the same manner, 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 coastal States. Such rules and standards shall, in the same manner, be re-examined from time to time as necessary.¹²⁰ (**emphasis added**)*

'Vessel' and 'ship' are not defined in UNCLOS and reliance is placed on the definitions attached to these for specific purposes in the various IMO conventions. flag States are expected to legislate standards for their ships that 'have the same effect as that of generally accepted international rules and standards established through the competent international organization or general diplomatic conference.'¹²¹ UNCLOS further requires that international rules under this provision include prompt notification of coastal States whose interests are affected by a casualty.¹²² Thus, insofar as ships are concerned, IMO has competence to adopt international, rules, regulations and standards for

115 UNCLOS (n 1) art 94(1).

116 Ibid art 94(3).

117 MLC (n 65).

118 Ibid art 94(4).

119 Ibid art 94(5).

120 Ibid art 211(1).

121 Ibid art 211(2).

122 Ibid art 211(7).

vessel-source pollution, as well as routing systems to prevent accidents. This provision is nourished by several IMO conventions, including MARPOL (all annexes), the BWM Convention and the AFS Convention, including their codes and related guidelines, generally providing duties for flag States and standards for their ships.

Flag States have a duty to legislate atmospheric pollution from their ships, wherever they are, 'taking into account internationally agreed rules, standards and recommended practices and procedures ...'¹²³ and for all States 'acting especially through competent international organizations or diplomatic conference' to endeavour to adopt global rules, standards and recommended practices and procedures' for such pollution.¹²⁴ There is a similar obligation to legislate to enable enforcement by implementing 'applicable international rules and standards established through competent international organizations or diplomatic conference' for such pollution. The principal IMO instrument nourishing this provision is MARPOL Annex VI, which plays a vital role in regulating a range of harmful emissions from ships.

Article 210(4) of UNCLOS concerning pollution by dumping, defined comprehensively in Article 1(5) of

UNCLOS,¹²⁵ allocates roles to competent international organizations, including IMO, rather than to a single organization, as follows:

States, acting especially through competent international organizations or diplomatic conference, shall endeavour to establish global and regional rules, standards and recommended practices and procedures to prevent, reduce and control such pollution. Such rules, standards and recommended practices and procedures shall be re-examined from time to time as necessary.

Consistently, the exercise of legislative jurisdiction by States 'shall be no less effective in preventing, reducing and controlling such pollution than the global rules and standards.'¹²⁶ Similarly, the exercise of enforcement jurisdiction in Article 216 of UNCLOS includes an obligation for the flag State to enforce, *inter alia*, 'applicable international rules and standards established through competent international organizations or diplomatic conference for the prevention, reduction and control of pollution of the marine environment by dumping.'¹²⁷ This obligation also applies to any other State (for example the sponsoring State and other States receiving minerals from the Area) 'with regard to acts of loading of wastes or other matter occurring within its

123 Ibid art 212(1).

124 Ibid art 222.

125 Ibid art 1(5):

(a): ' "dumping" means:

(i) any deliberate disposal of wastes or other matter from vessels, aircraft, platforms or other man-made structures at sea;

(ii) any deliberate disposal of vessels, aircraft, platforms or other man-made structures at sea;

(b) "dumping" does not include:

(i) the disposal of wastes or other matter incidental to, or derived from the normal operations of vessels, aircraft, platforms or other man-made structures at sea and their equipment, other than wastes or other matter transported by or to vessels, aircraft, platforms or other man-made structures at sea, operating for the purpose of disposal of such matter or derived from the treatment of such wastes or other matter on such vessels, aircraft, platforms or structures;

(ii) placement of matter for a purpose other than the mere disposal thereof, provided that such placement is not contrary to the aims of this Convention.

126 Ibid art 210(6).

127 Ibid art 216(1).

128 Ibid art 216(1)(c).

territory or at its off-shore terminals.¹²⁸

The London Convention and London Protocol establish regulatory regimes for dumping at sea and serve to nourish Articles 210 and 216 of UNCLOS with detailed prescriptions. While they recognize roles for competent international organizations and agencies, the two instruments allocate to IMO the function of secretariat.¹²⁹ The London Protocol expressly designates IMO as 'the' competent organization and provides it with a dedicated mandate and several responsibilities throughout the

instrument.¹³⁰ The secretariat functions are not regulatory¹³¹ and the responsibility for amending the two instruments resides with consultative or special meetings of Contracting Parties.¹³² The London Convention has a definition of dumping consistent with UNCLOS but, together with the London Protocol, excludes 'disposal of wastes or other matter directly arising from, or related to the exploration, exploitation and associated off-shore processing of seabed mineral resources.'¹³³

129 London Convention (n 23) art XIV(2). First Meeting of Contracting Parties, Resolution LDC (7) Rev 1 adopted on 18 December 1975.

130 London Protocol (n 24) arts 1(2) and 19.

131 London Convention (n 23) art XIV(3); London Protocol (n 24) art 19.

132 London Convention (n 23) art XIV(4)(a).

133 Ibid art III(1)(c); London Protocol (n 24) art 1(4)(3).

5. INTERFACE OF COMPETENCIES AND DIVISION OF RESPONSIBILITIES

5.1 General considerations

In this section the report explores the actual and potential interface between the regimes for deep seabed mining and international navigation and shipping, directly or indirectly with respect to activities in the Area. The section aims to identify the respective competencies of ISA and IMO and division of responsibilities in accordance with their mandates. The earlier survey of the two organizations' respective mandates, together with the definition of activities in the Area proffered by the *Seabed Advisory Opinion* serve as backdrop.

5.2 Maritime safety

5.2.1 Promotion of human safety in the Area

Article 146 of UNCLOS empowers ISA to 'adopt appropriate rules, regulations and procedures **to supplement existing international law as embodied in relevant treaties**' (emphasis added) as necessary to ensure effective protection of human life with respect to activities in

the Area. The intention of the provision is for ISA to regulate for the protection of human life on safety aspects concerning exploration and exploitation in a manner to complement international regulations already adopted by other organizations. These organizations are IMO, which has extensive maritime safety and seafarer training regulation discussed further below, and ILO concerning occupational health and safety for seafarers, but outside the remit of this report. The definition of 'seafarer' in the MLC is comprehensive as to potentially encompass workers involved in activities in the Area.¹³⁴

The exploration regulations address this topic by delegating the task of assessing whether a plan of work provides for health and safety to the LTC.¹³⁵ No specific ISA regulations on the topic are referred to as presumably ISA has as yet to develop its own rules on the matter. On the other hand, the standard clauses for exploration contain rules of reference to international safety, labour and health standards, as well as rules that may be adopted at some point by ISA, as in the case of the Sulphides Regulations:

134 'Seafarer is defined as 'any person who is employed or engaged or works in any capacity on board a ship to which this Convention applies'; art II(4): 'Except as expressly provided otherwise, this Convention applies to all ships, whether publicly or privately owned, ordinarily engaged in commercial activities, other than ships engaged in fishing or in similar pursuits and ships of traditional build such as dhows and junks. This Convention does not apply to warships or naval auxiliaries.' MLC (n 65) art II(1)(f):

135 Nodules Regulations (n 10), reg 21(4); Sulphides Regulations (n 11) reg 23(4); Cobalt Regulations (n 12) reg 23(4).

15.1 *The Contractor shall comply with the **generally accepted international rules and standards established by competent international organizations or general diplomatic conferences concerning the safety of life at sea, and the prevention of collisions and such rules, regulations and procedures as may be adopted by the Authority relating to safety at sea. Each vessel used for carrying out activities in the Area shall possess current valid certificates required by and issued pursuant to such international rules and standards.***

15.2 *The Contractor shall, in carrying out exploration under this contract, observe and comply with such rules, regulations and procedures as may be adopted by the Authority relating to protection against discrimination in employment, occupational safety and health, labour relations, social security, employment security and living conditions at the work site. Such rules, regulations and procedures shall take into account **conventions and recommendations of the International Labour Organization and other competent international organizations.**¹³⁶ (emphasis added)*

The Draft exploitation regulations set out protection of human life as a regulatory principle,¹³⁷ provide for the adoption of 'A Health, Safety and Maritime Security Plan' (in accordance with the regulations' Annex VI, which has yet to be developed)¹³⁸ and detailed regulations on 'Safety, labour and health standards'.¹³⁹ It appears that at this time both the exploration and Draft exploitation regulations are relying on international standards for the protection of human life already adopted by IMO and

ILO. Contractors are required to comply with such international rules and standards.

IMO instruments on maritime safety are premised on the idea that the safety of the ship is central to the assurance of human safety on board and on other ships. The key IMO maritime safety conventions considered in this report (namely SOLAS, LL and COLREGS) will apply to ships and installations registered by flag States and engaged in activities in the Area. The Draft exploitation regulations are clear in requiring compliance by contractors with rules adopted by other competent international organizations.¹⁴⁰ COLREGS will be discussed in a separate section below. As observed earlier, in exercising jurisdiction and control over their ships flag States have an obligation to apply IMO and other international standards with respect to their ships. Under the Draft exploitation regulations contractors have a duty to comply with flag State regulations or the sponsoring State as the case may be.¹⁴¹

In general, unless expressly stated otherwise, the SOLAS and LL Conventions apply to ships engaged in international voyages, that is where the port of departure and port of arrival are in different States.¹⁴² Ships servicing deep seabed mining departing and returning to the same port are considered domestic shipping (i.e., cabotage) and may not be captured by the SOLAS and LL Conventions. The sponsoring State in whose and from whose ports such ships are operating, and whether the ships are registered under its flag or a foreign flag, has ISA to extend the

¹³⁶ Sulphides Regulations (n 11) reg 15.

¹³⁷ Draft Exploitation Regulations (n 13) draft reg 2(d).

¹³⁸ Ibid draft reg 7(3)(f).

¹³⁹ Ibid draft reg 30.

¹⁴⁰ Ibid. Draft reg 30 states the requirement of compliance both in implicit and in express terms throughout the provision, for example with respect to seaworthiness, maintenance of class, safety of life at sea, collisions, pollution prevention, treatment of seafarers, certification, and so on.

¹⁴¹ Ibid draft reg 30(3).

¹⁴² For example, SOLAS (n 19) chap 1, reg 1(a) and LL Convention (n 17) annex A, art 2(4).

application of international regulations to its domestic shipping. This could be a useful regulatory intervention by ISA to ensure that international maritime safety regulations apply to **all ships and on all voyages** engaged in activities in the Area.

SOLAS is the most important international instrument designed to promote maritime safety by setting minimum technical standards. Most of its regulations are relevant for ships operating in the Area and are accompanied by mandatory codes, recommendations and guidelines. Examples of the principal SOLAS chapters containing likely relevant regulations to highlight include:

- Chapter I: Surveying, documentation and port inspection for all ships. The regulations generally apply to ships on international voyages, unless provided otherwise.¹⁴³
- Chapter II-1: Ship construction, focusing on subdivision and stability, machinery and electrical installations, including goal-based standards for bulk carriers which would be utilized to transport minerals from the Area.¹⁴⁴ These apply to all ships constructed after a specified date, unless a maritime administration provides exemptions for specific rules to its ships.¹⁴⁵
- Chapter II-2: Fire protection, fire detection and fire extinction for all ships. These rules apply to ships constructed after a specified date and for all ships.¹⁴⁶
- Chapter III: Life-saving appliances and arrangements according to type of ship. These apply to all ships,¹⁴⁷ with provisions for ships built before a specified date.¹⁴⁸
- Chapter IV: Radio communications incorporating the Global Maritime Distress and Safety System (GMDSS), including undertakings by States Parties to provide radio communication services.¹⁴⁹ These apply to all ships and cargo ships above a specified tonnage.¹⁵⁰
- Chapter V: Safety of navigation generally applicable to all ships on all voyages, and including provisions on sufficient manning, adoption of routing measures, meteorological services, SAR services, carriage of voyage data recorders and automatic identification systems (discussed further under navigation safety below). These apply to all ships on all voyages, unless expressly provided otherwise.¹⁵¹
- Chapter VI: Carriage of cargoes, including solid bulk cargoes such as minerals, and proper stowage to ensure ship stability.¹⁵² These apply to ships above a specified tonnage and carrying certain cargoes.¹⁵³

143 Ibid chap 1, reg 1(a).

144 See Goal-based Ship Construction Standards for Bulk Carriers and Oil Tankers means the International Goal-Based Ship Construction Standards for Bulk Carriers and Oil Tankers, adopted by the Maritime Safety Committee by Resolution MSC.287(87) on 20 May 2010.

145 SOLAS (n 19), chap II-1, reg 1.

146 Ibid chap II-2, reg 1.1.

147 See International Life-Saving Appliance (LSA) Code, adopted by the Maritime Safety Committee by Resolution MSC.48(66) on 4 June 1996.

148 SOLAS (n 19) chap III, reg 1.

149 See International Code of Signals, adopted by Assembly Resolution A.IV/Res.80 on 27 September 1965. SOLAS Chapter IV is also linked to the International Telecommunication Union (ITU)'s Radio Regulations, online: <<https://www.itu.int/pub/R-REG-RR-2016>>.

150 SOLAS (n 19) chap IV, reg 1.

151 Ibid chap V, reg 1.

152 See International Maritime Solid Bulk Cargoes Code (IMSBC Code), adopted by Maritime Safety Committee Resolution MSC.268(85) on 4 December 2008.

153 SOLAS (n 19) chap VI, reg 1.



- Chapter VII: Carriage of dangerous goods.¹⁵⁴ These apply to all ships and cargo vessels less than a specified tonnage.¹⁵⁵
 - Chapter IX: Management for the safe operation of ships requiring safety management systems for ships.¹⁵⁶ These apply to all ships.¹⁵⁷
 - Chapter XI-1: Special measures to enhance maritime safety concerning the role of recognized organizations in carrying out surveys and inspections on behalf of the flag State. These concern the designation of recognized organizations by the maritime administration.¹⁵⁸
 - Chapter XII: Additional safety measures for bulk carriers over 150 metres long. In addition to other regulations, these apply to this particular class of ship.¹⁵⁹
 - Chapter XIII: Verification of compliance, concerning the mandatory IMO Member State Audit Scheme. These regulations serve to guide the implementation of SOLAS States Parties in executing their obligations and responsibilities.¹⁶⁰
- The extent to which SOLAS applies to the different classes of ships is set out in each of its chapters. The maritime administration of a flag State may provide exemptions

¹⁵⁴ The principal code providing detailed regulation for safe packing, marking, handling and carriage is the mandatory IMDG Code. Other codes apply depending on the cargo carried.

¹⁵⁵ SOLAS (n 19) chap VII, reg 1.

¹⁵⁶ International Management Code for the Safe Operation of Ships and for Pollution Prevention, adopted by Assembly Resolution A.741(18) on 17 November 1993 (ISM Code).

¹⁵⁷ SOLAS (n 19) chap IX, reg 2.

¹⁵⁸ Ibid chap XI-1, reg 1.

¹⁵⁹ Ibid chap XII, reg 2.

¹⁶⁰ Ibid chap XIII, reg 2.

from certain rules, for example for ships involving novel technologies to encourage technological development.¹⁶¹ This could be relevant for new technologies developed for activities in the Area.

The SAR dimension in SOLAS is further fleshed out in numerous guidelines and guidance documents, as well as in the SAR Convention. Under the latter convention, States Parties undertake to develop the infrastructure and cooperative arrangements necessary for the provision of SAR services, including the allocation of responsibilities for all marine regions. The measures provided by the SAR Convention include ship reporting systems.¹⁶²

The LL Convention addresses a longstanding concern regarding the appropriate loading of ships on international voyages, depending on their class and navigation environment. They are relevant for all ships operating in the Area, including vessels that may be loading and transporting minerals. Annex I of this convention provides rules for the determination of the freeboard for safe loading, taking into consideration subdivisions in the hull structure and maintaining stability in damage conditions.¹⁶³ The rules include seasonal load lines to factor the different navigation conditions of various geographical regions. This means that activities in the Area in different marine regions will have their own load lines under **Annex II** of this convention. The load lines are marked at different points on the hull exterior. **Annex III** provides additional safety measures for personnel on board.

Activities in the Area will involve a range of vessels, from conventional ships such as OSVs and bulk carriers, to a range of installations, including floating platforms, floating and submerged structures, submersibles and craft operating on the seabed. In addition to standards for conventional ships, IMO has adopted codes under SOLAS containing standards for MODUs, special purpose ships and OSVs. It may be recalled that Article 147(2)(a) of UNCLOS provides that 'installations shall be erected, emplaced and removed solely in accordance with this Part and subject to the rules, regulations and procedures of the Authority', but the provision does not expressly extend ISA's mandate to regulate construction and equipment requirements. It is useful to point out that IMO has adopted the non-mandatory MODU Code containing recommendations on design criteria, construction standards and safety measures to protect personnel on board and the environment to provide an equivalent level of safety to that provided under SOLAS and the LL Convention.¹⁶⁴ Similarly, the Code of Safety for Special Purpose Ships (SPS Code) provides recommendations for design criteria, construction standards and safety measures for such vessels.¹⁶⁵ The purpose of the code is to provide safety standards for such vessels and personnel operating them that are equivalent to those available in SOLAS. The SPS Code does not apply to MODUs.¹⁶⁶ Also relevant is the Code of Safe Practice for the Carriage of Cargoes and Persons by Offshore Supply Vessels (OSV Code), which applies to vessels 'used for the transportation of stores, materials, equipment or personnel to, from and

¹⁶¹ Ibid chap 1, reg 4.

¹⁶² SAR Convention (n 20) annex, chap V.

¹⁶³ See International Code on Intact Stability, adopted by Maritime Safety Committee Resolution MSC.267(85) on 4 December 2008.

¹⁶⁴ MODU Code (n 64) preamble.

¹⁶⁵ SPS Code (n 63) chap 1, reg 1.1

¹⁶⁶ Ibid reg 1.2.2.

between offshore installations.¹⁶⁷ Offshore installation is defined as 'a structure which is, or is to be, or has been used, while standing or stationed in water, or on the foreshore or other land intermittently covered with water.'¹⁶⁸ The purpose is to provide operators and contractors with 'an international standard to avoid or reduce to a minimum the hazards which affect offshore supply vessels' in their operations and should be considered in implementing a safety management system under the ISM Code.¹⁶⁹ The OSV Code also recommends that vessels fitted with dynamic positioning equipment comply with the guidelines.¹⁷⁰

In summary, IMO standards cover many of the human safety considerations in regulating activities in the Area and will nourish the various exploration and Draft exploitation regulations. They are updated in response to technological change and lessons learned on a regular basis. It is efficient and makes functional sense for ISA to continue to employ rules of reference in its regulations, as it has in the Draft

exploitation regulations, and standard clauses to IMO standards on protection of human life.

5.2.2 Navigation safety

Navigation safety is addressed by SOLAS Chapter V and COLREGS, each containing numerous regulations and rules that are relevant for operations in the Area. There will be substantial maritime traffic supporting activities in the Area. Chapter V includes several undertakings by States,¹⁷¹ ships' routeing and reporting, safe manning and equipment,¹⁷² and rules for safe navigation.¹⁷³ Regulation 10 contains recommendations for the use of ship routeing systems by all ships, and may be voluntary or mandatory.¹⁷⁴ Routeing is particularly valuable to help organize maritime traffic and indeed has been important for marine spatial planning and area management in regions such as the North Sea, where shipping, offshore oil and gas, cables and pipelines, wind farms, fishing and other ocean users interact.

167 Code of Safe Practice for the Carriage of Cargoes and Persons by Offshore Supply Vessels, Assembly Resolution A.863(20) adopted 27 November 1997 (OSV Code), reg 1.1.3.

168 Ibid reg 1.1.5.

169 Ibid foreword.

170 Ibid reg 1.1.5.

171 SOLAS (n 19) Chap V, reg 5: Meteorological services and warnings, consisting of an undertaking by governments to encourage their ships to collect meteorological data (e.g., storm warnings) and for its dissemination to mariners, including in high seas areas. Reg 7: SAR services, consisting of an undertaking by governments to ensure that necessary arrangements are made for distress communication and co-ordination in their area of responsibility and for the rescue of persons in distress at sea around their coasts.

172 Ibid: reg 12: shipborne navigational equipment, prescribing various navigational equipment, such as compasses, radar, echo-sounders, radio equipment, etc.; reg 14: ships' manning, requiring that all ships are sufficiently and efficiently manned to maintain safety of life at sea; reg 16: maintenance of equipment, to ensure continued performance; reg 18: approval, surveys and performance standards of navigational systems and equipment and voyage data recorder; reg 19: carriage requirements for shipborne navigational systems and equipment; reg 19-1: long-range identification and tracking of ships, which applies, among other, to cargo ships and MODUs, prescribing AIS and providing for entitlements to access AIS data; reg 20: voyage data recorder, to assist casualty investigations.

173 Ibid: reg 21: International Code of Signals and IAMSAR Manual, essential for signalling and SAR; reg 22: navigation bridge visibility; reg 24: use of heading and/or track control systems; reg 25: operation of steering gear; reg 27: nautical charts and nautical publications; reg 28: records of navigational activities and daily reporting; reg 29: life-saving signals to be used by ships, aircraft or persons in distress; reg 31: danger messages; reg 32: information required in danger messages; reg 33: distress situations, obligations and procedures; reg 34: safe navigation and avoidance of dangerous situations; and reg 34-1: master's discretion.

174 General Provisions on Ships' Routeing, adopted by Assembly Resolution A.572(14) on 20 November 1985, as amended.

IMO is recognized as the only international body responsible for developing guidelines, criteria and regulations on an international level for ships' routing systems. States refer proposals for routing measures to IMO for adoption. Once adopted, States have an obligation to adhere to IMO designated routing measures and their enforcement has to comply with international law, including UNCLOS. Also, potentially relevant is Regulation 11 concerning ship reporting systems (other than for SAR), intended for use by all ships, or certain classes of ships. As in routing, IMO is recognized as the only international body for developing guidelines, criteria and regulations on an international level for ship reporting systems. States refer proposals to IMO for adoption. The master is required to comply with reporting requirements. Enforcement must comply with international law, including UNCLOS. Ship reporting could be a useful information management and dissemination tool in relation to activities in the Area.

The COLREGS apply to all vessels navigating on the surface of the high seas and connected navigable waters.¹⁷⁵ They provide the rules of the road, which are central to good seamanship and maritime safety generally. They are intended for vessels to maintain safe distances and avoid close quarters situations by prescribing actions to avoid collisions. They also prescribe the use of standardized signs and lights to identify vessels by day and night. The rules provide navigation privileges, to define the relationship between stand-on and give-way vessels. They include the term 'vessel restricted in her ability to manoeuvre', defined to mean 'a vessel which from the nature of her work is restricted in her ability to manoeuvre as required by these Rules and therefore is

unable to keep out of the way of another vessel.'¹⁷⁶ Other vessels are required to keep out of the way of such vessels. Examples are provided to illustrate the application of the rule and therefore are not exclusive. Although vessels engaged in mining activities are not expressly mentioned, other functions performed by vessels conducting activities in the Area are included, such as 'a vessel engaged in dredging, surveying or underwater operations' and 'a vessel engaged in a towing operation such as severely restricts the towing vessel and her tow in their ability to deviate from their course'.¹⁷⁷

In summary, similar observations on navigation safety can be made as in the case of protection of human life. IMO rules for navigation safety not only protect human life, they also promote orderly use of marine spaces. Routing measures could be useful area-based management tools. Moreover, the navigational rules can help minimize disruptions to mining activities by enabling vessels restricted in their ability to manoeuvre to remain stand-on vessels.

5.2.3 Maritime security

As indicated at the outset in this report, maritime security is not addressed in-depth and should be the subject of detailed treatment. The discussion in this section merely serves to highlight possible security aspects of seabed mining that could be considered further in a future study.

Maritime safety and security at sea may be closely related and in fact have been treated as such by IMO in the SUA Convention and SUA Protocol. In addition to the need to ensure that the ship is a safe working space at sea and is navigated with

175 COLREGS (n 18) rule 1(a).

176 Ibid rule 3(g).

177 Ibid.

due regard to the safety of other ships in its vicinity, there is the additional concern that ships may be exposed to security concerns such as armed robbery, piracy and terrorist activity. Ships may carry weapons and may themselves be weaponized. The 1988 SUA Convention and SUA Protocol were specifically designed to address unlawful threats to the safety of navigation of ships and fixed platforms on the continental shelf and, among other, placed a duty on flag States to legislate a range of offences. The SUA Convention defined ship broadly to include 'a vessel of any type whatsoever not permanently attached to the sea-bed, including dynamically supported craft, submersibles, or any other floating craft.'¹⁷⁸

The 1988 Protocol extended protection to fixed platforms defined to mean 'an artificial island, installation or structure permanently attached to the seabed for the purpose of exploration or exploitation of resources or for other economic purposes.'¹⁷⁹ The range of threats addressed include seizure or control over a ship or fixed platform by force or intimidation, acts of violence on board that endanger safety, destruction of the ship or platform, and so on.¹⁸⁰ For ships, the SUA Convention applies 'if the ship is navigating or is scheduled to navigate into, through or from waters beyond the outer limit of the territorial sea of a single State, or the lateral limits of its territorial sea with adjacent States.'¹⁸¹ The SUA Protocol applies to fixed platforms on the continental shelf. In 2005 the two instruments were amended to broaden their application to a wider range of threats, including the transportation of weapons of mass destruction (biological, chemical, nuclear).¹⁸²

The security of vessels, installations and structures engaged in or supporting activities in the Area could be a concern. These operations will take place in remote areas and far from immediate protection or assistance from policing authorities. Interestingly, UNCLOS does not expressly use the term 'security' in setting out ISA's regulatory powers. As observed earlier, in Article 146 of UNCLOS, ISA has a subsidiary regulatory power with respect to protection of human life and this could be interpreted to include concern over the security of personnel involved in activities in the Area. The Draft exploitation regulations establish a requirement for a Health, Safety and Maritime Security Plan, the required content of which has as yet to be developed.¹⁸³

ISA's regulation of security aspects, as an integral part of protection of human life, could be interpreted as subsidiary to the regulatory function performed by IMO through the SUA instruments. The SUA Convention is likely applicable to vessels engaged in activities in the Area and flag States that are Parties to SUA have jurisdictional responsibilities. The implications for sponsoring States merit study. However, the SUA Protocol's limited geographical scope of application on the continental shelf leaves a gap for activities in the Area. This is an area for possible cooperation between ISA and IMO to explore options for extending the protection provided by the SUA Protocol to fixed platforms used in seabed mining in the Area.

178 SUA Convention (n 21) art 1.

179 SUA 1988 Protocol (n 22) art 1(3).

180 SUA Convention (n 21) art 3; SUA 1988 Protocol (n 22) art 2.

181 SUA Convention (n 21) art 4(1).

182 SUA Convention as amended by Protocol of 2005 (n 21) art 4(4) amending art 3(2) and introducing art 3bis. Offences were extended to apply *mutatis mutandis* to the SUA Protocol as amended by Protocol of 2005.

183 Draft Exploitation Regulations (n 13) annex VI.

5.3 Marine environment protection

5.3.1 Operational vessel-source pollution

As observed earlier, Article 145 of UNCLOS, expressly and exclusively empowers ISA to regulate for the prevention, reduction and control of pollution and other hazards to the marine environment from activities in the Area. The provision concerns, *inter alia*, pollution prevention by referring to 'harmful effects of drilling, dredging, excavation, disposal of waste, construction and operation or maintenance of installations, pipelines and other devices related to such activities.' These activities may entail the use of ships as platforms for such activities. In such cases, the protection and preservation of the marine environment may necessitate the regulation of harmful wastes and emissions as a direct result of the operation of ships (e.g., sewage, garbage and air emissions), as distinct from harmful effects produced from the activities in the Area as described in Article 145 and as understood by the *Seabed Advisory Opinion*. The need for pollution prevention from mining and from shipping in the combined or coordinated operation provides a complementary interface of competencies of ISA and IMO.

As seen earlier, Article 94 of UNCLOS requires the flag State to adopt measures with respect to its ships to ensure that

the master and crew are conversant and compliant with applicable international regulations concerning the prevention, reduction and control of pollution, and in doing so must comply with generally accepted international regulations, procedures and practices. This rule of reference implicitly refers to maritime regulations concerning the management, recording and reporting of waste handling on board ships and other operations that produce environmental impacts, such as MARPOL and BWM Conventions.

MARPOL regulates the discharge of harmful substances from ships,¹⁸⁴ but expressly excludes dumping within the meaning of the London Convention and the 'release of harmful substances directly arising from the exploration, exploitation and associated off-shore processing of sea-bed mineral resources.'¹⁸⁵ As will be seen later, dumping is addressed in a separate instrument. MARPOL defines 'ship' broadly to include '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,'¹⁸⁶ unless the flag State provides an exemption as may be permissible under an annex of MARPOL.¹⁸⁷ This definition captures some of the vessels likely to be employed in supporting activities in the Area.

The precise operational wastes and emissions produced by ships supporting seabed mining that will be governed

184 Harmful substance is defined as 'any substance which, if introduced into the sea, is liable to create hazards to human health, to harm living resources and marine life, to damage amenities or to interfere with other legitimate uses of the sea, and includes any substance subject to control by the present Convention.' MARPOL (n 25) art 2(2). 'Discharge' means '... means any release howsoever caused from a ship and includes any escape, disposal, spilling, leaking, pumping, emitting or emptying.' Ibid art 2(3)(a).

185 Ibid art 2(3)(b)(i) and (ii).

186 Ibid art 2(4).

187 Ibid annex I, reg 3.1: 'Any ship such as hydrofoil, air-cushion vehicle, near-surface craft and submarine craft etc. whose constructional features are such as to render the application of any of the provisions of chapters 3 and 4 of this Annex or section 1.2 of part II-A of the Polar Code relating to construction and equipment unreasonable or impracticable may be exempted by the Administration from such provisions, provided that the construction and equipment of that ship provides equivalent protection against pollution by oil, having regard to the service for which it is intended.'

by maritime regulation remains to be ascertained and will depend on the specific vessels, technologies and operations conducted at sea. In general, ships are subject to detailed regulation under the six MARPOL annexes concerning oil (I), noxious liquid substances carried in bulk (II), harmful substances carried in packaged form (III), sewage (IV), garbage (V) and air emissions (VI). The annexes apply to all ships, unless the regulations provide otherwise.¹⁸⁸ **Annex IV** applies to ships on the basis of tonnage and passenger thresholds.¹⁸⁹ The wastes addressed are defined in some detail and need not be discussed in depth in this report. Suffice to point out that standards are set for a broad range of wastes that include those banned from release anywhere into the marine environment (e.g., plastics under **Annex V**), or that may be released under prescribed limited concentration (e.g., oily ballast water), or that are permitted to be released at a distance from the nearest land following treatment (e.g., sewage), or that are not addressed by regulation but for which guidelines are provided (e.g., grey water). As mentioned, the definition of ship is broad to include installations with the effect of extending the application of most pollution prevention rules to such vessels. There are also dedicated rules for garbage from fixed or floating platforms.¹⁹⁰

Annex VI on the prevention of air pollution requires more detailed consideration to explain how the interface between ISA and IMO competencies can be expected to occur. In general, **Annex VI** applies to all ships, unless otherwise stated in specific regulations.¹⁹¹ However, there is a range of emissions from seabed mineral activities that are excluded as follows:

Reg 3.1 Emissions directly arising from the exploration, exploitation and associated offshore processing of sea-bed mineral resources are, consistent with article 2(3)(b)(ii) of the present Convention, exempt from the provisions of this Annex. Such emissions include the following:

3.1.1 emissions resulting from the incineration of substances that are solely and directly the result of exploration, exploitation and associated offshore processing of sea-bed mineral resources, including but not limited to the flaring of hydrocarbons and the burning of cuttings, muds, and/or stimulation fluids during well completion and testing operations, and flaring arising from upset conditions;

3.1.2 the release of gases and volatile compounds entrained in drilling fluids and cuttings;

¹⁸⁸ For example MARPOL (n 25) annex I, reg 2; annex II, reg 2.1; annex V, reg 2.

¹⁸⁹ Ibid annex IV, reg 2.1: 'The provisions of this Annex shall apply to the following ships engaged in international voyages:

- .1 new ships of 400 gross tonnage and above; and
- .2 new ships of less than 400 gross tonnage which are certified to carry more than 15 persons; and
- .3 existing ships of 400 gross tonnage and above, five years after the date of entry into force of this Annex; and
- .4 existing ships of less than 400 gross tonnage which are certified to carry more than 15 persons, five years after the date of entry into force of this Annex.'

¹⁹⁰ Ibid annex V, reg 5:

1 Subject to the provisions of paragraph 2 of this regulation, the discharge into the sea of any garbage is prohibited from fixed or floating platforms and from all other ships when alongside or within 500 m of such platforms.

2 Food wastes may be discharged into the sea from fixed or floating platforms located more than 12 nautical miles from the nearest land and from all other ships when alongside or within 500 m of such platforms, but only when the wastes have been passed through a comminuter or grinder. Such comminuted or ground food wastes shall be capable of passing through a screen with openings no greater than 25 mm.

¹⁹¹ Ibid annex VI, chap I, reg 1.

3.1.3 emissions associated solely and directly with the treatment, handling, or storage of sea-bed minerals; and

3.1.4 emissions from marine diesel engines that are solely dedicated to the exploration, exploitation and associated offshore processing of sea-bed mineral resources.

Reg 3.2 The requirements of regulation 18 of this Annex shall not apply to the use of hydrocarbons which are produced and subsequently used on site as fuel, when approved by the Administration.
[emphasis added]

The regulation of emissions under this provision may require close coordination between ISA and IMO, especially with respect to provisions 3 and 4 which may involve the use of multipurpose equipment to support both ship operations and activities more directly related to exploration and exploitation at different times. The range of emitted substances currently regulated by **Annex VI** include ozone depleting substances, nitrogen oxides, sulphur oxides, particulate matter and volatile organic compounds. Shipboard incineration is also addressed. Recently, IMO adopted the Initial Strategy for the Reduction of Greenhouse Emissions from Ships,¹⁹² which will be revised and finalized for adoption in 2023 and in due course will enhance existing energy efficiency and energy use requirements which could have implications for ships supporting activities in the Area. At this time, the energy efficiency regulations do not apply to platforms and drilling rigs,¹⁹³ but most other types of ships of 400 gross tons and above are captured.

In summary, the MARPOL annexes regulate a broad range of operational wastes, discharges and emissions relevant for activities in the Area. The regulation of air emissions from activities in the Area requires careful consideration to determine what is desirable. Should higher standards for mining than are currently available under **Annex VI** be necessary, it is likely that IMO would need to address such concerns. The *Seabed Advisory Opinion* did not include air emissions from activities in the Area in considering disposal, dumping and discharge of sediment, wastes or other effluents.

5.3.2 Antifouling systems

The AFS Convention regulates the use of antifouling systems by ships. Anti-fouling system is defined as 'a coating, paint, surface treatment, surface, or device that is used on a ship to control or prevent attachment of unwanted organisms.'¹⁹⁴ The definition of ship in this instrument is broad to include a vessel of any type whatsoever operating in the marine environment and includes hydrofoil boats, air-cushion vehicles, submersibles, floating craft, fixed or floating platforms, floating storage units (FSUs) and floating production storage and off-loading units (FPSOs),¹⁹⁵ effectively capturing a wide range of vessels supporting activities in the Area. However, only ships of 400 gross tonnage and over engaged in international voyages, but excluding fixed or floating platforms, FSUs, and FPSOs, are required to undergo an initial survey and subsequent surveys when anti-fouling systems are changed or replaced.¹⁹⁶ International voyage is defined as 'a voyage by a ship entitled to

¹⁹² The IMO GHG Strategy was adopted by Resolution MEPC.304/72 annexed in the Report of the MEPC on its 72nd Session, IMO Doc MEPC 72/17/Add.1 (18 May 2018), annex 11.

¹⁹³ MARPOL (n 25) annex VI, chap IV, reg 19(2.2).

¹⁹⁴ AFS Convention (n 26) art 2(2).

¹⁹⁵ Ibid art 2(9).

¹⁹⁶ Ibid, Annex IV, reg 1(1).

fly the flag of one State to or from a port, shipyard, or offshore terminal under the jurisdiction of another State.¹⁹⁷

As in the case of other IMO instruments whose application, whether in whole or in part, is confined to particular classes and tonnage of ships on international voyages, the application of survey requirements would have to be extended by the flag State or perhaps required by the sponsoring State, possibly as a requirement under the mining regulations. At this time, it is unclear the extent to which, if at all, the mining regulations' rules of reference serve to extend the application of this (and other international standards) to all ships engaged in activities in the Area.

5.3.3 Ballast waters

The BWM Convention is aimed at preventing, minimizing and ultimately eliminating the transfer of harmful aquatic organisms and pathogens through the control and management of ships' ballast water and sediments.¹⁹⁸ States Parties 'shall endeavour to co-operate under the auspices of IMO to address threats and risks to sensitive, vulnerable or threatened marine ecosystems and biodiversity in areas beyond the limits of national jurisdiction in relation to Ballast Water Management'.¹⁹⁹ The concern is the uptake of ballast water from one environment and discharge into another, potentially transferring alien or exotic species.²⁰⁰ It would be useful to ascertain the extent to which ballast water exchange in the Area poses threats as in

other marine regions.

As other IMO conventions, the BWM captures a range of vessels supporting activities in the Area by defining 'ship' broadly as 'a vessel of any type whatsoever operating in the aquatic environment and includes submersibles, floating craft, floating platforms, FSUs and FPSOs'.²⁰¹ It applies to vessels designed or constructed to carry ballast waters.

In summary, should ballast water exchange in the Area be of concern, the BWM Convention is potentially valuable for minimizing the problems posed elsewhere. If it is desirable to require all ships supporting activities in the Area to be made subject to such a standard, this could be a matter for discussion with IMO considering that it could be deemed to be a high seas navigation issue. The *Seabed Advisory Opinion* was mindful to avoid unnecessary conflict in regulating activities in the Area in a manner that could create conflict with UNCLOS provisions concerning navigation on the high seas.²⁰²

5.3.4 Dumping/disposal of wastes

As observed earlier, in Article 145 of UNCLOS, ISA is expressly named and allocated the responsibility to adopt appropriate rules, regulations and procedures for the effective protection of the marine environment from harmful effects of activities in the Area. These include:

197 Ibid art 2(5).

198 BWM Convention (n 27) art 1(1). This is the core obligation of States Parties. 'Harmful aquatic organisms and pathogens are defined as 'aquatic organisms or pathogens which, if introduced into the sea including estuaries, or into fresh water courses, may create hazards to the environment, human health, property or resources, impair biological diversity or interfere with other legitimate uses of such areas.' Ibid art 1(8).

199 Ibid art 2(9).

200 Ibid annex, reg A3(4) contains an exception with respect to 'the uptake and subsequent discharge on the high seas of the same Ballast Water and Sediments.'

201 Ibid art 1(12).

202 *Seabed Advisory Opinion* (n 3) para 96.

(a) 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;

(b) the protection and conservation of the natural resources of the Area and the prevention of damage to the flora and fauna of the marine environment. **(emphasis added)**

Consistently, in setting out ISA's regulatory scope with respect to the protection of the marine environment, UNCLOS Annex III provides:

*Rules, regulations and procedures shall be drawn up in order to secure effective protection of the marine environment from harmful effects directly resulting from activities in the Area or from shipboard processing immediately above a mine site of minerals derived from that mine site, taking into account the extent to which such harmful effects may directly result from drilling, dredging, coring and excavation and **from disposal, dumping and discharge into the marine environment of sediment, wastes or other effluents.***²⁰³ **(emphasis added)**

Clearly, ISA is the one and only competent international organization in these provisions. This competence is further supported by Article 209 of UNCLOS, although placed in Part XII (rather than in Part XI on the Area), which provides that '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' and in Article 215 of UNCLOS with respect to their enforcement, also as governed by Part XI. **(emphasis added)**

The phrase 'disposal of waste' in Article 145(a) of UNCLOS is comprehended in the Article 1 definition of dumping which includes '**any deliberate disposal of wastes** or other matter from vessels, ... platforms or other man-made structures at sea' **(emphasis added)**.²⁰⁴ Article 1 of UNCLOS excludes disposal of wastes from the operations of vessels, platforms and man-made structures, but includes 'wastes or other matter transported by or to vessels, ... platforms or other man-made structures at sea, operating for the purpose of disposal of such matter or derived from the treatment of such wastes or other matter on such vessels, ... platforms or structures.'²⁰⁵ Although the Article 1 general definition of dumping seems to include the disposal of waste generally, the drafting of Article 145 of UNCLOS is unambiguous in allocating regulatory power over disposal of wastes from activities in the Area to ISA. The *Seabed Advisory Opinion* confirms this interpretation.

In the careful and in-depth explanation of what is included by activities in the Area, the Seabed Disputes Chamber considered wastes that might be generated during exploration and exploitation. Interestingly, it did not consider the deliberate disposal of platforms and man-made structures following decommissioning, possibly because this action is not captured by the notions of exploration and exploitation. ISA's regulatory authority in Article 145(a) of UNCLOS on this matter is limited to 'construction and operation or maintenance of installations'. The potential logical conse-

203 UNCLOS (n 1), annex III, art 14(2)(f).

204 Ibid art 1(5)(a)(i).

205 Ibid art 1(5)(b)(i).

quence is that ‘any deliberate disposal of vessels, ... platforms or other man-made structures at sea²⁰⁶ following termination of activities in the Area may well be captured by Article 210 on pollution by dumping, the London Convention and London Protocol. Although the London Convention and Protocol do not apply to the disposal of wastes from or related to the exploration, exploitation and offshore processing of seabed mineral resources, both instruments include disposal of vessels, platforms and other man-made structures at sea in the definition of dumping. The London Protocol definition includes ‘any abandonment or toppling at site of platforms or other man-made structures at sea, for the sole purpose of deliberate disposal.’²⁰⁷

In recent years States Parties to the London Convention have considered alternatives to at sea disposal²⁰⁸ and since the adoption of the Hong Kong Convention, although not yet in force,²⁰⁹ the expectation is that efforts will be invested into safe and environmentally sustainable ship recycling on land. Also, IMO has developed guidelines for the removal of offshore installations and structures, but they do not appear to apply to areas beyond national jurisdiction.²¹⁰ The London Convention and Protocol regime could provide guidance on how ISA might regulate waste disposal from activities in the Area. The London Protocol provides a framework for waste assessment that includes a waste

prevention audit, consideration of waste management options, chemical-physical-biological processes, dump site selection, assessment of potential effects, monitoring and permitting.²¹¹ Guidelines for waste assessment have been adopted.²¹²

In summary, ISA enjoys exclusive authority to regulate the disposal of wastes from activities in the Area under Article 145 of UNCLOS. Although construction and operation or maintenance of installations fall within ISA’s regulatory power, the situation is less clear with respect to disposal of vessels, platforms and other man-made structures at sea. Rather, the disposal of vessels, platforms and structures at sea (to the extent that it is to occur at all) appears to fall under the general definition of dumping in the UNCLOS, and the London Convention and Protocol. Finally, waste assessment guidelines developed under the London Convention and Protocol could serve as a useful model for the development of regulations for the disposal of waste generated by activities in the Area.

5.4 Seafarer training standards

Another area of possible interface between ISA and IMO competencies is the training of personnel on board ships and installations supporting activities in the Area. Although related to human safety,

206 Ibid art 1(5)(a)(ii).

207 London Protocol (n 24) art 1(4)(1)(4).

208 London Convention Special Meeting Resolution LC.56(SM) on Sea Disposal of Vessels.

209 Hong Kong Convention (n 28) Article 2(7) defines ‘ship’ as ‘a vessel of any type whatsoever operating or having operated in the marine environment and includes submersibles, floating craft, floating platforms, self elevating platforms, Floating Storage Units (FSUs), and Floating Production Storage and Offloading Units (FPSOs), including a vessel stripped of equipment or being towed.’

210 Guidelines and Standards for the Removal of Offshore Installations and Structures on the Continental Shelf and in the Exclusive Economic Zone, Assembly Resolution A.672(16) adopted on 19 October 1989.

211 London Protocol (n 24) annex 2.

212 *Waste Assessment Guidelines under the London Convention and Protocol* (IMO, 2014). The Guidelines provide for eight distinct steps: (1) waste characterization; (2) waste prevention audit and management options; (3) action list; (4) selection of a dump site; (5) impact assessment; (6) permitting system; (7) permit conditions; and (8) monitoring. These include guidelines for dredged materials, which could be relevant depending on technologies used to exploit resources of the Area. See also Revised Specific Guidelines for the Assessment of Vessels, adopted by LC 38/16 (2016).

this topic should be considered separately as it relates to human competence in operations and seaworthiness of the vessel in the interests of safety, security and environment protection. The STCW Convention and accompanying STCW Code are the principal IMO instruments for standards of training and certification of seafarers, with a focus on the master, officers and engine room. They apply to seafarers on board sea-going vessels to ensure they are qualified and fit for their duties from the perspectives of safety of life, property safety and marine environment protection.²¹³ Standards are set out for the master and deck department, engine department, radio communication and radio personnel, and general provisions for firefighting, occupational safety, security, medical care and survival.

In summary, IMO training regulations for seafarers cover a range of workers, but not all personnel likely to be engaged in activities in the Area. The LTC is empowered to determine whether the proposed plans of work for exploration provide for effective protection of human health and safety and this could be understood to include the full range of personnel working at sea.²¹⁴ ISA's supplementary power under Article 146 of UNCLOS could be used in a complementary manner to address the non-seafarer competencies needed on board ships and installations engaged in activities in the Area.²¹⁵

5.5 Accommodation of activities in the Area

Activities in the Area are 'to be carried with reasonable regard for other activities in the marine environment.'²¹⁶ Article 147 of UNCLOS concerning accommodation of activities in the Area and in the marine environment is designed to prevent, to the extent possible, and manage conflicts of ocean uses in the Area. More specifically, installations used for activities in the area are subject to certain conditions of which the following are relevant for this report:

(a) such installations shall be erected, emplaced and removed solely in accordance with this Part and subject to the rules, regulations and procedures of the Authority. Due notice must be given of the erection, emplacement and removal of such installations, and permanent means for giving warning of their presence must be maintained;
(b) such installations may not be established where interference may be caused to the use of recognized sea lanes essential to international navigation or in areas of intense fishing activity;
(c) safety zones shall be established around such installations with appropriate markings to ensure the safety of both navigation and the installations. The configuration and location of such safety zones shall not be such as to form a belt impeding the lawful access of shipping to particular maritime zones or navigation along international sea lanes; ...²¹⁷

A few observations are to be made. While referring to installations in the Area, Article 147 of UNCLOS does not mention artificial islands and structures, as in Article 60 of UNCLOS with respect to the EEZ and continental shelf. The lack of reference

213 STCW Convention (n 29) art 1(2).

214 Nodules Regulations (n 10) reg 21(4)(a); Sulphides Regulations (n 11) reg 23(4)(a); Cobalt Regulations (n 12) reg 23(4)(a).

215 Draft Exploitation Regulations (n 13) draft reg 32(5) provides that the contractor shall ensure that: 'All of its personnel, before assuming their duties, have the necessary experience, training and qualifications and are able to conduct their duties safely, competently and in compliance with the Rules of the Authority and the terms of the exploitation contract.'

216 UNCLOS (n 1) art 147(1).

217 Ibid art 147(2).

to artificial islands is understandable as they are likely unrealistic with respect to activities in the Area. However, structures for use in activities in the Area are realistic. Logically, structures used in activities in the Area ought to be regulated by ISA, but Article 147 of UNCLOS leaves open the possibility that such structures might be subject to other international standards, for example with respect to marking.

Further, certain aspects of coastal state regulation of installations and structures in the EEZ and on the continental shelf are guided by various international standards, such as the discharge of certain wastes addressed by MARPOL. The removal of abandoned or disused installations and structures is to take 'into account any generally accepted international standards established in this regard by the competent international organization.'²¹⁸ Similarly, the breadth of safety zones around the artificial islands, installations and structures is to take 'into account applicable international standards' and the breadth shall not exceed 500 metres unless 'authorized by generally accepted international standards or as recommended by the competent international organization.'²¹⁹ Consistently, all ships are required to respect the safety zones and to comply with 'generally accepted international standards regarding navigation in the vicinity ...'²²⁰

It is also possible that installations in the Area, in addition to safety zones, may require routing measures for their safety and for the safety of other users of the marine environment. Other users of the marine environment have a counterpart duty of due regard to activities in the Area.²²¹ The Draft exploitation regulations provide that

ISA, 'in conjunction with member States, shall take measures to ensure that other activities in the Marine Environment shall be conducted with reasonable regard for the activities of Contractors in the Area.'²²² If routing measures for maritime safety in the Area are needed, such as areas to be avoided, they will have to be sought from IMO under the authority of SOLAS Chapter V, as it is the only organization responsible for designating such measures. Routing measures are typically requested by coastal States in their capacity as IMO Member States and as States Parties to SOLAS. It is arguable that sponsoring States, by analogy to coastal States, and acting in their capacity as States Parties to SOLAS, should submit routing proposals to IMO. Since such measures would be directed to international shipping on the high seas, if and when adopted they would likely be in the form of recommendations. Sponsoring States do not enjoy jurisdiction over international shipping on the high seas. Flag States enjoy exclusive jurisdiction and control over their ships on the high seas. An interesting variation arises where the activities in the Area are conducted by the Enterprise as an organ of ISA, although initially through joint ventures.²²³ Although ISA has a cooperation agreement with IMO, reliance on the State sponsoring the joint venture would be likely necessary.

Ideally, international rules and standards for the safety of installations and structures and navigation in their vicinity should be uniform and for this purpose it makes sense for ISA and IMO to work together, as appropriate. There may be a range of novel structures and machinery (e.g., excavators) employed in activities in the Area and that may require dedicated standards and assistance from IMO. IMO guidelines for

218 Ibid at art 60(3).

219 Ibid at art 60(5).

220 Ibid at art 60(6).

221 Ibid art 147(3).

222 Draft Exploitation Regulations (n 13) draft reg 31(2).

223 Implementation Agreement (n 2), annex, section 2.2.

the removal of offshore installations and structures, although applicable to the continental shelf and in the EEZ, could assist ISA in discharging its responsibilities under Article 147 of UNCLOS.

5.6 Liability and compensation for pollution of the marine environment

As observed earlier, ISA has extensive regulatory power for the prevention of pollution of the marine environment from activities in the Area and this includes the development of a responsibility and liability regime. The discussion does not discuss the current or proposed environmental regulations in the exploration regulations and Draft exploitation regulations and the options for a liability regime for the conduct of activities in the Area. The latter task has already been discharged by other studies conducted in cooperation with ISA.²²⁴ Rather, the discussion now explores a possible interface between ISA's and IMO's competencies to develop civil liability regimes respectively for seabed mining and international shipping.

ISA has the power to impose penalties on contractors for serious contractual violations²²⁵ and '[T]he contractor shall have responsibility or liability for any damage arising out of wrongful acts in the conduct of its operations, account being taken of contributory acts or omissions by ISA.'²²⁶ Indeed, ISA itself may be held responsible or liable 'for any damage arising out of wrongful acts in the exercise of its powers and functions ... account being taken of contributory acts or omissions by the contractor.' In both the contractor's and ISA's case, liability

is for the actual amount of damage. This discussion now turns to how ISA's power to develop a responsibility and liability regime interfaces with IMO's analogous power with respect to international shipping. UNCLOS does not contain a provision for IMO's potential responsibility or liability as in the case of ISA in the exercise of its regulatory mandate.

An important provision for the development of responsibility and liability regimes for pollution of the marine environment is Article 235(3) of UNCLOS, which provides:

With the objective of assuring prompt and adequate compensation in respect of all damage caused by pollution of the marine environment, States shall cooperate in the implementation of existing international law and the further development of international law relating to responsibility and liability for the assessment of and compensation for damage and the settlement of related disputes, as well as, where appropriate, development of criteria and procedures for payment of adequate compensation, such as compulsory insurance or compensation funds.

In this provision States Parties have a duty to cooperate in the implementation and further development of the international law on responsibility, liability and compensation of environmental damage, as well as the related structures and procedures. In the absence of express mention, but by necessary implication, it is reasonable to consider that this duty would be discharged through the instrumentality of the organizations having the pertinent remit. The competencies to develop primary environmental rules respectively enjoyed by ISA with respect

²²⁴ For example, see Neil Craik, 'Determining the Standard for Liability for Environmental Harm from Deep Seabed Mining Activities', Liability Issues for Deep Seabed Mining Series, Paper No. 2 (Centre for International Governance Innovation, October 2018).

²²⁵ UNCLOS (n 1) annex III, art 18.

²²⁶ Implementation Agreement (n 2) art 22.

to activities in the Area and IMO with regard to international shipping on the high seas, potentially interface with respect to the development of secondary rules of environmental responsibility and liability. It is interesting to note that the London Convention and Protocol have provisions committing States Parties to develop procedures for the assessment of liability.²²⁷

The guidance provided by the *Seabed Advisory Opinion* with respect to the meaning of 'activities in the Area' serves to define the scope of ISA's commensurate power to develop a responsibility and liability regime within its remit. Its regulatory remit includes:

*Rules, regulations and procedures shall be drawn up in order to secure effective protection of the marine environment from harmful effects directly resulting from activities in the Area or from shipboard processing immediately above a mine site of minerals derived from that mine site, taking into account the extent to which such harmful effects may directly result from drilling, dredging, coring and excavation and from disposal, dumping and discharge into the marine environment of sediment, wastes or other effluents.*²²⁸

ISA has taken tentative steps towards the development of a responsibility and liability regime. The principal approach to channelling liability for damage to the marine environment appears to be based on a contractual approach by including

a provision in the standard clauses for the exploitation contract, holding the contractor liable to ISA:

*... for the actual amount of any damage, including damage to the Marine Environment, arising out of its wrongful acts or omissions, and those of its employees, subcontractors, agents and all persons engaged in working or acting for them in the conduct of its operations under this contract, including the costs of reasonable measures to prevent and limit damage to the Marine Environment, account being taken of any contributory acts or omissions by the Authority or third parties.*²²⁹

The provision also provides for the liability of ISA to the contractor for ISA's wrongful acts. The main text of the Draft exploitation regulations does not contain a provision on environmental liability. The inclusion of an Environmental Performance Guarantee in the Draft exploitation regulations does not concern responsibility or liability for marine environmental damage.²³⁰

In comparison, IMO has a number of liability regimes for international shipping with respect to damage to the marine environment. However, the extent of their application to environmental damage caused on the high seas and the Area needs to be considered. It should be pointed out at the outset that the liability regimes in international shipping are guided by the principles of strict and limited liability as a matter of public policy. The rationale is to encourage ship owning and provision

²²⁷ 'In accordance with the principles of international law regarding State responsibility for damage to the environment of other States or to any other area of the environment, caused by dumping of wastes and other matter of all kinds, the Contracting Parties undertake to develop procedures for the assessment of liability and the settlement of disputes regarding dumping.' London Convention (n 23) art X. 'In accordance with the principles of international law regarding State responsibility for damage to the environment of other States or to any other area of the environment, the Contracting Parties undertake to develop procedures regarding liability arising from the dumping or incineration at sea of wastes or other matter'. London Protocol (n 24) art 15
²²⁸ UNCLOS (n 1) annex III, art 17(2)(f).

²²⁹ Draft Exploitation Regulations (n 13) annex 10, Standard Clauses for Exploitation Contract, section 7.

²³⁰ Ibid draft reg 26.

of vital services to maritime trade and insurability. The liability limits are updated periodically. It is also important to observe that the civil liability conventions are not as widely subscribed by States as IMO's pollution prevention conventions, such as MARPOL.

The LLMC, as amended by the Protocol of 1996, concerns general maritime claims against a designated class of persons. The LLMC establishes the general right to the ship-owner (defined as the owner, charterer, manager and operator of a seagoing ship) and the insurer to limit their liability as a defence against claims for loss damage or injury.²³¹ To deny the ship-owner the right to limitation of liability, a claimant has to cross a high threshold: '[A] person liable shall not be entitled to limit his liability if it is proved that the loss resulted from his personal act or omission, committed with the intent to cause such loss, or recklessly and with knowledge that such loss would probably result.'²³² Prior to the amendment introduced by the Protocol of 1996, the right to limitation could be denied if it was proved that the owner was in actual fault or privity to the loss, and accompanied by low limitation amounts, this produced much litigation. The 1996 amendment was specifically intended to establish an unbreakable right, i.e., subject to a very high standard with the burden to deny entitlement on the claimant, while at the same time raising the limits of liability.²³³ A recent decision

by a Spanish Court took a contrary view and has triggered the inclusion of a new output at a future meeting of the Legal Committee.²³⁴ This is a significant development as it will affect the limitation of liability regimes under the various IMO civil liability conventions.

The claims relevant for environmental liability concern 'the raising, removal, destruction or the rendering harmless of a ship which is sunk, wrecked, stranded or abandoned, including anything that is or has been on board such ship', 'removal, destruction or the rendering harmless of the cargo of the ship,' and 'claims of a person other than the person liable in respect of measures taken in order to avert or minimize loss for which the person liable may limit his liability in accordance with this Convention, and further loss caused by such measures.'²³⁵ The claims do not have geographical limits but oil pollution claims covered by the CLC Convention are not covered²³⁶ and the LLMC does not apply to 'floating platforms constructed for the purpose of exploring or exploiting the natural resources of the sea-bed or the subsoil thereof'.²³⁷ The liability limits are set out in the LLMC on the basis of a tonnage formula.²³⁸ Claims and defences are advanced in the domestic courts of States Parties; however, State Parties may modify the domestic application of the LLMC, for example by limiting its application to specific persons.²³⁹ Once a limitation fund is established by the owner in a domestic

231 Ibid art 1.

232 LLMC (n 30) art 4.

233 See *The Travaux Préparatoires of the LLMC Convention, 1976 and of the Protocol of 1996*, compiled by Francesco Berlingieri (CMI, undated), 121 et seq., online: <file:///C:/Users/chirc/Downloads/Travaux-Preparatoire-of-the-LLMC-Convention-1976-and-of-the-Protocol-of-1996.pdf>.

234 Draft Report of the Legal Committee on the Work of its 106th Session, IMO Doc LEG 106/WP.1/Add.1 (29 March 2019), 7. The LEG Committee approved the 'Proposal to Add a New Output under the Work Programme on "Unified Interpretation on the Test for Breaking the Owner's Right to Limit Liability under the IMO Conventions"' Submitted by Greece, the Marshall Islands, International Chamber of Shipping and International Group of Protection and Indemnity Associations, IMO Doc LEG 106/13 (11 January 2019).

235 LLMC (n 30) art 2.

236 Ibid art 3.

237 Ibid art 15(5)(b).

238 Ibid art 6.

239 Ibid art 15(1).

court, the claims are attached to it. Thus, while some vessels engaged in supporting seabed mining, such as OSVs and bulkers, are covered, the LLMC Convention does not apply to offshore installations and structures engaged in seabed mining. Nor is the contractor a beneficiary of the LLMC, unless the contractor is the ship-owner, charterer, manager or operator of the ship concerned with maritime claims.

Differently from the LLMC, the CLC, IOPC Funds Conventions (including IOPC Supplementary Fund) constitute a system compensation of claims of damage resulting from pollution of the marine environment. The operational Funds at this time are the 1992 Fund and the Supplementary Fund, the latter enjoying a far smaller subscription rate than the former.²⁴⁰ They are significantly more limited in application than the LLMC. The CLC and Funds apply to pollution damage outside the ship from persistent oil carried on tankers as cargo or bunkers during a voyage following carriage in relation to damage suffered by State Parties within the territorial sea and EEZ. However, 'preventive measures, wherever taken, to prevent or minimize such damage', which could be on the high seas, are also compensable.²⁴¹ Liability is strict, with limited defences,²⁴² but subject to limitation of liability,²⁴³ and similarly to the LLMC is virtually unbreakable.²⁴⁴ Similarly to the LLMC, once a fund is established by the owner in a domestic court, the claims attach to it. The range of eligible claims is broad and in addition to reasonable

claims for cleanup, reinstatement costs for environmental damage and preventive measures, may also include loss of income. The CLC ship has to have insurance cover. The IOPC Funds Convention and IOPC Supplementary Fund provide two additional tiers of compensation in the event the limitation fund established under the CLC Convention is inadequate to meet the claims advanced against it.²⁴⁵ Based at IMO, the Funds enjoy legal personality in State Parties. Differently from the CLC Convention, which constitutes the first tier of compensation, i.e., from the ship-owner and insurer, the IOPC Funds consist of the cargo owners' share channelled through contributions levied on specified amounts of imported oil in State Parties.²⁴⁶ The geographical scope and types of claims that may be advanced are similar to the CLC Convention. The levels of compensation are substantially higher in the 1992 Fund and even higher in the IOPC Supplementary Fund. In summary, the liability regimes of the CLC and IOPC Funds (including IOPC Supplementary Fund) providing compensation for damage from pollution to the marine environment do not extend to damage to the marine environment of the high seas and the Area and to the cargoes of minerals extracted from the Area.

Modelled on the CLC Convention and as its title suggests, the Bunker Convention provides a strict liability regime for environmental damage from bunker fuel carried on ships of 1000 tons or more.²⁴⁷ It has the same compulsory

240 At the time of writing 115 States are Parties to both the CLC and IOPC Fund 1992 and 32 States to the Supplementary Fund. IOPC Funds (2019), online: <<https://www.iopcfunds.org/about-us/membership/pdf/>>.

241 CLC Convention (n 31) art II(b).

242 Ibid art III.

243 Ibid art V(1).

244 Ibid art V(2).

245 IOPC Funds Convention (n 33) art 2.

246 Ibid art 10.

247 Bunker Convention (n 35) art 3(1).

insurance requirement,²⁴⁸ geographical scope²⁴⁹ and limited defences²⁵⁰ as the CLC and IOPC Funds Conventions. Thus, preventive measures on the high seas with respect to oil lost there and to mitigate impacts in the EEZ and territorial sea are compensable.²⁵¹ Ship-owners and their insurers continue to enjoy the right to limit liability under any applicable national or international regime such as the LLMC.²⁵² In summary, the Bunker Convention is potentially applicable to ships operating and providing support to activities in the Area, but only insofar as the loss of bunker fuel threatens the EEZ and territorial sea of neighbouring States.

Also modelled on the CLC and IOPC Funds Convention, the HNS Convention and Protocol were adopted to address a range of hazardous and noxious substances not covered by the other compensation regimes, but similarly based on strict,²⁵³ but limited liability.²⁵⁴ The HNS Convention and Protocol are not yet in force. The liability regime anticipates a two-tiered system consisting of a first tier of ship-owner liability based on compulsory insurance²⁵⁵ and second tier consisting of a fund consisting of contributions from

importers of such substances.²⁵⁶ Like the IOPC Funds, the HNS Fund is similarly recognized as a legal person in States Parties.²⁵⁷ The HNS Convention has a similar geographical scope of application with respect to damage to the marine environment as the CLC, IOPC Funds and Bunker Conventions and thus includes preventive measures on the high seas.²⁵⁸

In conclusion, both ISA and IMO enjoy competencies for the development of civil liability regimes for compensation for pollution damage to the marine environment in their respective remits. ISA's remit is limited to activities in the Area, including *in situ* transportation, whereas IMO's concerns international shipping and including *ex situ* transportation of recovered minerals. While the development of a civil liability regime for seabed mining is in its infancy, the civil liability regimes for international shipping are mature, but narrowly applicable to specific threats and generally not to damage of the marine environment on the high seas. However, they could serve to inform the development of a future liability regime for seabed mining.

248 Ibid art 7.

249 Ibid art 2(b).

250 Ibid art 3(3).

251 Ibid.

252 Ibid art 6.

253 HNS Convention & Protocol (n 34) art 7.

254 Ibid art 9.

255 Ibid art 12.

256 Ibid art 16.

257 Ibid art 13.

258 Ibid art 3.

6. FINDINGS, ISSUES AND FURTHER RESEARCH NEEDED

6.1 Findings and issues

The general analysis of pertinent provisions concerning the interface of competencies of ISA and IMO in UNCLOS and ISA regulations in the previous sections are summarized in **Annex 3**. The principal findings are presented below.

• **UNCLOS, Article 1: Definitions**

The *Seabed Advisory Opinion* has impacted on the definitions in this provision (see **Annex 1**). The definition of 'activities in the Area' intended to refer to exploration and exploitation activities has been clarified in some depth and excludes processing and transportation of minerals *ex situ*. The reference to 'disposal of wastes' in the definition of 'dumping' must be read against the allocation of this power to ISA in Article 145 of UNCLOS.

The definition of ISA's regulatory power over 'disposal of wastes' from activities in the Area does not include the disposal of vessels, platforms and other structures in the Area. Disposal of these is governed by the London Convention and Protocol. Recycling of ships will be governed by the Hong Kong Convention when this instrument enters into force.

• **UNCLOS, Article 94: Duties of the flag State**

Ships used as platforms for activities in the Area and on the high seas are subject to the exclusive jurisdiction and control

of the flag State. That jurisdiction has to be exercised with reference to IMO conventions concerning maritime safety (SOLAS; LL; COLREGS), manning and training (SOLAS; STCW) and environment protection (MARPOL; AFS; BWM).

• **UNCLOS, Article 145: Protection of the marine environment**

The ISA's power to regulate protection of the marine environment from activities in the Area, as defined by the *Seabed Advisory Opinion*, is an exclusive power. The power concerns the regulation of drilling, dredging, excavation, disposal of waste, construction and operation or maintenance of installations, pipelines and other devices related to such activities.

Measures taken by ISA for the protection and preservation of the marine environment will be complemented by IMO regulation with respect to the use of ships to support the above activities in the Area. Several IMO conventions (MARPOL annexes I-V; AFS; BWM; London Convention and Protocol) apply to a range of ship types, including floating platforms, floating and submerged structures, submersibles and craft.

There are possible gaps. A concern with the AFS and BWM Conventions is that they apply to international voyages, possibly necessitating extension of the rules to cabotage that is to vessels supporting activities in the Area whose port of departure and port of return are the same, or if different are located within the same jurisdiction. A range of emissions

from activities in the Area are not covered by Annex VI and the *Seabed Advisory Opinion* did not include air emissions in considering disposal of wastes. However, the regulation of operation of installations (over which it has express power) arguably should include emissions.

- **UNCLOS, Article 146: Protection of human life**

The ISA's regulatory power for the protection of human life is a supplementary power, rather than an exclusive or a primary power. This implies that the lead regulators of this subject-matter are other competent international organizations. Safety of life at sea (defined broadly to include all matters addressed by SOLAS, LL and SAR), as well as maritime security, and seafarer training (STCW) are IMO competencies. Occupational health and safety of seafarers is an ILO competence. There is extensive maritime safety regulation for which IMO has competence which is directly relevant to vessels that may conduct or provide support for activities in the Area, such as several SOLAS chapters and specific codes, e.g., for MODUs and OSVs. On maritime security, while the SUA Convention likely applies to vessels engaged in activities in the Area, the SUA Protocol's focus on fixed platforms on the continental shelf excludes its application to activities in the Area.

The ISA's mandate more narrowly concerns regulation for the protection of human life in relation to resource exploration and exploitation activities in the Area. To date, there appears to be ISA reliance on existing international standards through a rule of reference in the standard clauses of exploration contracts. The Draft exploitation regulations anticipate reliance on IMO and ILO standards on health and safety matters. A concern is that aspects of SOLAS and the LL Convention apply to ships on international voyages, thus necessitating extension to cabotage (where applicable) by the sponsoring State.

A further dimension of the protection of human life is maritime security on board vessels and installations, which is possibly also captured by ISA's subsidiary safety regulatory power. IMO's SUA instruments are potentially relevant, although the application of the SUA Protocol is limited to the continental shelf. Maritime security is an area for possible cooperation between ISA and IMO.

- **UNCLOS, Article 147: Accommodation of activities in the Area and in the marine environment**

IMO has area-based management (routing) and reporting (ship reporting system) tools that could be useful for the accommodation of activities in the Area. IMO is the organization responsible for routing and ship reporting. If these tools are needed for safety, it is likely that the sponsoring State, as an IMO Member State and SOLAS State Party, would have the standing necessary to propose their adoption by IMO. ISA has exclusive regulatory power over the erection, emplacement and removal of installations engaged in activities in the Area. IMO's guidelines for the removal of offshore installations and structures, although applicable to the continental shelf and the EEZ, could be informative for ISA in exercising its regulatory power.

- **UNCLOS, Article 209: Pollution from activities in the Area**

Article 145 of UNCLOS assigns exclusive regulatory responsibility for pollution from activities in the Area to ISA. Article 209(1) reinforces this regulatory role. Article 209(2) places an obligation on States to exercise legislative jurisdiction over their vessels, installations and structures to protect the marine environment from activities in the Area, in a manner that is no less effective than ISA regulations.

Other rules may play a role. Regulation 1(5) of the Nodules, Sulphides and Cobalt Regulations provides that the regulations 'may be supplemented by further rules, regulations and procedures' and that the regulations are subject to UNCLOS, the 1994 Agreement and other rules of international law not incompatible with UNCLOS.

- **UNCLOS, Article 210: Pollution by dumping**

While IMO is the lead organization with respect to dumping in general, ISA enjoys exclusive authority to regulate the disposal of wastes from activities in the Area under Article 145 of UNCLOS. Although construction and operation or maintenance of installations fall within ISA's regulatory power, the situation is less clear with respect to the disposal of vessels, platforms and other man-made structures at sea. The deliberate disposal, abandonment and toppling on site of vessels, platforms and other man-made structures at sea are likely captured by Article 210, the London Convention and Protocol regimes, and possibly other instruments such as the Hong Kong Convention when it enters into force. The London Convention and Protocol regimes have built substantial experience on waste management that could be of value to ISA. In particular, the waste assessment guidelines, now mandatory for London Convention and Protocol States Parties, are likely a useful model to consider in the development of regulations for the disposal of waste generated by activities in the Area.

- **UNCLOS, Article 211: Pollution from vessels**

Rules of reference to IMO's regulations on vessel source pollution are applicable to ships supporting activities in the Area, subject to specific competencies that are exclusive to ISA with respect to the

regulation of activities in the Area. The regulation of the various forms of pollution consequential to the operation of ships generally is the responsibility of IMO. The Draft exploitation regulations subject contractors to IMO regulations with respect to pollution prevention from ships, thus ensuring complementarity.

- **UNCLOS, Article 212: Pollution from or through the atmosphere**

In considering the nature of 'disposal of wastes' in Article 145 of UNCLOS, the *Seabed Advisory Opinion* did not explore the extent to which emissions, as distinct from other discharges, are captured by ISA's environmental regulatory power over activities in the Area. It is conceivable that the reference to 'operation of installations' includes emissions from their operation. In any case, MARPOL Annex VI does not apply to emissions directly arising from the exploration, exploitation and associated offshore processing of seabed mineral resources. It is possible that there is a regulatory gap with respect to air emissions from activities in the Area.

- **UNCLOS, Article 235: Responsibility and liability**

Although their respective competencies are not expressly mentioned in this provision, ISA and IMO enjoy complementary competencies for the development of civil liability regimes concerning pollution of the marine environment, respectively from activities in the Area and international shipping. The ISA's competence is limited to activities in the Area as defined by the *Seabed Advisory Opinion*. This includes in situ transportation of extracted minerals. IMO's competence commences with *ex situ* transportation of recovered minerals. IMO's mature strict liability regimes, although of minimal application to high seas areas, could serve as a model for the development of a liability regime for mining in the Area.

- **UNCLOS, Annex III, Art 17(2)(f) and Annex IV, Article 1: Transportation of minerals *ex situ***

The *Seabed Advisory Opinion* concluded that the transporting on the high seas, processing on land and marketing of minerals recovered from the Area are not part of 'activities in the Area'. Only transportation in situ is included in activities in the Area. The consequence is that IMO rather than ISA enjoys regulatory competence over *ex situ* transportation systems.

- **Nodules, Sulphides and Cobalt Regulations, Regulation 1: Use of terms and scope**

Regulation 1(3): The definitions of exploration and exploitation as defined in the mining regulations have been interpreted and narrowed down by the *Seabed Advisory Opinion* to exclude processing and *ex situ* transportation. The reference to transportation systems suggests regulatory interface with IMO regulations, both for transport using ships in situ and *ex situ*.

Regulation 1(5): The rule of reference in this provision incorporates other regulations (including non-ISA) that may be applicable. The regulations usefully anticipate that on the protection and preservation of the marine environment they may be supplemented by other rules of international law.

- **Draft Exploitation Regulations, Regulation 30: Safety, labour and health standards**

This draft regulation employs rules of references that engage several IMO conventions and codes, as well as the ILO's MLC, including: SOLAS; LL; MARPOL; AFS; BWM; COLREGS; and STCW. The several codes that apply by extension

include BWM Code, ISM Code and STCW Code. The requirement for compliance with national maritime laws serves to emphasize the relevance of domesticated international maritime regulations and covers rules applicable to cabotage where shipping supporting seabed mining is domestic. IMO training regulations for seafarers (STCW Code) cover a range of personnel, but not all workers engaged in activities in the Area. The MLC is potentially applicable. The ISA's supplementary power under UNCLOS Article 146 could be used to address the non-seafarer competencies needed on board ships and installations engaged in activities in the Area.

The future development of guidelines for contractors' safety management systems for seabed mining has a useful precedent in the ISM Code. The ISM Code, a SOLAS instrument, could serve as a model for the development of safety management system for seabed mining. This is another area where IMO experience and expertise could be helpful.

- **Draft Exploitation Regulations, Regulation 31: Reasonable regard for other activities in the marine environment**

It is possible that routing measures could be useful area-based management tools to enable ISA to discharge its obligation in this provision. In this case, ISA in conjunction and likely through its member States (as States Parties to SOLAS), would need to proceed through IMO.

6.2 Further research needed

This report has set out a preliminary roadmap for understanding the respective competencies of ISA and IMO concerning activities in the Area at a high level of generality. While the scope of the report is comprehensive, the potential points of

interface identified are not exhaustive. Several matters concerning the interface of competencies have been identified and likely merit further studies, including:

- Which and how do ISA regulations depend and rely upon or draw from IMO regulations and generally accepted practices? In particular, a comprehensive study of specific IMO regulations and generally accepted practices that will apply side-by-side ISA regulations is likely necessary.
- Determination of what installations and structures employed in activities in the Area may be characterized as 'ships' is necessary to facilitate coordination between the applicable inspection regimes for seabed mining and international shipping.
- Further identification of IMO codes, guidelines and generally accepted practices that could serve to inform, supplement or assist the development of ISA regulations and guidelines would be helpful. There is much that ISA regulatory efforts could learn from IMO's opus. Several examples were given in this report (e.g., London Convention and London Protocol waste assessment guidelines). In addition to those, for example, and while outside the remit of this report, it is conceivable that IMO approach to pollution emergency preparedness and response could be useful for ISA to consider. This could assist the development of the Draft exploitation regulations Annex V Emergency



Response and Contingency Plan requirements.

- The maritime security dimensions of seabed mining and the range of applicable instruments need careful consideration, as this is an area of likely overlapping competence. A study will likely assist development of the Draft exploitation regulations Annex VI Health, Safety and Security Plan requirements.
- Although the work of ILO was outside the remit of this report, a study of the extent to which the range of workers engaged in seabed mining will be captured by the MLC would likely assist ISA in developing expectations for the Draft exploitation regulations Annex VI Health, Safety and Security Plan.

7. CONCLUSION


ISA and IMO competencies are highly complementary as they interface with respect to activities in the Area. As the competent international organization for the regime of the Area, ISA is central to the seabed mining regime and functions as the regulator of resource exploration and exploitation activities. Those activities require the use of a broad range of conventional and emerging technologies, including the use of ships as technological platforms themselves. IMO is central to the regime for international shipping and regulation and is the medium through which States adopt international regulations, rules and standards for maritime safety, vessel-source pollution, security and the development of civil liability and compensation regimes, as well as in the interests of public order in all ocean spaces. IMO's functions are closely tied to the regulation of conventional and emerging maritime technologies. IMO has a mature and comprehensive regulatory framework for all aspects of shipping. Accordingly, ISA's regulatory functions and UNCLOS's frequent use of rules of reference to IMO standards produce a symbiotic relationship.

In understanding how the regulatory mandates of the two organizations interface, it is necessary to appreciate the limits of the respective competencies. The *Seabed Advisory Opinion* has helped significantly in clarifying the contours of 'activities in the Area' as referring to exploration and exploitation of the non-living resources on the seabed and subsoil of the Area and specific actions. The Seabed Disputes Chamber was sensitive to

the need to avoid conflict with the regime of navigation on the high seas. Exploration and exploitation include a range of actions requiring regulation in the interests of safe and environmentally acceptable development, such as drilling, dredging, coring, excavation, lifting minerals to the surface, separating water from minerals, disposal of wastes, onsite transportation and construction and maintenance of offshore infrastructure that includes installations, pipelines and related devices.

In turn, this understanding of activities in the Area helps identify where and how IMO regulation provides supportive and complementary functions for ISA regulations. These include the regulation of ship design and construction, equipment requirements and standards, vessel routing and reporting, collision avoidance, prevention of pollution through operational wastes and emissions, safe manning requirements and crew certification and training, SAR, and so on. IMO regulation is a mixture of prescribed standards (e.g., waste discharges in the marine environment) and goal-based (e.g., construction standards), frequently with intermixed mandatory requirements and recommendations.

The complementarity of the regulatory interface between ISA and IMO is exemplified in the protection and preservation of the marine environment from activities in the Area. The harmful effects produced from the activities in the Area as described in Article 145 and as understood by the *Seabed Advisory Opinion*, require ISA regulatory



intervention through the exploration and exploitation regulations. The ships deployed to support activities in the Area and to export the minerals will in turn produce harmful wastes and emissions as a direct result of their operation (e.g., oil, noxious liquid substances, sewage, garbage and atmospheric releases), which are regulated by MARPOL. Moreover, the disposal of wastes from activities in the Area and the London Convention and Protocol regimes also potentially interface in a complementary manner. The need for pollution prevention from mining and from shipping in the combined or coordinated operation provides a complementary

interface of competencies of ISA and IMO. It is possible that there could be occasional regulatory overlaps, despite the clear general allocation of competencies. More likely, ISA is in a position to benefit from the regulatory experience of IMO and the London Convention and Protocol as it proceeds with the development of exploitation regulations and the subsidiary instruments that will be needed, such as waste assessment guidelines. These situations would be best addressed on a case-by-case basis by ISA and IMO in accordance with their agreement on cooperation mentioned at the outset of this report.²⁵⁹

259 IMO-ISA Agreement (n 6).

ANNEX 1: ACTIVITIES IN THE AREA

Provision	Activity <u>(emphasis added)</u>	Seabed Advisory Opinion (emphasis added)
UNCLOS Art 1(3)	"activities in the Area" means all activities of exploration for, and exploitation of, the resources of the Area.	Para 83: "Some indication of the meaning of the term "activities in the Area" may be found in Annex IV, article 1, paragraph 1 ..."
UNCLOS Art 133	(a) "resources" means all solid, liquid or gaseous mineral resources in situ in the Area at or beneath the seabed, including polymetallic nodules; (b) resources, when recovered from the Area, are referred to as "minerals".	Para 82: "The two definitions ... do not indicate what is meant by "exploration" and "exploitation"."
UNCLOS Art 145	Necessary 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 . To this end the Authority shall adopt appropriate rules, regulations and procedures for <i>inter alia</i> : (a) 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 ; (b) the protection and conservation of the natural resources of the Area and the prevention of damage to the flora and fauna of the marine environment.	Para 85: "Article 145 of the Convention, which prescribes the taking of "[n]ecessary measures ... with respect to activities in the Area to ensure effective protection for the marine environment from harmful effects which may arise from such activities", indicates the activities in respect of which the Authority should adopt rules, regulations and procedures. These activities include: "drilling, dredging, excavation, disposal of waste, construction and operation or maintenance of installations, pipelines and other devices related to such activities" . In the view of the Chamber, these activities are included in the notion of "activities in the Area" ."

<p>UNCLOS Annex III, Art 17 (2) (f)</p>	<p>Rules, regulations and procedures shall be drawn up in order to secure effective protection of the marine environment from harmful effects directly resulting from activities in the Area or from shipboard processing immediately above a mine site of minerals derived from that mine site, taking into account the extent to which such harmful effects may directly result from drilling, dredging, coring and excavation and from disposal, dumping and discharge into the marine environment of sediment, wastes or other effluents.</p>	<p>Para 86: This provision 'sets out the criteria for the rules, regulations and procedures concerning protection of the marine environment to be drawn up by the Authority gives further useful indications of what is included in the notion of "activities in the Area".'</p> <p>Para 88: '... "shipboard processing immediately above a mine site of minerals derived from that mine site" is to be considered as included in "activities in the Area". As the aforementioned list of activities refers without distinction to the harmful effects resulting directly from "activities in the Area" and from "shipboard processing", the two are to be seen as part of the same kind of activities.</p>
<p>UNCLOS Annex IV, Art 1</p>	<p>The Enterprise is the organ of the Authority which shall carry out activities in the Area directly, pursuant to article 153, paragraph 2(a), as well as the transporting, processing and marketing of minerals recovered from the Area.</p>	<p>Para 84: 'This provision distinguishes "activities in the Area" which the Enterprise carries out directly pursuant to article 153, paragraph 2(a), of the Convention, from other activities with which the Enterprise is entrusted, namely, the transporting, processing and marketing of minerals recovered from the Area. Consequently, the latter activities are not included in the notion of "activities in the Area" referred to in Annex IV, article 1, paragraph 1, of the Convention.'</p> <p>Para 87: 'The provisions considered in the preceding paragraphs [referring to paras 83 to 86] confirm that processing and transporting as mentioned in Annex IV, article 1, paragraph 1, of the Convention are excluded from the notion of "activities in the Area". They set out lists of activities whose harmful effects are indicated as directly resulting from such activities. These lists may be seen as an indication of what the Convention considers as included in the notion of "activities in the Area". These activities include: drilling, dredging, coring, and excavation; disposal, dumping and discharge into the marine environment of sediment, wastes or other effluents; and construction and operation or maintenance of installations, pipelines and other devices related to such activities.</p>

<p>Nodules & Sulphides Regulations, Reg 3(b) and (a)</p>	<p>“Exploration” means searching for deposits of polymetallic nodules in the Area with exclusive rights, the analysis of such deposits, the testing of collecting systems and equipment, processing facilities and transportation systems, and the carrying out of studies of the environmental, technical, economic, commercial and other appropriate factors that must be taken into account in exploitation.</p> <p>“Exploitation” means the recovery for commercial purposes of polymetallic nodules 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.</p>	<p>Para 91: ‘These provisions of the Nodules Regulations and the Sulphides Regulations include in the notion of exploration the testing of processing facilities and transportation systems and in that of exploitation the construction and operation of processing and transportation systems.’</p> <p>Para 92: ‘The scope of “exploration” and “exploitation” as defined in the Regulations seems broader than the “activities in the Area” envisaged in Annex IV, article 1, paragraph 1, and in article 145 and Annex III, article 17, paragraph 2 (f), of the Convention. Processing and transportation are included in the notion of exploration and exploitation of the Regulations, but not in that of “activities in the Area” in the provision of Annex IV of the Convention, which has just been cited.’</p> <p>Para 93: ‘The difference in scope of “activities in the Area” in the provisions of the Convention and in the Nodules Regulations and the Sulphides Regulations makes it necessary to examine the relevant provisions within the broader framework of the Convention. It would seem preferable to consider that the meaning of “activities in the Area” in articles 139 and Annex III, article 4, paragraph 4, of the Convention is consistent with that of article 145 and Annex III, article 17, paragraph 2(f), and Annex IV, article 1, paragraph 1, rather than with that of “exploration” and “exploitation” in the two Regulations. The aforementioned articles of the Convention and of Annexes III and IV, all belong to the same legal instrument. They were negotiated by the same parties and adopted at the same time. It therefore seems reasonable to assume that the meaning of an expression (or the exclusion of certain activities from the scope of that expression) in one provision also applies to the others. The Regulations are instruments subordinate to the Convention, which, if not in conformity with it, should be interpreted so as to ensure consistency with its provisions. They may, nevertheless be used to clarify and supplement certain aspects of the relevant provisions of the Convention.’</p>
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Nodules & Sulphides Regulations, Reg 3(b) and (a)

Para 94: 'In light of the above, the expression "activities in the Area", in the context of both exploration and exploitation, includes, first of all, the recovery of minerals from the seabed and their lifting to the water surface.'

Para 95: 'Activities directly connected with those mentioned in the previous paragraph such as the **evacuation of water from the minerals and the preliminary separation of materials of no commercial interest, including their disposal at sea, are deemed to be covered by the expression "activities in the Area"**. "Processing", namely, the process through which metals are extracted from the minerals and which is normally conducted at a plant situated on land, is excluded from the expression "activities in the Area". This is confirmed by the wording of Annex IV, article 1, paragraph 1, of the Convention as well as by information provided by the Authority at the request of the Chamber.'

Para 96: '**Transportation to points on land from the part of the high seas superjacent to the part of the Area in which the contractor operates cannot be included in the notion of "activities in the Area"**, as it would be incompatible with the exclusion of transportation from "activities in the Area" in Annex IV, article 1, paragraph 1, of the Convention. However, **transportation within that part of the high seas, when directly connected with extraction and lifting, should be included in activities in the Area**. In the case of polymetallic nodules, this applies, for instance, to transportation between the ship or installation where the lifting process ends and another ship or installation where the evacuation of water and the preliminary separation and disposal of material to be discarded take place. **The inclusion of transportation to points on land could create an unnecessary conflict with provisions of the Convention such as those that concern navigation on the high seas.'**

Para 97: 'One consequence of the exclusion of water evacuation and disposal of material from "activities in the Area" would be that the activities conducted by the contractor which are among the most hazardous to the environment would be excluded from those to which the responsibilities of the sponsoring State apply. This would be contrary to the general obligation of States Parties, under article 192 of the Convention, "to protect and preserve the marine environment".'

ANNEX 2: RULES OF REFERENCE TO IMO'S REGULATORY COMPETENCIES IN UNCLOS

Part	Art.	Provision	Rule of reference (emphasis added)	Pertinent instruments
II: Territorial Sea and Contiguous Zone	21	Laws and regulations of the coastal State relating to innocent passage	(2) Such laws and 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 . (4) Foreign ships exercising the right of innocent passage through the territorial sea shall comply with all such laws and regulations and all generally accepted international regulations relating to the prevention of collisions at sea .	(2) SOLAS and codes; LL Convention & Intact Stability Code; STCW Convention & STCW Code (4) COLREGS
	22	Sea lanes and traffic separation schemes in the territorial sea	(3) In the designation of sea lanes and the prescription of traffic separation schemes under this article, the coastal State shall take into account: (a) the recommendations of the competent international organization ;	(a) SOLAS (Chap V, Routing); COLREGS (Rule 10)
	23	Foreign nuclear-powered ships and ships carrying nuclear or other inherently dangerous or noxious substances	Foreign nuclear-powered ships and ships carrying nuclear or other inherently dangerous or noxious substances shall, when exercising the right of innocent passage through the territorial sea, carry documents and observe special precautionary measures established for such ships by international agreements .	SOLAS (with IAEA)
III: Straits Used for International Navigation	39	Duties of ships ... during transit passage	(2) Ships in transit passage shall: (a) comply with generally accepted international regulations, procedures and practices for safety at sea, including the International Regulations for Preventing Collisions at Sea ; (b) comply with generally accepted international regulations, procedures and practices for the prevention, reduction and control of pollution from ships .	(a) SOLAS & codes; LL Convention & Intact Stability Code; COLREGS (b) MARPOL; BWM Convention; AFS Convention

<p>IV: Archipelagic States</p>	<p>54</p>	<p>Duties of ships during their passage, etc.</p>	<p>Articles 39 ... applies <i>mutatis mutandis</i> to archipelagic sea lanes passage.</p>	<p>Same as 39(2)(a) & (b)</p>
<p>V: EEZ</p>	<p>60</p>	<p>Artificial islands, installations and structures in the exclusive economic zone</p>	<p>(3) ... Any installations or structures which are abandoned or disused shall be removed to ensure safety of navigation, taking into account any generally accepted international standards established in this regard by the competent international organization. (5) The breadth of the safety zones shall be determined by the coastal State, taking into account applicable international standards. Such zones shall be designed to ensure that they are reasonably related to the nature and function of the artificial islands, installations or structures, and shall not exceed a distance of 500 metres around them, measured from each point of their outer edge, except as authorized by generally accepted international standards or as recommended by the competent international organization. (6) All ships must respect these safety zones and shall comply with generally accepted international standards regarding navigation in the vicinity of artificial islands, installations, structures and safety zones.</p>	<p>(3) London Convention & Protocol; IMO Guidelines and Standards for the Removal of Offshore Installations and Structures on the Continental Shelf and in the Exclusive Economic Zone (5) IMO Resolution on Safety Zones and Safety of Navigation around Offshore Installations and Structures (6) SOLAS; COLREGS</p>
<p>VI: Continental Shelf</p>	<p>80</p>	<p>Artificial islands, installations and structures on the continental shelf</p>	<p>Article 60(3), (5) and (6) apply <i>mutatis mutandis</i> to artificial islands, installations and structures on the continental shelf.</p>	<p>Same as 60(3), (5) & (6)</p>

<p>VII: High Seas</p>	<p>94</p>	<p>Duties of the flag State</p>	<p>(3) Every State shall take such measures for ships flying its flag as are necessary to ensure safety at sea with regard, <i>inter alia</i>, to:</p> <ul style="list-style-type: none"> (a) the construction, equipment and seaworthiness of ships; (b) the manning of ships, labour conditions and the training of crews, taking into account the applicable international instruments; (c) the use of signals, the maintenance of communications and the prevention of collisions. <p>(4) Such measures shall include those necessary to ensure:</p> <ul style="list-style-type: none"> (a) that each ship, before registration and thereafter at appropriate intervals, is surveyed by a qualified surveyor of ships, and has on board such charts, nautical publications and navigational equipment and instruments as are appropriate for the safe navigation of the ship; (b) that each ship is in the charge of a master and officers who possess appropriate qualifications, in particular in seamanship, navigation, communications and marine engineering, and that the crew is appropriate in qualification and numbers for the type, size, machinery and equipment of the ship; (c) that the master, officers and, to the extent appropriate, the crew are fully conversant with and required to observe the applicable international regulations concerning the safety of life at sea, the prevention of collisions, the prevention, reduction and control of marine pollution, and the maintenance of communications by radio. <p>(5) In taking the measures called for in paragraphs 3 and 4 each State is required to conform to generally accepted international regulations, procedures and practices and to take any steps which may be necessary to secure their observance.</p>	<p>(3) STCW Convention & STCW Code; MLC (4) STCW Convention & STCW Code; SOLAS and ISM Code; COLREGS; MARPOL; BWM Convention (5) All of the above, and generally all IMO conventions, codes and guidelines.</p>
<p>XII: Protection and Preservation of the Marine Environment</p>	<p>210</p>	<p>Pollution by dumping</p>	<p>(4) States, acting especially through competent international organizations or diplomatic conference, shall endeavour to establish global and regional rules, standards and recommended practices and procedures to prevent, reduce and control such pollution. Such rules, standards and recommended practices and procedures shall be re-examined from time to time as necessary.</p> <p>(6) National laws, regulations and measures shall be no less effective in preventing, reducing and controlling such pollution than the global rules and standards.</p>	<p>(4), (6) London Convention & Protocol</p>



<p>XII: Protection and Preservation of the Marine Environment</p>	<p>211</p>	<p>Pollution from vessels</p>	<p>(1) States, acting through the competent international organization or general diplomatic conference, shall establish international rules and standards to prevent, reduce and control pollution of the marine environment from vessels and promote the adoption, in the same manner, wherever appropriate, of routing 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 coastal States. Such rules and standards shall, in the same manner, be re-examined from time to time as necessary.</p> <p>(2) States shall adopt laws and regulations for the prevention, reduction and control of pollution of the marine environment from vessels flying their flag or of their registry. Such laws and regulations shall at least have the same effect as that of generally accepted international rules and standards established through the competent international organization or general diplomatic conference.</p> <p>(5) Coastal States, for the purpose of enforcement as provided for in section 6, may in respect of their exclusive economic zones adopt laws and regulations for the prevention, reduction and control of pollution from vessels conforming to and giving effect to generally accepted international rules and standards established through the competent international organization or general diplomatic conference.</p> <p>(6) (a) Where the international rules and standards referred to in paragraph 1 are inadequate to meet special circumstances and coastal States have reasonable grounds for believing that a particular, clearly defined area of their respective exclusive economic zones 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, the coastal States, after appropriate consultations through the competent international organization with any other States concerned, may, for that area, direct a communication to that organization, submitting scientific and technical evidence in support and information on necessary reception facilities. Within 12 months after receiving such a communication, the organization shall determine whether the conditions in that area correspond to the requirements set out above. If the organization so determines, the coastal States may, for that area, 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 organization, for special areas. These laws and regulations shall not become applicable to foreign vessels until 15 months after the submission of the communication to the organization.</p> <p>(b) The coastal States shall publish the limits of any such particular, clearly defined area.</p> <p>(1), (2), (5) & (7) MARPOL; AFS Convention; BWM Convention & BWM Code</p>
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	211	Pollution from vessels	<p>(c) If the coastal States intend to adopt additional laws and regulations for the same area for the prevention, reduction and control of pollution from vessels, they shall, when submitting the aforesaid communication, at the same time notify the organization thereof. Such additional laws and regulations 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; they shall become applicable to foreign vessels 15 months after the submission of the communication to the organization, provided that the organization agrees within 12 months after the submission of the communication.</p> <p>(7) The international rules and standards referred to in this article should include <i>inter alia</i> those relating to prompt notification to coastal States, whose coastline or related interests may be affected by incidents, including maritime casualties, which involve discharges or probability of discharges.</p>	(1), (2), (5) & (7) MARPOL; AFS Convention; BWM Convention & BWM Code
XII: Protection and Preservation of the Marine Environment	212	Pollution from or through the atmosphere	<p>(1) States shall adopt laws and regulations to prevent, reduce and control pollution of the marine environment from or through the atmosphere, applicable to the air space under their sovereignty and to vessels flying their flag or vessels or aircraft of their registry, taking into account internationally agreed rules, standards and recommended practices and procedures and the safety of air navigation.</p> <p>(3) States, acting especially through competent international organizations or diplomatic conference, shall endeavour to establish global and regional rules, standards and recommended practices and procedures to prevent, reduce and control such pollution.</p>	(1), (3) MARPOL Annex VI
	214	Enforcement with respect to pollution from seabed activities	<p>States shall enforce their laws and regulations adopted in accordance with article 208 and shall adopt laws and regulations and take other measures necessary to implement applicable international rules and standards established through competent international organizations or diplomatic conference 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.</p>	MARPOL Annexes I-V; AFS Convention; BWM Convention
	216	Enforcement with respect to pollution by dumping	<p>(1) Laws and regulations adopted in accordance with this Convention and applicable international rules and standards established through competent international organizations or diplomatic conference for the prevention, reduction and control of pollution of the marine environment by dumping shall be enforced:</p> <p>(a) by the coastal State with regard to dumping within its territorial sea or its exclusive economic zone or onto its continental shelf;</p> <p>(b) by the flag State with regard to vessels flying its flag or vessels or aircraft of its registry;</p> <p>(c) by any State with regard to acts of loading of wastes or other matter occurring within its territory or at its off-shore terminals.</p>	London Convention & Protocol

<p>XII: Protection and Preservation of the Marine Environment</p>	<p>217</p>	<p>Enforcement by flag States</p>	<p>(1) States shall ensure compliance by vessels flying their flag or of their registry with applicable international rules and standards, established through the competent international organization or general diplomatic conference, and with their laws and regulations adopted in accordance with this Convention for the prevention, reduction and control of pollution of the marine environment from vessels and shall accordingly adopt laws and regulations and take other measures necessary for their implementation. Flag States shall provide for the effective enforcement of such rules, standards, laws and regulations, irrespective of where a violation occurs.</p> <p>(2) States shall, in particular, take appropriate measures in order to ensure that vessels flying their flag or of their registry are prohibited from sailing, until they can proceed to sea in compliance with the requirements of the international rules and standards referred to in paragraph 1, including requirements in respect of design, construction, equipment and manning of vessels.</p> <p>(3) States shall ensure that vessels flying their flag or of their registry carry on board certificates required by and issued pursuant to international rules and standards referred to in paragraph 1. States shall ensure that vessels flying their flag are periodically inspected in order to verify that such certificates are in conformity with the actual condition of the vessels. These certificates shall be accepted by other States as evidence of the condition of the vessels and shall be regarded as having the same force as certificates issued by them, unless there are clear grounds for believing that the condition of the vessel does not correspond substantially with the particulars of the certificates.</p> <p>(4) If a vessel commits a violation of rules and standards established through the competent international organization or general diplomatic conference, the flag State, without prejudice to articles 218, 220 and 228, shall provide for immediate investigation and where appropriate institute proceedings in respect of the alleged violation irrespective of where the violation occurred or where the pollution caused by such violation has occurred or has been spotted.</p>	<p>(1)-(4) MARPOL; AFS Convention; BWM Convention; London Convention & Protocol</p>
	<p>218</p>	<p>Enforcement by port States</p>	<p>1. When a vessel is voluntarily within a port or at an off-shore terminal of a State, that State may undertake investigations and, where the evidence so warrants, institute proceedings in respect of any discharge from that vessel outside the internal waters, territorial sea or exclusive economic zone of that State in violation of applicable international rules and standards established through the competent international organization or general diplomatic conference.</p>	<p>MARPOL; AFS Convention; BWM Convention; London Convention & Protocol</p>
	<p>219</p>	<p>Measures relating to seaworthiness of vessels to avoid pollution</p>	<p>Subject to section 7, States which, upon request or on their own initiative, have ascertained that a vessel within one of their ports or at one of their off-shore terminals is in violation of applicable international rules and standards relating to seaworthiness of vessels and thereby threatens damage to the marine environment shall, as far as practicable, take administrative measures to prevent the vessel from sailing. Such States may permit the vessel to proceed only to the nearest appropriate repair yard and, upon removal of the causes of the violation, shall permit the vessel to continue immediately.</p>	<p>SOLAS; LL Convention; STCW Convention</p>

<p>XII: Protection and Preservation of the Marine Environment</p>	<p>220</p>	<p>Enforcement by coastal States</p>	<p>(1) When a vessel is voluntarily within a port or at an off-shore terminal of a State, that State may, subject to section 7, institute proceedings in respect of any violation of its laws and regulations adopted in accordance with this Convention or applicable international rules and standards for the prevention, reduction and control of pollution from vessels when the violation has occurred within the territorial sea or the exclusive economic zone of that State.</p> <p>(2) Where there are clear grounds for believing that a vessel navigating in the territorial sea of a State has, during its passage therein, violated laws and regulations of that State adopted in accordance with this Convention or applicable international rules and standards for the prevention, reduction and control of pollution from vessels, that State, without prejudice to the application of the relevant provisions of Part II, section 3, may undertake physical inspection of the vessel relating to the violation and may, where the evidence so warrants, institute proceedings, including detention of the vessel, in accordance with its laws, subject to the provisions of section 7.</p> <p>(3) Where there are clear grounds for believing that a vessel navigating in the exclusive economic zone or the territorial sea of a State has, in the exclusive economic zone, committed a violation of applicable international rules and standards for the prevention, reduction and control of pollution from vessels or laws and regulations of that State conforming and giving effect to such rules and standards, that State may require the vessel to give information regarding its identity and port of registry, its last and its next port of call and other relevant information required to establish whether a violation has occurred.</p> <p>(7) Notwithstanding the provisions of paragraph 6, whenever appropriate procedures have been established, either through the competent international organization or as otherwise agreed, whereby compliance with requirements for bonding or other appropriate financial security has been assured, the coastal State if bound by such procedures shall allow the vessel to proceed.</p> <p>(8) The provisions of paragraphs 3, 4, 5, 6 and 7 also apply in respect of national laws and regulations adopted pursuant to article 211, paragraph 6.</p>	<p>(1)-(3), (7)-(8) MARPOL; AFS Convention; BWM Convention; London Convention & Protocol</p>
<p>222</p>	<p>Enforcement with respect to pollution from or through the atmospheres</p>	<p>Enforcement with respect to pollution from or through the atmospheres</p>	<p>States shall enforce ... with regard to vessels flying their flag or vessels ... of their registry, their laws and regulations adopted in accordance with article 212, paragraph 1, and with other provisions of this Convention and shall adopt laws and regulations and take other measures necessary to implement applicable international rules and standards established through competent international organizations or diplomatic conference to prevent, reduce and control pollution of the marine environment from or through the atmosphere, in conformity with all relevant international rules and standards concerning the safety of air navigation.</p>	<p>MARPOL; AFS Convention; BWM Convention; London Convention & Protocol</p>



<p>XII: Protection and Preservation of the Marine Environment</p>	<p>226</p>	<p>Investigation of foreign vessels</p>	<p>(1) (a) States shall not delay a foreign vessel longer than is essential for purposes of the investigations provided for in articles 216, 218 and 220. Any physical inspection of a foreign vessel shall be limited to an examination of such certificates, records or other documents as the vessel is required to carry by generally accepted international rules and standards or of any similar documents which it is carrying; further physical inspection of the vessel may be undertaken only after such an examination and only when:</p> <p>...</p> <p>(b) If the investigation indicates a violation of applicable laws and regulations or international rules and standards for the protection and preservation of the marine environment, release shall be made promptly subject to reasonable procedures such as bonding or other appropriate financial security.</p> <p>(c) Without prejudice to applicable international rules and standards relating to the seaworthiness of vessels, the release of a vessel may, whenever it would present an unreasonable threat of damage to the marine environment, be refused or made conditional upon proceeding to the nearest appropriate repair yard. ...</p>	<p>(a) SOLAS; LL Convention; Tonnage Convention; MARPOL; BWM Convention (b) MARPOL; AFS Convention; BWM Convention (c) SOLAS; LL Convention; Tonnage; MARPOL; AFS Convention; BWM Convention</p>
	<p>228</p>	<p>Suspension and restrictions on institution of proceedings</p>	<p>(1) Proceedings to impose penalties in respect of any violation of applicable laws and regulations or international rules and standards relating to the prevention, reduction and control of pollution from vessels committed by a foreign vessel beyond the territorial sea of the State instituting proceedings shall be suspended upon the taking of proceedings to impose penalties in respect of corresponding charges by the flag State within six months of the date on which proceedings were first instituted, unless those proceedings relate to a case of major damage to the coastal State or the flag State in question has repeatedly disregarded its obligation to enforce effectively the applicable international rules and standards in respect of violations committed by its vessels. ...</p>	<p>All IMO pollution prevention conventions</p>
	<p>235</p>	<p>Responsibility and liability</p>	<p>(3) With the objective of assuring prompt and adequate compensation in respect of all damage caused by pollution of the marine environment, States shall cooperate in the implementation of existing international law and the further development of international law relating to responsibility and liability for the assessment of and compensation for damage and the settlement of related disputes, as well as, where appropriate, development of criteria and procedures for payment of adequate compensation, such as compulsory insurance or compensation funds.</p>	<p>CLC Convention; IOPC Funds Convention/ Supplementary Fund; LLMC; HNS Convention & Protocol; Bunker Convention</p>

ANNEX 3: INTERFACE OF COMPETENCIES OF ISA AND IMO WITH RESPECT TO ACTIVITIES IN THE AREA

Parts	Provisions	Description of competencies	CIO	Cross-references	Comments
Part I	Article 1 Use of terms and scope	<p>(3) "activities in the Area" means all activities of exploration for, and exploitation of, the resources of the Area;</p> <p>(5)(a) "dumping" means:</p> <p>(i) any deliberate disposal of wastes or other matter from vessels, aircraft, platforms or other man-made structures at sea;</p> <p>(ii) any deliberate disposal of vessels, aircraft, platforms or other man-made structures at sea;</p> <p>(b) "dumping" does not include:</p> <p>(i) the disposal of wastes or other matter incidental to, or derived from the normal operations of vessels, aircraft, platforms or other man-made structures at sea and their equipment, other than wastes or other matter transported by or to vessels, aircraft, platforms or other man-made structures at sea, operating for the purpose of disposal of such matter or derived from the treatment of such wastes or other matter on such vessels, aircraft, platforms or structures;</p> <p>(ii) placement of matter for a purpose other than the mere disposal thereof, provided that such placement is not contrary to the aims of this Convention.</p>	(3) ISA (5) ISA,IMO	<p>(3) UNCLOS Part XI generally;Annex III;Annex IV; Nodule Regulations Sulphides; Regulations Cobalt Regulations reg 1(3)(b) & (c); Draft Exploitation Regulations</p> <p>(5) UNCLOS, Arts 145, 210 and 216; London Convention, art 3(1); London Protocol, Art 1(4); Hong Kong Convention</p>	<p>The <i>Seabed Advisory Opinion</i> has impacted on the definitions in this provision. The definition of 'activities in the Area' intended to refer to exploration and exploitation activities has been clarified in some depth and excludes processing and transportation of minerals <i>ex situ</i>. The reference to 'disposal of wastes' in the definition of 'dumping' must be read against the allocation of this power to ISA in Article 145. The definition of ISA's regulatory power over 'disposal of wastes' from activities in the Area does not include the disposal of vessels, platforms and other structures in the Area. Disposal of these is governed by the London Convention and London Protocol. Recycling of ships is now governed by the Hong Kong Convention, also an IMO responsibility.</p>
Part VII	Article 87 Freedoms of the high seas	<p>(1) The high seas are open to all States ... Freedom of the high seas is exercised under the conditions laid down by this Convention and by other rules of international law. It comprises, <i>inter alia</i>, ...:</p> <p>(a) freedom of navigation;</p> <p>(d) freedom to construct artificial islands and other installations permitted under international law, subject to Part VI; ...</p> <p>(2) These freedoms shall be exercised by all States ... with due regard for the rights under this Convention with respect to activities in the Area.</p>	IMO	<p>(1) UNCLOS Part XI, Art 147</p> <p>(2) UNCLOS Part XI generally and regulations</p>	<p>The construction of installations for activities in the Area is not a freedom of the high seas, but an activity regulated by ISA.</p>

	<p>Article 94 Duties of the flag State</p>	<p>(3) Every State shall take such measures for ships flying its flag as are necessary to ensure safety at sea with regard, inter alia, to:</p> <p>(a) the construction, equipment and seaworthiness of ships;</p> <p>(b) the manning of ships, labour conditions and the training of crews, taking into account the applicable international instruments;</p> <p>(c) the use of signals, the maintenance of communications and the prevention of collisions.</p> <p>(4) Such measures shall include those necessary to ensure:</p> <p>(a) that each ship, before registration and thereafter at appropriate intervals, is surveyed by a qualified surveyor of ships, and has on board such charts, nautical publications and navigational equipment and instruments as are appropriate for the safe navigation of the ship;</p> <p>(b) that each ship is in the charge of a master and officers who possess appropriate qualifications, in particular in seamanship, navigation, communications and marine engineering, and that the crew is appropriate in qualification and numbers for the type, size, machinery and equipment of the ship;</p> <p>(c) that the master, officers and, to the extent appropriate, the crew are fully conversant with and required to observe the applicable international regulations concerning the safety of life at sea, the prevention of collisions, the prevention, reduction and control of marine pollution, and the maintenance of communications by radio.</p> <p>5) In taking the measures called for in paragraphs 3 and 4 each State is required to conform to generally accepted international regulations, procedures and practices and to take any steps which may be necessary to secure their observance.</p>	<p>IMO</p>	<p>(3) STCW Convention; MLC</p> <p>(4) STCW Convention; SOLAS; COLREGS; MARPOL; AFS Convention; BWM Convention</p> <p>(5) All of the above, and generally all IMO conventions, codes and guidelines.</p>	<p>Ships used as platforms for activities in the Area and on the high seas are subject to the exclusive jurisdiction and control of the flag State. That jurisdiction has to be exercised with reference to IMO conventions concerning maritime safety (SOLAS, LL, COLREGS), manning and training (SOLAS, STCW) and environment protection (MARPOL, AFS, BWM).</p>
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<p>Part XI</p>	<p>Article 145 Protection of the marine environment</p>	<p>Necessary 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. To this end the Authority shall adopt appropriate rules, regulations and procedures for <i>inter alia</i>:</p> <p>(a) 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;</p> <p>(b) the protection and conservation of the natural resources of the Area and the prevention of damage to the flora and fauna of the marine environment.</p>	<p>ISA</p>	<p>UNCLOS Art 209; Nodules Regulations, reg 15(2); Sulphides Regulations (reg 15(2)); Cobalt Regulations, reg 15(2); Draft Exploitation Regulations, draft regs 2, 7(3), 32, 92</p>	<p>ISA's power to regulate protection of the marine environment from activities in the Area, as defined by the <i>Seabed Advisory Opinion</i>, is an exclusive power. The power concerns the regulation of drilling, dredging, excavation, disposal of waste, construction and operation or maintenance of installations, pipelines and other devices related to such activities. Measures taken by ISA for the protection and preservation of the marine environment will be complemented by IMO regulation with respect to the use of ships to support the above activities in the Area. Several IMO instruments (MARPOL annexes I-V; AFS Convention; BWM Convention; London Convention and Protocol) apply to a range of ship types, including floating platforms, floating and submerged structures, submersibles and craft. There are possible gaps. A concern with the AFS and BWM Conventions is that they apply to international voyages, possibly necessitating extension of the rules to cabotage. A range of emissions from activities in the Area are not covered by Annex VI and the <i>Seabed Advisory Opinion</i> did not include air emissions in considering disposal of wastes. However, the regulation of operation of installations (over which it has express power) arguably should include emissions.</p>
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<p>Part XI</p>	<p>Article 146 - environment</p>	<p>With respect to activities in the Area, necessary measures shall be taken to ensure effective protection of human life. To this end the Authority shall adopt appropriate rules, regulations and procedures to supplement existing international law as embodied in relevant treaties.</p>	<p>ISA, IMO, ILO</p>	<p>UNCLOS art 98; SOLAS; SAR Convention; LL Convention; STCW; SUA Convention & Protocol; MLC (ILO)</p> <p>Nodules Regulations; Sulphides Regulations; Cobalt Regulations</p> <p>Standard Clauses section 15</p>	<p>ISA's regulatory power for the protection of human life is a supplementary power, rather than an exclusive or a primary power. This implies that the lead regulators of this subject-matter are other competent international organizations. Safety of life at sea (defined broadly to include all matters addressed by SOLAS, LLC and SAR) and seafarer training (STCW) are IMO responsibilities. Occupational health and safety of seafarers is an ILO responsibility. ISA's mandate concerns regulation for the protection of human life in relation to resource exploration and exploitation activities in the Area. To date, there appears to be ISA reliance on existing international standards through a rule of reference in the standard clauses of exploration contracts and the Draft exploitation regulations anticipate reliance on IMO and ILO standards on health and safety. A concern is that SOLAS and LLC apply to ships on international voyages, thus necessitating extension to cabotage by the sponsoring State. A further matter is the security of personnel and possible protections under the SUA Convention. The application of the SUA Protocol with respect to fixed platforms does not extend to activities in the Area.</p>
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<p>Part XI</p>	<p>Article 147 Accommodation of activities in the Area and in the marine environment</p>	<p>(1) Activities in the Area shall be carried out with reasonable regard for other activities in the marine environment. (2) Installations used for carrying out activities in the Area shall be subject to the following conditions: (a) such installations shall be erected, emplaced and removed solely in accordance with this Part and subject to the rules, regulations and procedures of the Authority. Due notice must be given of the erection, emplacement and removal of such installations, and permanent means for giving warning of their presence must be maintained; (b) such installations may not be established where interference may be caused to the use of recognized sea lanes essential to international navigation or in areas of intense fishing activity; (c) safety zones shall be established around such installations with appropriate markings to ensure the safety of both navigation and the installations. The configuration and location of such safety zones shall not be such as to form a belt impeding the lawful access of shipping to particular maritime zones or navigation along international sea lanes; 3. Other activities in the marine environment shall be conducted with reasonable regard for activities in the Area.</p>	<p>ISA, IMO</p>	<p>UNCLOS, Art 87; SOLAS (chap V; MODU Code; Routing for Ships); COLREGS</p>	<p>IMO has area-based management (routing) and reporting (ship reporting system) tools that could be useful for the accommodation of activities in the Area. IMO is the organization responsible for routing and ship reporting. If these are tools desirable, it is unclear who would be able to propose these for adoption at IMO (ISA? Flag State? Sponsoring State?). ISA has clear regulatory power over the erection, emplacement and removal of installations engaged in activities in the Area. IMO has construction standards for MODUs that could be useful for installations in the Area. Its guidelines for the removal of offshore installations and structures, although applicable to the continental shelf and in the EEZ, could be informative.</p>
<p>Article 150 Policies relating to activities in the Area</p>	<p>The provision sets general policy directions. More specifically, activities in the Area to be carried with a view to ensuring: (b) orderly, safe and rational management of the resources of the Area and, in accordance with efficient conduct of activities in the Area and, in accordance with sound principles of conservation, the avoidance of unnecessary waste;</p>	<p>ISA</p>	<p>Nodules Regulations; Sulphides Regulations; Cobalt Regulations; Draft Exploitation Regulations</p>	<p>This article provides support for the use of area-based management tools and ship reporting systems. However, they would need to be proposed to IMO.</p>	



<p>Part XI</p>	<p>Article 153 System of exploration and exploitation</p>	<p>(1) Activities in the Area shall be organized, carried out and controlled by the Authority on behalf of mankind as a whole in accordance with this article as well as other relevant provisions of this Part and the relevant Annexes, and the rules, regulations and procedures of the Authority. ... (4) The Authority shall exercise such control over activities in the Area as is necessary for the purpose of securing compliance with the relevant provisions of this Part and the Annexes relating thereto, and the rules, regulations and procedures of the Authority, and the plans of work approved in accordance with paragraph 3. States Parties shall assist the Authority by taking all measures necessary to ensure such compliance in accordance with article 139. (5) The Authority shall have the right to take at any time any measures provided for under this Part to ensure compliance with its provisions and the exercise of the functions of control and regulation assigned to it thereunder or under any contract. The Authority shall have the right to inspect all installations in the Area used in connection with activities in the Area. ...</p>	<p>ISA</p>	<p>Nodules Sulphides Cobalt Exploitation Regulations; Regulations; Regulations; Draft Regulations</p>	
<p>Article 157 Nature and fundamental principles of the Authority</p>	<p>As revised by the 1994 Agreement: (1) The International Seabed Authority ... is the organization through which States Parties to the Convention shall, in accordance with the regime for the Area established in Part XI and this Agreement, organize and control activities in the Area, particularly with a view to administering the resources of the Area. The powers and functions of the Authority shall be those expressly conferred upon it by this Convention. The Authority shall have such incidental powers, consistent with this Convention, as are implicit in, and necessary for, the exercise of those powers and functions with respect to activities in the Area.</p>	<p>ISA</p>	<p>1994 Agreement, Annex, Section 1, para 1; Nodules Sulphides Cobalt Exploitation Regulations; Regulations; Regulations</p>	<p>ISAs incidental powers could be invoked to address potential regulatory gaps with respect to activities in the Area.</p>	

<p>Part XI</p>	<p>Article 160 P o w e r s and func- tions</p>	<p>(2) In addition, the powers and functions of the Assembly shall be: (f)(ii) to consider and approve the rules, regulations and procedures of the Authority, and any amendments thereto, provisionally adopted by the Council pursuant to article 162, paragraph 2(o)(ii). These rules, regulations and procedures shall relate to prospecting, exploration and exploitation in the Area, the financial management and internal administration of the Authority, and, upon the recommendation of the Governing Board of the Enterprise, to the transfer of funds from the Enterprise to the Authority; ... (n) to discuss any question or matter within the competence of the Authority and to decide as to which organ of the Authority shall deal with any such question or matter not specifically entrusted to a particular organ, consistent with the distribution of powers and functions among the organs of the Authority</p>	<p>ISA</p>	<p>Nodules Sulphides Cobalt Exploitation Regulations; Regulations; Regulations; Draft Regulations</p>	<p>ISAs has exclusive regulatory authority over activities in the Area.</p>
<p>Article 162 P o w e r s and func- tions</p>	<p>(1) The Council is the executive organ of the Authority. The Council shall have the power to establish, in conformity with this Convention and the general policies established by the Assembly, the specific policies to be pursued by the Authority on any question or matter within the competence of the Authority. (2) In addition, the Council shall: (a) supervise and coordinate the implementation of the provisions of this Part on all questions and matters within the competence of the Authority (f) enter into agreements with the United Nations or other international organizations on behalf of the Authority and within its competence, subject to approval by the Assembly; ... [1994 Agreement: approves plans of work] ... (l) exercise control over activities in the Area in accordance with article 153, paragraph 4, and the rules, regulations and procedures of the Authority;</p>	<p>ISA</p>	<p>1994 Agreement, Annex, Section 3, para 11</p>	<p>This provision empowers Council to work with IMO and other competent international organizations in the event regulatory coordination and harmonization are needed to support activities in the Area.</p>	

<p>Part XI</p>	<p>Article 162 P o w e r s and func- tions</p>	<p>o) (ii) adopt and apply provisionally, pending approval by the Assembly, the rules, regulations and procedures of the Authority, and any amendments thereto, taking into account the recommendations of the Legal and Technical Commission or other subordinate organ concerned. These rules, regulations and procedures shall relate to prospecting, exploration and exploitation in the Area (s) make recommendations to the Assembly concerning policies on any question or matter within the competence of the Authority; ... (w) issue emergency orders, which may include orders for the suspension or adjustment of operations, to prevent serious harm to the marine environment arising out of activities in the Area; (x) disapprove areas for exploitation by contractors or the Enterprise in cases where substantial evidence indicates the risk of serious harm to the marine environment; ... (z) establish appropriate mechanisms for directing and supervising a staff of inspectors who shall inspect activities in the Area to determine whether this Part, the rules, regulations and procedures of the Authority, and the terms and conditions of any contract with the Authority are being complied with.</p>	<p>ISA</p>	<p>1994 Agreement, Annex, Section 3, para 11</p>	<p>This provision empowers Council to work with IMO and other competent international organizations in the event regulatory coordination and harmonization are needed to support activities in the Area.</p>
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<p>Part XII</p>	<p>Article 209 Pollution from ac- tivities in the Area</p>	<p>(1) 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. (2) Subject to the relevant provisions of this section, States shall adopt laws and regulations to prevent, reduce and control pollution of the marine environment from activities in the Area undertaken by vessels, installations, structures and other devices flying their flag or of their registry or operating under their authority, as the case may be. The requirements of such laws and regulations shall be no less effective than the international rules, regulations and procedures referred to in paragraph 1.</p>	<p>ISA</p>	<p>UNCLOS Arts 1, 145, 215; Nodules Regulations; Sulphides Regulations; Cobalt Regulations; Draft Exploitation Regulations</p>	<p>As indicated earlier, Article 145 clearly assigns exclusive regulatory responsibility for pollution from activities in the Area to ISA. Article 209(1) reinforces this regulatory role. Article 209(2) places an obligation on States to exercise legislative jurisdiction over their vessels, installations and structures to protect the marine environment from activities in the Area, in a manner that is no less effective than ISA regulations. Other rules may play a role. Regulation 1(5) of the Nodules, Sulphides and Cobalt Regulations ISA regulations (Regulation 1(5)) provides that the regulations 'may be supplemented by further rules, regulations and procedures' and that the regulations are subject to the UNCLOS, 1994 Agreement and other rules of international law not incompatible with the UNCLOS.</p>
<p>Article 210 Pollution by dum- ping</p>	<p>See Annex 2</p>	<p>IMO</p>	<p>UNCLOS Arts 1, 145, 216; London Convention & Protocol</p>	<p>While IMO is the lead organization with respect to dumping in general, ISA enjoys exclusive authority to regulate the disposal of wastes from activities in the Area under Article 145. Although construction and operation or maintenance of installations fall within ISA's regulatory power, the situation is less clear with respect to the disposal of vessels, platforms and other man-made structures at sea. The deliberate disposal, abandonment and toppling on site of vessels, platforms and other man-made structures at sea are likely captured by Article 210, the London Convention and London Protocol regime, and possibly other instruments such as the Hong Kong Recycling Convention.</p>	



Part XII	Article 211 Pollution from ves- sels	See Annex 2	IMO	MARPOL; Convention; Convention	AFS BWM	Rules of reference to IMO regulations on vessel source pollution are applicable to ships supporting activities in the Area, subject to specific competencies that are exclusive to ISA with respect to the regulation of activities in the Area. The regulation of the various forms of pollution consequential to the operation of ships generally is the responsibility of IMO.
Article 212 Pollution from or through the atmos- phere	See Annex 2	IMO	UNCLOS Arts 145, 209, 215, 222; MARPOL annex VI	In considering the nature of 'disposal of wastes' in Article 145, the <i>Seabed Advisory Opinion</i> did not explore the extent to which emissions, as distinct from discharges, are captured by ISA's environmental regulatory power over activities in the Area. It is conceivable that the reference to 'operation of installations' includes emissions from their operation. In any case, MARPOL Annex VI does not apply to emissions directly arising from the exploration, exploitation and associated offshore processing of seabed mineral resources. It is possible that there is a regulatory gap with respect to air emissions from activities in the Area.		
Article 215 Enforce- ment with respect to pollution from ac- tivities in the Area	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.	ISA	UNCLOS Arts 145 & 209; Nodules Regulations; Sulphides Regulations; Cobalt Regulations; Draft Exploitation Regulations	ISA's regulations concerning the responsibilities of sponsoring States and contractors apply. Note the due diligence duties of sponsoring States clarified by the <i>Seabed Advisory Opinion</i> .		

Part XII	Article 216 Enforcement with respect to pollution by dumping	See Annex 2	IMO	UNCLOS Arts 1, 145, 216; London Convention & Protocol	See comments on Article 210.
	Article 217 Enforcement by flag States	See Annex 2	IMO	MARPOL; AFS Convention; BWM London Convention & Protocol	See comments on Article 211. Flag States have a due diligence responsibility to enforce IMO standards with respect to ships supporting activities in the Area.
	Article 222 Enforcement with respect to pollution from or through the atmosphere	See Annex 2	IMO	MARPOL annex VI	See comments on Article 212.
	Article 235 Responsibility and liability	(3) With the objective of assuring prompt and adequate compensation in respect of all damage caused by pollution of the marine environment, States shall cooperate in the implementation of existing international law and the further development of international law relating to responsibility and liability for the assessment of and compensation for damage and the settlement of related disputes, as well as, where appropriate, development of criteria and procedures for payment of adequate compensation, such as compulsory insurance or compensation funds.	ISA, IMO	UNCLOS Annex III, Art 22; CLC Convention; IOPC Funds Convention/ Supplementary Fund; LLMC; HNS Convention & Protocol; Bunker Convention	Although their respective competencies are not expressly mentioned in this provision, ISA and IMO enjoy complementary competencies for the development of civil liability regimes concerning pollution of the marine environment, respectively from activities in the Area and international shipping. ISA's competence is limited to activities in the Area as defined by the <i>Seabed Advisory Opinion</i> . This includes in situ transportation of extracted minerals. IMO's competence commences with <i>ex situ</i> transportation of recovered minerals. IMO's mature strict liability regimes, although of minimal application to high seas areas, could serve as a model for the development of a liability regime for mining in the Area.



Annex III	Art 17(2)(f)	<p>(1) The Authority shall adopt and uniformly apply rules, regulations and procedures ... on, <i>inter alia</i>, the following matters ...</p> <p>(2) Rules, regulations and procedures on the following items shall fully reflect the objective criteria set out below:</p> <p>(f) Rules, regulations and procedures shall be drawn up in order to secure effective protection of the marine environment from harmful effects directly resulting from activities in the Area or from shipboard processing immediately above a mine site of minerals derived from that mine site, taking into account the extent to which such harmful effects may directly result from drilling, dredging, coring and excavation and from disposal, dumping and discharge into the marine environment of sediment, wastes or other effluents</p>	ISA, IMO	<p>Mining regulations with respect to Art 153(2)(a).</p> <p>IMO regulations with respect to transportation <i>ex situ</i>.</p> <p>Nodules Regulations;</p> <p>Sulphides Regulations;</p> <p>Cobalt Regulations;</p> <p>IMO regulations with respect to <i>ex situ</i> transportation</p>	<p>The definitions of exploration and exploitation as defined in the mining regulations have been interpreted/narrowed down by the <i>Seabed Advisory Opinion</i> to exclude processing and <i>ex situ</i> transportation.</p> <p>The reference to transportation systems suggests regulatory interface with IMO regulations, both for transport using ships in <i>situ</i> and <i>ex situ</i>.</p>
Annex IV	Article 1	<p>The Enterprise is the organ of the Authority which shall carry out activities in the Area directly, pursuant to article 153, paragraph 2(a), as well as the transporting, processing and marketing of minerals recovered from the Area.</p>	ISA, IMO	<p>Mining regulations with respect to Art 153(2)(a).</p> <p>IMO regulations with respect to transportation <i>ex situ</i>.</p>	<p>The <i>Seabed Advisory Opinion</i> concluded that the underlined text is not part of activities in the Area and that the text refers to <i>ex situ</i> transportation. The consequence is that IMO rather than ISA enjoys regulatory competence over <i>ex situ</i> transportation systems.</p>
Nodules Regulations; Sulphides Regulations; Cobalt Regulations	Regulation 1(3)	<p>(a) "Exploitation" means the recovery for commercial purposes of polymetallic nodules 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.</p> <p>(b) "Exploration" means searching for deposits of polymetallic nodules in the Area with exclusive rights, the analysis of such deposits, the testing of collecting systems and equipment, processing facilities and transportation systems, and the carrying out of studies of the environmental, technical, economic, commercial and other appropriate factors that must be taken into account in exploitation.</p>	ISA	<p>Nodules Regulations;</p> <p>Sulphides Regulations;</p> <p>Cobalt Regulations;</p> <p>IMO regulations with respect to <i>ex situ</i> transportation</p>	<p>The definitions of exploration and exploitation as defined in the mining regulations have been interpreted/narrowed down by the <i>Seabed Advisory Opinion</i> to exclude processing and <i>ex situ</i> transportation.</p> <p>The reference to transportation systems suggests regulatory interface with IMO regulations, both for transport using ships in <i>situ</i> and <i>ex situ</i>.</p>

<p>Nodules Regulation 1(5)</p>	<p>Regulation 1(5)</p>	<p>These Regulations may be supplemented by further rules, regulations and procedures, in particular on the protection and preservation of the marine environment. These Regulations shall be subject to the provisions of the Convention and the Agreement and other rules of international law not incompatible with the Convention.</p>	<p>ISA, IMO</p>	<p>Other applicable regulations, including IMO (e.g., MARPOL, AFS Convention, BWM Convention).</p>	<p>The rule of reference in this provision incorporates other regulations (including non-ISA) that may be applicable. The regulations usefully anticipate that on the protection and preservation of the marine environment they may be supplemented by other rules of international law.</p>
<p>Regulation 23</p>	<p>Regulation 23</p>	<p>4. The Commission shall, in accordance with the requirements set forth in these Regulations and its procedures, determine whether the proposed plan of work for exploration will:</p> <ul style="list-style-type: none"> (a) Provide for effective protection of human health and safety; (b) Provide for effective protection and preservation of the marine environment, including, but not restricted to, the impact on biodiversity; (c) Ensure that installations are not established where interference may be caused by the use of recognized sea lanes essential to international navigation or in areas of intense fishing activity. 	<p>ISA</p>	<p>Nodules Sulphides Cobalt Exploitation IMO regulations; MLC</p>	<p>The Commission would need to consider the extent to which IMO and ILO regulations on human health and safety apply and factored into plans of work.</p>



<p>Modules Regulations; Sulphides Regulations; Cobalt Regulations; Standard Clauses</p>	<p>Section 15</p>	<p>15.1 The Contractor shall comply with the generally accepted international rules and standards established by competent international organizations or general diplomatic conferences concerning the safety of life at sea, and the prevention of collisions and such rules, regulations and procedures as may be adopted by the Authority relating to safety at sea. Each vessel used for carrying out activities in the Area shall possess current valid certificates required by and issued pursuant to such international rules and standards. 15.2 The Contractor shall, in carrying out exploration under this contract, observe and comply with such rules, regulations and procedures as may be adopted by the Authority relating to protection against discrimination in employment, occupational safety and health, labour relations, social security, employment security and living conditions at the work site. Such rules, regulations and procedures shall take into account conventions and recommendations of the International Labour Organization and other competent international organizations.</p>	<p>ISA, ILO, IMO,</p>	<p>SOLAS; LL Convention; COLREGS; MLC</p>	<p>This rule of reference in a standard clause enables the efficient incorporation of important legal regimes for safety of life at sea.</p>
<p>Draft Exploitation Regulations</p>	<p>Draft Regulation 1</p>	<p>7. These Regulations are subject to the provisions of the Convention and the Agreement and other rules of international law not incompatible with the Convention.</p>	<p>ISA</p>	<p>UNCLOS generally; 1994 Agreement; applicable IMO conventions</p>	<p>This provision sets out the legal context/ parameters of the draft regulations. In addition to the law of the sea instruments, the provision implicitly refers to IMO conventions that are applicable to shipping on the high seas.</p>

Draft Exploitation Regulations	Draft Regulation 2	4. Provide for the protection of human life;	ISA, IMO, ILO	ISA future regulations; IMO safety and ILO regulations	This provision states a principle without clarifying that ISA's regulatory role on this topic is supplementary to existing international safety regulations.
	Draft Regulation 7(3)	(f) A Health, Safety and Maritime Security Plan prepared in accordance with annex VI to these Regulations;	ISA, IMO, ILO	ISA future regulations; IMO safety, security and ILO regulations	Annex VI of the Draft exploitation regulations has not been drafted and will be populated following discussion with IMO Secretariat, members of ISA and Stakeholders.] It is likely that the Plan will be informed by a range of applicable international standards adopted by ISA, IMO and ILO.
	Draft Regulation 30 (Safety, labour and health standards)	<p>1. The Contractor shall ensure at all times that:</p> <p>(a) All vessels and Installations operating and engaged in Exploitation activities are in good repair, in a safe and sound condition and adequately manned, and comply with paragraphs 2 and 3 below; and</p> <p>(b) All vessels and Installations employed in Exploitation activities have an appropriate class designation and shall remain in class for the duration of the exploitation contract.</p> <p>2. The Contractor shall ensure compliance with the applicable international rules and standards established by competent international organizations or general diplomatic conferences concerning the safety of life at sea, the pollution of the Marine Environment by vessels, the prevention of collisions at sea and the treatment of crew members, as well as any rules, regulations and procedures and Standards adopted from time to time by the Council relating to these matters.</p> <p>3. In addition, Contractors shall:</p> <p>(a) Comply with the relevant national laws relating to vessel standards and crew safety of their flag State in the case of vessels, or their sponsoring State or States in the case of Installations; and</p>	ISA, IMO, ILO	SOLAS; LL Convention; MARPOL; AFS Convention; BWM Convention; COLREGS; STCW Convention; MLC	<p>This draft regulation contains useful rules of references to several applicable IMO conventions and codes, as well as the important ILO's MLC. The requirement for compliance with national maritime laws serves to emphasize the relevance of domesticated international maritime regulations and covers rules applicable to cabotage where shipping supporting seabed mining is domestic.</p> <p>On (5), IMO training regulations for seafarers cover a range of workers, but not all personnel likely to be engaged in activities in the Area. The MLC is potentially applicable. ISA's supplementary power under UNCLOS Article 146 could be used to address the non-seafarer competences needed on board ships and installations engaged in activities in the Area.</p> <p>The future development of guidelines for contractors' safety management systems for seabed mining has a useful precedent in the ISM Code. The ISM Code, a SOLAS instrument, could serve as a model for the development of safety management system for seabed mining. This is another area where IMO experience and expertise could be helpful.</p>

<p>Draft Exploitation Regulations</p>	<p>Draft Regulation 30 (Safety, labour and health standards)</p>	<p>(b) Comply with the national laws of its sponsoring State or States in relation to any matters that fall outside of the jurisdiction of the flag State, such as worker rights for non-crew members and human health and safety that pertains to the mining process rather than to ship operation. 4. The Contractor shall provide copies of valid certificates required under relevant international shipping conventions to the Authority upon request. 5. The Contractor shall ensure that: (a) All of its personnel, before assuming their duties, have the necessary experience, training and qualifications and are able to conduct their duties safely, competently and in compliance with the Rules of the Authority and the terms of the exploitation contract; (b) An occupational health, safety and environmental awareness plan is put in place to inform all personnel engaged in Exploitation activities as to the occupational and environmental risks which may result from their work and the manner in which such risks are to be dealt with; and (c) Records of the experience, training and qualifications of all of its personnel are kept and made available to the Secretary-General upon request. 6. A Contractor shall implement and maintain a safety management system taking account of the relevant Guidelines.</p>	<p>ISA</p>	<p>UNCLOS art 147</p>	<p>It is possible that routing measures could be useful area-based management tools to enable ISA to discharge its obligation in this provision. In this case, ISA in conjunction and likely through its member States (as States Parties to SOLAS), would need to proceed through IMO.</p>
<p>Draft Regulation 31</p>	<p>Draft Regulation 31</p>	<p>2. The Authority, in conjunction with member States, shall take measures to ensure that other activities in the Marine Environment shall be conducted with reasonable regard for the activities of Contractors in the Area.</p>	<p>ISA</p>	<p>UNCLOS art 147</p>	<p>It is possible that routing measures could be useful area-based management tools to enable ISA to discharge its obligation in this provision. In this case, ISA in conjunction and likely through its member States (as States Parties to SOLAS), would need to proceed through IMO.</p>

<p>Draft Exploitation Regulations</p>	<p>Draft Regulation 43 (Compliance with other laws and regulations)</p>	<p>1. Nothing in an exploitation contract shall relieve a Contractor from its lawful obligations under any national law to which it is subject, including the laws of a sponsoring State and flag State.</p>	<p>ISA</p>	<p>All ISA regulations and applicable IMO regulations</p>	<p>This provision underscores that international maritime rules and standards apply side-by-side seabed mining regulation.</p>
<p>Draft Exploitation Regulations</p>	<p>Draft Regulation 94 (Adoption of Standards)</p>	<p>1. The Commission shall, taking into account the views of recognized experts, relevant Stakeholders and relevant existing internationally accepted standards, make recommendations to the Council on the adoption and revision of Standards relating to Exploitation activities in the Area, including but not limited to standards relating to:</p> <ul style="list-style-type: none"> (a) Operational safety; (b) The conservation of the Resources; and (c) The protection of the Marine Environment, including standards or requirements relating to the Environment Effects of Exploitation activities, and referred to in regulation 45. 	<p>ISA</p>	<p>All ISA regulations, ISM Code and London Convention & Protocol waste assessment guidelines</p>	<p>The ISM Code and London Convention and Protocol's waste assessment guidelines are potentially relevant internationally accepted standards.</p>





<p>Draft Exploitation Regulations</p>	<p>Draft Regulation 95 (Issue of Guidelines)</p>	<p>1. The Commission or the Secretary-General shall, from time to time, issue Guidelines of a technical or administrative nature, taking into account the views of relevant Stakeholders. Guidelines will support the implementation of these Regulations from an administrative and technical perspective. 2. The full text of such Guidelines shall be reported to the Council. Should the Council find that a Guideline is inconsistent with the intent and purpose of the Rules of the Authority, it may request that the guideline be modified or withdrawn. 3. The Commission or the Secretary-General shall keep under review such Guidelines in the light of improved knowledge or information.</p>	<p>ISA</p>	<p>Various international codes and guidelines (e.g., IMO instruments).</p>	<p>The ISM Code and London Convention and Protocol's waste assessment guidelines are potentially useful models for the issuance of guidelines by ISA.</p>
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