

INTERNATIONAL TRIBUNAL FOR THE LAW OF THE SEA

CASE NO. 31

**Request for an Advisory Opinion submitted by the Commission of Small Island States
on Climate Change and International Law**

Written Statement of the
International Maritime Organization

16 June 2023

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I. Introduction

A. Background

1. A request for an advisory opinion was submitted to the International Tribunal of the Law of the Sea (the "Tribunal") on 12 December 2022 by the Commission of Small Island States on Climate Change and International Law (the "Commission"). The request was submitted under article 138¹ of the Rules of the Tribunal and pursuant to article 2, paragraph 2 of the Agreement² establishing the Commission ("COSIS Agreement").
2. On 16 December 2022, in accordance with article 133 of the Rules of the Tribunal, the President of the Tribunal adopted an Order on the conduct of the proceedings in the present case, by which it decided that certain intergovernmental organizations,³ including the International Maritime Organization, are considered likely to be able to furnish information on the questions submitted to the Tribunal for an advisory opinion, and to this end, invited the same intergovernmental organizations to present written statements on those questions. By the same Order, 16 May 2023 was set as the time limit within which written statements may be presented to the Tribunal, which was thereafter extended by an Order of 15 February 2023, to 16 June 2023.
3. The Commission of Small Island States on Climate Change and International Law was established by the COSIS Agreement signed at Edinburgh on 31 October 2021. It entered into force on the same day, by virtue of the definitive signature of Antigua and Barbuda and Tuvalu. Thereafter, the following States acceded to the Agreement: Palau,⁴ Niue,⁵ Vanuatu⁶ and St. Lucia.⁷
4. Two intertwined questions are presented to the Tribunal as follows: What are the specific obligations of States Parties to the United Nations Convention on the Law of the Sea ("UNCLOS"), including under Part XII:
 - a. To prevent, reduce and control pollution of the marine environment in relation to the deleterious effects that result or are likely to result from climate change,

¹ 1. The Tribunal may give an advisory opinion on a legal question if an international agreement related to the purposes of the Convention specifically provides for the submission to the Tribunal of a request for such an opinion.

2. A request for an advisory opinion shall be transmitted to the Tribunal by whatever body is authorized by or in accordance with the agreement to make the request to the Tribunal.

3. The Tribunal shall apply *mutatis mutandis* articles 130 to 137.

² Agreement for the establishment of the Commission of Small Island States on Climate Change and International Law. Edinburgh, 31 October 2021, entry into force by signature, in accordance with article 4(2).

³ Annex to Order 2022/4 of 16 December 2022 by the President of the Tribunal identified the following intergovernmental organizations: United Nations, United Nations Environment Programme (UNEP), United Nations Framework Convention on Climate Change (UNFCCC), Food and Agriculture Organization of the United Nations (FAO), Intergovernmental Oceanographic Commission of UNESCO (IOC-UNESCO), International Maritime Organization (IMO), International Union for Conservation of Nature (IUCN), and World Meteorological Organization (WMO). The African Union was added to the list of intergovernmental organizations pursuant to Order 2023/1 of 15 February 2023.

⁴ 4 November 2021.

⁵ 13 September 2022.

⁶ 2 December 2022.

⁷ 7 December 2022.

including through ocean warming and sea level rise, and ocean acidification, which are caused by anthropogenic greenhouse gas emissions into the atmosphere?

- b. To protect and preserve the marine environment in relation to climate change impacts, including ocean warming and sea level rise, and ocean acidification?
5. This written statement is being presented to the Tribunal in compliance with the above Orders and invitation to specified international organizations.

B. International Maritime Organization

6. The International Maritime Organization (IMO) is an intergovernmental organization with a regulatory mandate for the safety and security of shipping and the prevention of marine and atmospheric pollution by ships. As a specialized agency of the United Nations, IMO is the global standard-setting authority for the safety, security and environmental performance of international shipping. Its main role is to create a regulatory framework for the shipping industry that is fair and effective, universally adopted and consistently implemented and enforced. The mission of IMO is to promote safe, secure, environmentally sound, efficient and sustainable shipping through cooperation. This will be accomplished by adopting the highest practicable standards of maritime safety and security, efficiency of navigation, and prevention and control of pollution from ships, as well as through consideration of the related legal matters and effective implementation of IMO instruments, with a view to their universal and uniform application.⁸
7. IMO was established by the Convention on the International Maritime Organization adopted on 6 March 1948 in Geneva, and entered into force on 17 March 1958.⁹ The highest governing body of the Organization is the Assembly, which consists of all Members. In between sessions of the Assembly, the Council, comprised of 40 Members elected on the basis of specific criteria,¹⁰ stands as the governing body of the Organization.
8. Membership of the Organization¹¹ currently stands at 175 Member States and three Associate Members.¹² In addition thereto, 66 intergovernmental organizations have observer status with IMO,¹³ while 88 international non-governmental organizations are in consultative status.¹⁴ The diverse participation of Member States and international

⁸ Resolution A.1149(32).

⁹ Convention on the Inter-governmental Maritime Consultative Organization, 6 March 1948, 289 UNTS 3. The original name: the Inter-governmental Maritime Consultative Organization or IMCO was changed to International Maritime Organization or IMO, in 1982.

¹⁰ Category A: 10 Member States with the largest interest in providing shipping services; Category B: 10 Member States with the largest interest in international seaborne trade; Category C: 20 Member States which have special interests in maritime transport or navigation. Election in this category must ensure representation of all major geographic areas.

¹¹ <https://www.imo.org/en/OurWork/ERO/Pages/MemberStates.aspx>

¹² Faroes; Hong Kong, China; and Macao, China.

¹³ <https://www.imo.org/en/OurWork/ERO/Pages/IGOsWithObserverStatus.aspx>

¹⁴ <https://www.imo.org/en/About/Membership/Pages/NGOsInConsultativeStatus.aspx>

organizations ensures that various stakeholder interests in shipping are addressed by regulatory measures devised in the Organization.

9. Following several amendments to the IMO Convention, the work of the Organization is presently done through the following Committees, participated in by all IMO Member States:
 - a. The Maritime Safety Committee (MSC) is the principal forum for the consideration of matters directly affecting maritime safety in the Organization. These include ship design and construction standards, routing measures, manning requirements, communications, prevention of collisions, handling of dangerous goods, search and rescue and maritime security, among others.
 - b. The Marine Environment Protection Committee (MEPC) addresses environmental issues under IMO's remit. These include the control and prevention of ship-source pollution covered by the International Convention for the Prevention of Pollution from Ships (MARPOL) (from oil, chemicals carried in bulk, sewage, garbage and emissions from ships, including air pollutants and greenhouse gases). The work of MEPC aims to strike a balance between advancements in ship technologies and their impacts on the marine environment, including in the following areas: ballast water management, ship recycling, control of harmful anti-fouling systems, ship recycling, and ensuring ships' energy efficiency. MEPC, in conjunction with MSC, also considers proposals for the adoption of measures for special areas, emission control areas under MARPOL and particularly sensitive sea areas.
 - c. The Legal Committee (LEG) is primarily concerned with the liability and compensation regime in case of maritime casualties and the resulting damage to persons and the marine environment. LEG is also empowered to consider any legal matters within the scope of the Organization. LEG is also an organ responsible for the treaties related to the Suppression of Unlawful Acts against the Safety of Maritime Navigation which address, among other, environmental terrorism.
 - d. The Facilitation Committee (FAL) deals with matters related to the facilitation of international maritime traffic, including the arrival, stay and departure of ships, persons and cargo from ports, pursuant to the Convention on Facilitation of International Maritime Traffic, 1965.
 - e. The Technical Cooperation Committee (TCC) implements IMO's capacity-building and technical cooperation programmes for which the Organization acts as the executing or cooperating agency.
10. IMO and its different organs are driven by a strong commitment to ensuring that shipping does not unduly cause harm to the marine environment. In 1975, article 1 of the IMO Convention was amended to add to the purposes of the Organization "the prevention and control of marine pollution from ships; and to deal with legal matters related to the purposes."¹⁵ The Legal Committee was established in the same decade primarily tasked with the assessment of liability and compensation due for oil spill damage, as well as a new MSC Sub-Committee for environmental issues.

¹⁵ Originally, the Legal Committee was established as an ad hoc subsidiary body of the Council, following the Torrey Canyon disaster in 1967. It was then institutionalized in 1975: resolution A.358(IX), *Amendments to the IMCO Convention*. 14 November 1975 (Entry into force: 1982).

11. Today, the Maritime Safety and Marine Environment Protection Committees are further supported by the work of various Sub-Committees which delve into matters that concern the marine environment to varying extents, such as:
 - a. The Sub-Committee on Pollution Prevention and Response (PPR) deals with all matters within IMO's remit relating to pollution prevention and response. Besides ship-source pollution covered under the MARPOL Annexes, PPR also considers the control and management of harmful aquatic organisms in ships' ballast water and sediments, biofouling, anti-fouling systems, the safe and environmentally sound recycling of ships, and marine plastic litter from ships.
 - b. The Sub-Committee on Implementation of IMO Instruments (III) facilitates the consideration of implementation issues by flag, port and coastal States, including the analysis of consolidated audit summary reports from the mandatory IMO Member state Audit Scheme. It also keeps under review port State control data and procedures for port State control, and develops guidelines for surveys and certifications.

12. IMO has identified the need to respond to climate change among its strategic directions under its Strategic Plan for 2018-2023, acknowledging that, "although shipping is one of the most energy-efficient modes of transportation and has already increased its energy efficiency and reduced emissions, the shipping industry continues to pursue strategies to reduce emissions worldwide".¹⁶ Furthermore, IMO remains committed to "consider further measures to ensure that international shipping continues to bear its responsibility in addressing climate change." IMO's current work in relation to climate change and its effects are primarily considered before the following bodies and their corresponding agenda items:
 - a. **MEPC's work with respect to IMO conventions on the prevention and control of marine environmental pollution.** MEPC remains seized of developments relating to pollution of the marine environment through shipping activities, consistent with the mandate contained in different IMO treaties, foremost of which is the MARPOL Convention. Under the mandate of such relevant treaties (which are discussed hereunder), MEPC coordinates the Organization' target outputs¹⁷ under the strategic direction of responding to climate change. With respect to the **reduction of greenhouse gas emissions from ships**, following the adoption by IMO Member States of the Initial IMO Strategy on reduction of greenhouse gas (GHG) emissions from ships by resolution MEPC.304(72), MEPC, supported by the Intersessional Working Group on Reduction of Greenhouse Gases, is presently working on the revision of the said GHG strategy, conscious of the need for all concerned sectors to accelerate efforts at reducing GHG emissions;

¹⁶ A.32/Res.1149, *Revised Strategic Plan for the Organization for the six-year period 2018 to 2023*, para. 21 (SD 3: Respond to climate change). 15 December 2021.

¹⁷ *Ibid.* Treatment of ozone-depleting substances used by ships (output 3.1), further development of mechanisms needed to achieve the reduction of GHG emissions from international shipping (output 3.2), reduction of the impact on the Arctic of emissions of black carbon from international shipping (output 3.3), promotion of technical cooperation and transfer of technology relating to the reduction of GHG emissions from ships (3.4), revision of guidelines concerning Chapter 4 of MARPOL Annex VI (output 3.5), EEDI reviews required under regulation 21.6 of MARPOL Annex VI (output 3.6), and further technical and operational measures for enhancing the energy efficiency of international shipping (output 3.7).

- b. **Technical work on pollution prevention and response.** MEPC, through the PPR Sub-Committee, is presently engaged in the consideration of the following issues: prevention of air pollution from ships, control and management of ships' biofouling, reduction of the impact on the Arctic of black carbon emissions from international shipping, and the matter of addressing marine plastic litter from ships;
- c. **Measures relating to the regulation of dumping of wastes and other matter at sea.** Working under the auspices of IMO, the Contracting Parties to the London Convention and London Protocol regulate prevention of pollution from dumping at of wastes and other matters at sea, including the following matters: marine geoengineering (including ocean fertilization) and CO₂ sequestration in sub-seabed geological formations, among others;
- d. **Liability and compensation conventions for pollution of the marine environment.** Besides technical standards, the framework for regulation of activities that may lead to pollution of the marine environment is completed by IMO's liability and compensation conventions, primarily under the purview of the Organization's Legal Committee.

C. Applicable Law

- 13. In considering the questions presented to the Tribunal by the present request for advisory opinion, Article 293, paragraph 1 of UNCLOS provides 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."
- 14. In this regard, the extensive legal framework and numerous legal instruments that have emerged under the auspices of IMO, prior, in parallel and subsequent to UNCLOS, form part of such other rules of international law not incompatible with that Convention. As will be explained below, an intricate balance was sought to be achieved between the two regimes during the development of UNCLOS in the 1970s and 80s. Following the entry into force of UNCLOS, IMO continued to ensure that instruments that would be adopted would be in furtherance of the umbrella framework laid out in UNCLOS and be without prejudice to its provisions.

D. Summary of position

- 15. In addressing the questions submitted to the Tribunal by the Commission, IMO is in a position to provide views only within the scope of its status as a specialized agency of the United Nations and as a "competent international organization" under certain sections of UNCLOS. As a competent international organization, IMO is tasked with the development of rules and regulations relevant to international shipping and navigation and to the prevention and control of pollution in the marine environment from shipping activity, under its own framework, instruments and processes. While the discussion below is limited to examples derived from IMO's own legal instruments, the following written statement is intended to provide an overview of the framework by which general and specific obligations under UNCLOS are further developed and supplemented through normative modalities under competent international organizations.
- 16. The obligations of UNCLOS States Parties with respect to the effects of climate change on the marine environment are grounded and well-established in that Convention,

particularly in Part XII thereof. In addition, UNCLOS has established mechanisms by which competent international organizations in their respective fields of expertise could develop specific obligations that are intended to respond to challenges not previously contemplated at the time of the adoption of the Convention. In the context of IMO, those specific obligations in line with the implementation of UNCLOS are contained in treaties, regulations, resolutions and instruments developed under its auspices, with the participation of its Member States, most of which are also UNCLOS States Parties.

17. Specific obligations under those instruments may also arguably be regarded as having the standing of "generally accepted international rules and standards". While there are no specific criteria for identifying when or how international rules and standards become generally accepted, in the context of rulemaking in IMO, participation in the work of the Organization by 175 Member States and virtually all bodies and organizations with an interest in the regulation of shipping and in the creation and acceptance of those same rules and standards, lend support to a notion of their being generally accepted.
18. UNCLOS States Parties, insofar as they have agreed to the regime set out by that Convention for the development of generally accepted international rules and standards through competent international organizations, also have the obligation to give full effect to such rules and standards through the adoption of national legislation consistent with the same generally accepted international rules and standards, and the enforcement thereof within the bounds of each State Party's respective jurisdiction. Moreover, IMO Member States who are also UNCLOS States Parties could very well accept specific obligations under IMO instruments that derive from, or are without prejudice to, the provisions of UNCLOS.¹⁸

¹⁸ The following States are Parties to UNCLOS but not Members of IMO: Burkina Faso, Chad, Eswatini, Laos, Lesotho, Mali, Micronesia, Niger, Niue and Palestine. The following States are Members of IMO but not Parties to UNCLOS: Cambodia, Colombia, Democratic People's Republic of Korea, El Salvador, Eritrea, Ethiopia, Islamic Republic of Iran, Israel, Kazakhstan, Libya, San Marino, Syria, Türkiye, Turkmenistan, United Arab Emirates, United States and Venezuela. Some States Parties to UNCLOS, for example Niue, although not IMO Members, have ratified the most significant IMO treaties such as SOLAS and MARPOL.

II. Legal Questions submitted in the request for an advisory opinion

19. The following section contains information on the international legal instruments relevant to the questions raised that have been adopted under the auspices of IMO, with a view to assisting the Tribunal in its consideration of the questions raised in the request for an advisory opinion. Any references to the instruments are factual in nature and subject to the understanding that only States Parties to those instruments have the prerogative of interpreting those instruments.
20. While the statements made below are specific to the context of rulemaking in IMO, it is intended to provide an illustration of the development of specific obligations implementing the provisions of UNCLOS that are relevant to the competent international organizations designated under that Convention. These statements aim to respond to the legal questions submitted in the request for an advisory opinion by way of drawing examples and by describing the mandate provided in the IMO instruments discussed, and in no way provide an exhaustive list of obligations arising from those different instruments.

A. Preliminary Considerations

21. This section outlines preliminary considerations on IMO's regulatory framework that are integral to the responses to the questions in the request for the advisory opinion discussed in the next section.

1. Jurisdictional Interface between the UNCLOS and IMO regimes

22. UNCLOS is regarded as a framework convention for the regulation of States' rights, obligations and activities in ocean spaces. During the Third UN Conference for the Law of the Sea (from 1973 to 1982), a balance had to be carefully struck between the codification and development of the law of the sea to regulate once and for all different stakeholder rights and interests in ocean spaces on one hand, and the work and scope of activities of already existing organizations with their own mandates with respect to the oceans, on the other hand. The Secretariat of IMO (known then as the Inter-Governmental Maritime Consultative Organization or IMCO) thus participated actively in the negotiation of the Convention, to ensure that IMO instruments were consistent with the basic principles to be enshrined in UNCLOS. Following the Convention's adoption in 1982, IMO continued to cooperate with the UN in ensuring that provisions in its instruments (both treaty and non-treaty) were in line with, and did not prejudice, that of UNCLOS.
23. While IMO had already facilitated the adoption of several conventions by the time UNCLOS was being negotiated, UNCLOS today still provides the general jurisdictional framework for the use and regulation of ocean spaces, allocating rights, obligations and jurisdiction to coastal States, flag States and port States.
24. Under UNCLOS, coastal States enjoy sovereign rights in varying degrees over the different zones of the sea, namely the internal waters, territorial sea, contiguous zone, exclusive economic zone and the high seas. The Convention also gives coastal States a degree of jurisdiction over foreign vessels depending on where the vessel is located,

and exceptionally allows coastal States to take and enforce measures beyond the territorial sea in cases of pollution or a threat thereof following a maritime casualty.¹⁹

25. UNCLOS also provides a general framework for flag State jurisdiction that is intended to be filled in by rules and regulations adopted by IMO as the competent international organization, as discussed below.
26. Finally, under UNCLOS and IMO instruments, the exercise of port State jurisdiction within a State's internal waters provides an avenue for corrective action in case of flag States' failure to abide by their obligations.

2. Competent International Organizations under UNCLOS

27. When elaborating the duty of States and the scope of permissible activities within their respective jurisdiction, UNCLOS refers to "competent international organizations" in relation to specific subject matters covered under that Convention. The work of these organizations in relation to UNCLOS have a normative character: they could be the body under which relevant international rules and standards are further developed; or the proper forum before which proposals for State action relating to the seas are considered and adopted; or bodies that issue recommendations that States must take into account in adopting domestic rules and regulations. Thus, in addition to the one instance in which IMO is explicitly referred to in the Convention,²⁰ it is widely considered as the competent international organization in relation to specific subject areas regulated by UNCLOS, especially the safety of navigation and the prevention, reduction and control of pollution of the marine environment from dumping and the operation of vessels.
28. In the UN Division for Ocean Affairs and Law of the Sea's Law of the Sea Bulletin no. 31, those "competent and relevant international organizations" under the UNCLOS have been identified to avoid potential confusion regarding which organizations are "primarily responsible for the activities set forth in those specific provisions".²¹ This acknowledges that while specific international organizations have only been named a few times in UNCLOS, reference in general terms to "competent and relevant international organizations" would still primarily fall under the purview of specific organizations. In this regard, IMO has been identified as the competent or relevant organization for the following provisions of UNCLOS:
 - a. Innocent passage through the territorial sea: Article 22(3)(a) on the duty of coastal States establishing sea lanes and traffic separation schemes to take into account the recommendations of the *competent international organization*;
 - b. Straits used for international navigation: Article 41(4) on the duty of States bordering straits to refer to proposals concerning designation, prescription or substitution of sea lanes and traffic separation schemes to the *competent international organization* with a view to their adoption; and Article 41(5) on the duty

¹⁹ Article 221.

²⁰ Article 2 of Annex VIII.

²¹ Division for Ocean Affairs and Law of the Sea, Office of Legal Affairs, United Nations. Law of the Sea Bulletin No. 31, 1996, p. 79.

of the same States to cooperate in formulating proposals for sea lanes or traffic separation schemes in consultation with the *competent international organization*;

- c. Archipelagic States: Article 53(9) on the duty of archipelagic States to refer proposals concerning designation, prescription or substitution of sea lanes or traffic separation schemes to the *competent international organization* with a view to their adoption;
 - d. Artificial islands, installations and structures in the exclusive economic zones: Article 60(3) on the duty of coastal States to remove abandoned or disused installations or structures, taking into account any generally accepted international standards or as recommended by the *competent international organization*;
 - e. Constitution of special arbitral tribunal: Annex VIII, art. 3(e), which is, in fact, the only instance during which IMO was named.
29. More importantly, IMO has been identified as among the competent international organizations for matters relating to the protection and preservation of the marine environment (emphasis supplied):

Part XII

Section 2. Global and Regional Cooperation

Article 197 Cooperation on a global or regional basis

States shall cooperate on a global basis and, as appropriate, on a regional 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, taking into account characteristic regional features.

Article 198 Notification of imminent or actual damage

When a State becomes aware of cases in which the marine environment is in imminent danger of being damaged or has been damaged by pollution, it shall immediately notify other States it deems likely to be affected by such damage, as well as the *competent international organizations*.

Article 199 Contingency plans against pollution

In the cases referred to in article 198, States in the area affected, in accordance with their capabilities, and the *competent international organizations* shall cooperate, to the extent possible, in eliminating the effects of pollution and preventing or minimizing the damage. To this end, States shall jointly develop and promote contingency plans for responding to pollution incidents in the marine environment.

Article 200 Studies, research programmes and exchange of information and data

States shall cooperate, directly or through *competent international organizations*, for the purpose of promoting studies, undertaking programmes of scientific research and encouraging the exchange of information and data acquired about pollution of the marine environment. They shall endeavour to participate actively in regional and global programmes to acquire knowledge for the assessment of the nature and extent of pollution, exposure to it, and its pathways, risks and remedies.

Article 201 Scientific criteria for regulations

In the light of the information and data acquired pursuant to article 200, States shall cooperate, directly or through *competent international organizations*, in establishing appropriate scientific criteria for the formulation and elaboration of rules, standards and recommended practices and procedures for the prevention, reduction and control of pollution of the marine environment.

Section 3. Technical Assistance

Article 202 Scientific and technical assistance to developing States

States shall, directly or through *competent international organizations*:

- (a) promote programmes of scientific, educational, technical and other assistance to developing States for the protection and preservation of the marine environment and the prevention, reduction and control of marine pollution. Such assistance shall include, inter alia:
 - (i) training of their scientific and technical personnel;
 - (ii) facilitating their participation in relevant international programmes;
 - (iii) supplying them with necessary equipment and facilities;
 - (iv) enhancing their capacity to manufacture such equipment;
 - (v) advice on and developing facilities for research, monitoring, educational and other programmes;
- (b) provide appropriate assistance, especially to developing States, for the minimization of the effects of major incidents which may cause serious pollution of the marine environment;
- (c) provide appropriate assistance, especially to developing States, concerning the preparation of environmental assessments.

Section 4. Monitoring and Environmental Assessment

Article 204 Monitoring of the risks or effects of pollution

1. States shall, consistent with the rights of other States, endeavour, as far as practicable, directly or through the *competent international organizations*, to observe, measure, evaluate and analyse, by recognized scientific methods, the risks or effects of pollution of the marine environment.
2. In particular, States shall keep under surveillance the effects of any activities which they permit or in which they engage in order to determine whether these activities are likely to pollute the marine environment.

Article 205 Publication of reports

States shall publish reports of the results obtained pursuant to article 204 or provide such reports at appropriate intervals to the *competent international organizations*, which should make them available to all States.

30. Section 5 of Part XII of UNCLOS provides a detailed framework for the different sources of pollution of the marine environment, and the allocation of States' prerogative to legislate on the prevention, reduction and control thereof. IMO has also been identified as being among the relevant competent international organizations in this regard, as follows (emphasis supplied):

Article 210 Pollution by dumping

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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.

Article 211 Pollution from vessels

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 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.
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.

3. States which establish particular requirements for the prevention, reduction and control of pollution of the marine environment as a condition for the entry of foreign vessels into their ports or internal waters or for a call at their off-shore terminals shall give due publicity to such requirements and shall communicate them to the *competent international organization*. Whenever such requirements are established in identical form by two or more coastal States in an endeavour to harmonize policy, the communication shall indicate which States are participating in such cooperative arrangements. Every State shall require the master of a vessel flying its flag or of its registry, when navigating within the territorial sea of a State participating in such cooperative arrangements, to furnish, upon the request of that State, information as to whether it is proceeding to a State of the same region participating in such cooperative arrangements and, if so, to indicate whether it complies with the port entry requirements of that State. This article is without prejudice to the continued exercise by a vessel of its right of innocent passage or to the application of article 25, paragraph 2.

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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.
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.

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(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.

Article 212 Pollution from or through the atmosphere

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.

31. Section 6 of Part XII of UNCLOS charts complementary provisions on the enforcement of those rules, standards, practices, etc. established in accordance with Section 5. IMO has also been identified as being among the relevant competent international organizations in this regard, including the related provision in Article 223, as follows (emphasis supplied):

Article 216 Enforcement with respect to pollution by dumping

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:
 - (a) by the coastal State with regard to dumping within its territorial sea or its exclusive economic zone or onto its continental shelf;
 - (b) by the flag State with regard to vessels flying its flag or vessels or aircraft of its registry;
 - (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.

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Article 217 Enforcement by flag States

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.

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2. 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.

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7. Flag States shall promptly inform the requesting State and the *competent international organization* of the action taken and its outcome. Such information shall be available to all States.

Article 218 Enforcement by port States

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.

Article 220 Enforcement by coastal States

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.

Article 222 Enforcement with respect to pollution from or through the atmosphere

States shall enforce, within the air space under their sovereignty or with regard to vessels flying their flag or vessels or aircraft 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.

32. Furthermore, IMO has also been identified as being among the international organizations concerned with respect to the following subject matters: enclosed or

semi-enclosed seas,²² the Area,²³ and marine scientific research,²⁴ which are referenced below for brevity.

3. Competent International Organizations as fora for the development of Generally Accepted International Rules and Standards (GAIRS)

33. In the Law of the Sea Bulletin No. 31 it is further explained that "some international organizations are also competent with respect to the provisions of the Convention" despite the lack of explicit reference to them or the term "organization", especially when reference is made to "generally accepted international rules and standards" and similar expressions. A specific example²⁵ relating to IMO was raised in this regard, which appears throughout the Convention in variations of the following usages, as also emphasized in the previous section: "generally accepted international rules and standards", "internationally agreed rules, standards, and recommended practices and procedures", "global and regional rules, standards and recommended practices", "generally accepted international regulations", "international rules and standards" or "applicable international instruments".
34. Besides the provisions relating to the pollution of the marine environment referred to in the previous section²⁶ and Article 226 on the investigation of foreign vessels,²⁷ other references to such generally accepted international rules and standards (or variations

²² Article 123 on the duty of States bordering such enclosed or semi-enclosed seas to endeavour to cooperate directly or through an appropriate regional organization to, among others, invite, as appropriate, other interested States or international organizations to cooperate with them.

²³ Article 163(13) on consultation by the Economic Planning Commission and the Legal and Technical Commission of any competent organ of the UN or its specialized agencies or any international organizations with competence in the subject-matter of such consultation; and Article 169(1) and (2) on the duty of the Secretary-General of the Authority to make suitable arrangements for consultation and cooperation with international and non-governmental organizations recognized by the Economic and Social Council of the United Nations.

²⁴ Articles 238, 239, 243, 244(1), (2), 246 (3), 246 (5), 247, 248, 249(1), 251, 252, 253, 254(1), (2), (3), (4), 256, 257, 262, 263(1), (2), (3), 265, 266(1), 268, 269, 270, 271, 272, 273, 275, 276(1), 278, 297 (1)(c).

²⁵ Article 21(4).

²⁶ See for example Articles 211(2), (5) and (6)(c).

²⁷ 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:

(i) there are clear grounds for believing that the condition of the vessel or its equipment does not correspond substantially with the particulars of those documents;

(ii) the contents of such documents are not sufficient to confirm or verify a suspected violation; or

(iii) the vessel is not carrying valid certificates and records.

(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.

(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. Where release has been refused or made conditional, the flag State of the vessel must be promptly notified, and may seek release of the vessel in accordance with Part XV.

thereof) relevant to IMO relate to innocent passage;²⁸ transit passage;²⁹ archipelagic sea lanes passage;³⁰ and artificial islands, installations and structures in the exclusive economic zone;³¹ among others. Article 94, which is a pillar for most IMO instruments and provisions detailing the duties of the flag State, also allude to such generally accepted international rules and standards with which the implementation of measures must be consistent:

Article 94 Duties of the flag State

1. Every State shall effectively exercise its jurisdiction and control in administrative, technical and social matters over ships flying its flag.
2. In particular every State shall:
 - (a) maintain a register of ships containing the names and particulars of ships flying its flag, except those which are excluded from generally accepted international regulations on account of their small size; and
 - (b) assume jurisdiction under its internal law over each ship flying its flag and its master, officers and crew in respect of administrative, technical and social matters concerning the ship.
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:
 - (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.
4. Such **measures** shall include those **necessary** to ensure:
 - (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.
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.

35. Pursuant to the abovementioned provisions, UNCLOS States Parties are effectively duty-bound to take such generally accepted international rules and standards into

²⁸ Under Article 21(2) coastal State regulation relating to innocent passage "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". Article 21 (4): provides that 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.

²⁹ Article 31(2) on the duties of ships and aircraft during transit passage provides that 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.

³⁰ Article 41(3) on straits used for international navigation and 53 (8) on archipelagic sea lanes passage provides that such sea lanes and traffic separation schemes shall conform to generally accepted international regulations.

³¹ Articles 60(3), (5) and (6) refer to generally accepted international standards in relation to artificial islands, installations and structures in the exclusive economic zone.

account in the exercise of its rights and obligations, or to conform or give effect thereto, or to act in a manner consistent therewith, or to establish regulations that are in line with, and not less effective than the standards contained in such rules and standards, that have been developed under the auspices of the relevant competent international organizations.

4. International rule-making in IMO

36. Since 1948, more than 50 treaties have been developed under IMO's auspices, as well as numerous codes, resolutions, recommendations, guidelines, unified interpretations, and other legal instruments aiming at the regulation of ships safety, the prevention, reduction and control of marine pollution from ships, and the provision of a satisfactory compensatory regime in case of damage resulting from pollution incidents.
37. In relation to shipping, therefore, the generally accepted international rules and standards developed by UNCLOS States Parties either through, or in consultation or cooperation with the competent international organization, will be those that are found in the range of IMO instruments regulating maritime safety, security and the protection of the marine environment from untoward effects of shipping activity.
38. Besides treaties, which are mandatory for States Parties that have accepted, ratified or acceded to them, IMO has also developed "codes" which can both be made mandatory and are incorporated in IMO treaties and/or contain recommendatory guidelines in parallel. Some of those treaties and codes are discussed below. Other non-mandatory instruments such as resolutions, recommendations, guidelines and unified interpretations may reflect the intent of IMO Member States and States Parties to the respective treaties to address perceived threats to the safety of navigation and the protection and preservation of the marine environment.
39. Consistent with its role as a competent international organization that is able to respond timely to contemporary challenges to the oceans, a number of IMO instruments have built-in mechanisms for the tacit acceptance of amendments to technical parts of treaties. For example, the amendment procedure of MARPOL annexes³² allows amendments to enter into force at the end of a defined period from the time of its adoption, unless before that period a threshold number of objections have been communicated to the IMO Secretary-General in his capacity as depositary. The tacit acceptance mechanism thus allows improvements to rules and regulations under the relevant IMO treaties to enter into force at a more timely pace, than if explicit acceptance of each and every amendment were required. This also ensures, subject to timely implementation of those amendments by States Parties, that IMO remains

³² Article 16(2) (f) (ii). an amendment to an Annex to the Convention shall be deemed to have been accepted in accordance with the procedure specified in sub-paragraph (f)(iii) unless the appropriate body, at the time of its adoption, determines that the amendment shall be deemed to have been accepted on the date on which it is accepted by two-thirds of the Parties, the combined merchant fleets of which constitute not less than fifty per cent of the gross tonnage of the world's merchant fleet. Nevertheless, at any time before the entry into force of an amendment to an Annex to the Convention, a Party may notify the Secretary-General of the Organization that its express approval will be necessary before the amendment enters into force for it. The latter shall bring such notification and the date of its receipt to the notice of Parties;

(iii) an amendment to an Appendix to an Annex to the Convention shall be deemed to have been accepted at the end of a period to be determined by the appropriate body at the time of its adoption, which period shall be not less than ten months, unless within that period an objection is communicated to the Organization by not less than one-third of the Parties or by the Parties the combined merchant fleets of which constitute not less than fifty per cent of the gross tonnage of the world's merchant fleet whichever condition is fulfilled;

capable to address promptly challenges and threats to the safety of navigation and the marine environment.

40. While there is no definitive criteria for the identification of when international rules and standards have the character of being "generally accepted" nor is it for IMO to define whether each and every one of such specific obligations under its treaties are "generally accepted international rules and standards" or variations thereof, the status of acceptance of IMO treaties may be indicative for such determination. As will be further illustrated below, the level of participation in the various IMO treaties is assessed not only in terms of the number of States Parties signing, acceding to, ratifying or accepting those treaties, but also in terms of the corresponding amount of shipping tonnage of those States, which provides a rough mark of the rate of implementation to be expected under each treaty system.

B. Question 1: What are the specific obligations of UNCLOS States Parties to prevent, reduce and control pollution of the marine environment in relation to the deleterious effects of climate change which are caused by greenhouse gas emissions into the atmosphere?

41. In responding to the above question, it is submitted that the specific obligations of UNCLOS States Parties to prevent, reduce and control pollution of the marine environment primarily in relation to deleterious climate change effects caused by anthropogenic greenhouse gas emissions in the atmosphere, are first, contained in UNCLOS itself, and second, elaborated through the generally accepted international rules and standards developed under the auspices of competent international organizations. Examples relevant to IMO's mandate and scope of work are provided hereunder.
42. UNCLOS is often referred to as a framework convention serving as an "umbrella" for the development of specific rules and regulations in accordance with the jurisdictional framework laid down in that convention. In relation to the preservation of the marine environment in Part XII UNCLOS provides the specific obligations of States Parties as reflected in Articles 192 to 237. Across those provisions and as explained above, general reference is made to IMO rules and standards, which States Parties must implement concurrently with the operative provisions of Part XII.

1. Obligations under UNCLOS

43. Part XII of UNCLOS sets out the obligations of States Parties to prevent, reduce and control pollution of the marine environment in articles 192 to 237. Matters under the scope of IMO's mandate are also covered under the following counterpart provisions: article 210 and 216 (pollution by dumping); articles 211, 217, 218 and 222 (pollution from vessels); and articles 212 and 222 (pollution from or through the atmosphere).
44. Most relevant to the question specific to climate change effects caused by anthropogenic greenhouse gas emissions into the atmosphere, are the provisions in articles 212 and 222 on pollution from or through the atmosphere:

Article 212 Pollution from or through the atmosphere

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.
2. States shall take other measures as may be necessary to prevent, reduce and control such pollution.
 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.

Article 222 Enforcement with respect to pollution from or through the atmosphere

States shall enforce, within the air space under their sovereignty or with regard to vessels flying their flag or vessels or aircraft 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.

2. Obligations under IMO Treaties relating to anthropogenic greenhouse gas emissions

45. In the IMO context, specific obligations relating to anthropogenic greenhouse gas emissions have been developed consistent with the UNCLOS framework for competent international organizations in the development of international rules and standards in the shipping sector, through the legal regime established in the International Convention for the Prevention of Pollution from Ships, 1973, and its Protocol of 1978 (MARPOL). More specifically, Annex VI thereof was adopted by Parties to MARPOL, conscious of the need to address air pollution from ships. Furthermore, article 2 of the 1997 Kyoto Protocol to the United Nations Framework Convention on Climate Change (UNFCCC) states that the limitation or reduction of greenhouse gas emissions from marine bunker fuels shall be pursued by IMO, affirming its status as a competent international organization. There is no explicit reference to greenhouse gas emissions from international shipping in the 2015 Paris Agreement to the UNFCCC. Notwithstanding, IMO developed a greenhouse gas strategy enhancing IMO's contribution to global efforts by addressing GHG emissions from international shipping, including the 2015 Paris Agreement. The 2018 Initial IMO GHG Strategy is currently the subject of a substantive revision process, in order to contribute holistically to global climate targets. IMO's PPR Sub-Committee also continues to facilitate discussions on Black Carbon in the Arctic, with a view to the adoption of voluntary, and later, mandatory measures.

a. MARPOL and its 1997 Protocol (Annex VI)

46. With respect to air pollution from ships through the emission of harmful greenhouse gases that result from ship operations, as early as November 1991, the IMO Assembly stated that its desire to reduce air pollution from ships by cooperative efforts of Member Governments may be best achieved by establishing a new annex to MARPOL which would provide rules for the restriction and control of emission of harmful substances from ships into the atmosphere.³³ In this respect, the so called Annex VI containing specific obligations, was adopted by a diplomatic conference by means of MARPOL PROT 1997. By this Protocol, the Parties to MARPOL recognized "the need to prevent and control air pollution from ships" and recalled "Principle 15 of the Rio Declaration

³³ Resolution A.719(17), *Prevention of Air Pollution from Ships*, 6 November 1991.

on Environment and Development which calls for the application of a precautionary approach".³⁴

47. The MARPOL Convention today comprises the 1973 main convention text,³⁵ its Protocol of 1978,³⁶ and its Protocol of 1997 (MARPOL PROT 1997).³⁷ It has six annexes which by design entered into force progressively upon meeting the requisite acceptance by Contracting Parties, with Annex VI having been adopted through the 1997 Protocol. Annexes I and II are compulsory, while Annexes III to VI are optional and require additional explicit acceptance. These Annexes address different types of ship-generated pollution, as follows:

Annex I – pollution by oil;
Annex II – pollution by noxious liquid substances carried in bulk;
Annex III – pollution by harmful substances carried by sea in packaged form;
Annex IV – pollution by sewage from ships;
Annex V – pollution by garbage from ships; and
Annex VI – air pollution from ships.

48. The preamble to MARPOL reflects the Contracting Parties' recognition that "deliberate, negligent or accidental release of oil and other harmful substances from ships" is a serious source of pollution and that there is a need to preserve the marine environment, and their intention to "achieve the complete elimination of intentional pollution" in the course of the operation of ships and the "minimization of accidental discharge of such substances". To facilitate these objectives, the annexes of MARPOL continuously evolve through the work of the Parties and the MEPC, in periodically adopting amendments that ensure that its regulations are kept up to date viz-a-viz advances in ship technologies and progress in climate targets.
49. Article 1 of MARPOL explicitly provides that "the Parties to the Convention undertake to give effect to the provisions of the present Convention and those Annexes thereto by which they are bound, in order to prevent the pollution of the marine environment by the discharge of harmful substances or effluents containing such substances in contravention to the Convention". MARPOL also applies to all ships entitled to fly the flag of its States Parties, except for warships or other ships only on government non-commercial service, the operation of which would however still have to be consistent with the Convention.

³⁴ Preamble, MARPOL PROT 1997.

³⁵ Adopted by the International Conference on Marine Pollution convened by the International Maritime Organization (IMO) from 8 October to 2 November 1973. Protocol I (Provisions concerning reports on incidents involving Harmful Substances) and Protocol II (Arbitration) were adopted at the same Conference.

³⁶ Adopted by the International Conference on Tanker Safety and Pollution Prevention (TSPP Conference) convened by IMO from 6 to 17 February 1978. The Convention, as modified by the 1978 Protocol, is known as the "International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto", or, in short form, "MARPOL 73/78".

³⁷ The Marine Environment Protection Committee (MEPC), at its fifty-sixth session, decided that, when referring to the Convention and its six Annexes as a whole, the term "MARPOL" should be preferred to "MARPOL 73/78", as the latter would leave Annex VI on Prevention of air pollution from ships, which had been adopted by the 1997 Protocol, outside its scope.

50. The 1997 Protocol entered into force on 19 May 2005, with the objective of “preventing, reducing and controlling pollution of the marine environment by anthropogenic greenhouse gas emissions into the atmosphere”. Specifically, it aims to control airborne emissions from ships of sulphur oxides (SO_x), nitrogen oxides (NO_x), ozone-depleting substances (ODS), volatile organic compounds (VOCs) and their cumulative, rather than direct, effects on the environment and overall air quality.
51. Shortly after entering into force, MEPC, at its fifty-third session (MEPC 53) in July 2005, decided that Annex VI should be revised based on contemporary knowledge of the harmful effects of exhaust gases from ships on human health and the environment. Following intensive work on the annex, MEPC 58 in October 2008 adopted the revised MARPOL Annex VI and a Technical Code on the control of emissions of nitrogen oxides from marine diesel engines (NO_x Technical Code 2008).³⁸ The revised Annex VI introduced even more stringent limits for the emission of air pollutants from ships, together with phased-in reductions, to be achieved through fuel oil quality and marine diesel engine design or equivalent technologies, in particular for SO_x and particulate matter (PM) and NO_x emissions.³⁹
52. One of the notable achievements of MARPOL Annex VI was the implementation from 1 January 2020 of a reduced global upper limit on the sulphur content of ships' fuel oil from 3.50% to 0.50%.⁴⁰ The so-called "sulphur cap" or “IMO2020” complements existing limits for designated Emission Control Areas which are already at 0.10%.
53. IMO has also adopted mandatory measures to reduce emissions of greenhouse gases from international shipping under MARPOL, namely, the Energy Efficiency Design Index (EEDI) mandatory for new ships, and the Ship Energy Efficiency Management Plan (SEEMP).⁴¹ The EEDI for new ships is the most important technical measure that aims at promoting the use of more energy efficient (less polluting) equipment and engines. The EEDI requires a minimum energy efficiency level per capacity mile (e.g. tonne mile) for different ship type and size segments. Since 1 January 2013, following an initial two year phase zero, new ship design needs to meet the reference level for their ship type. The level is to be tightened incrementally every five years, and so the EEDI is expected to stimulate continued innovation and technical development of all the components influencing the fuel efficiency of a ship from its design phase. The EEDI is a non-prescriptive, performance-based mechanism that leaves the choice of technologies to use in a specific ship design to the industry. As long as the required energy efficiency level is attained, ship designers and builders are free to use the most cost-efficient solutions for the ship to comply with the regulations.
54. In June 2021, IMO adopted amendments to IMO's MARPOL Annex VI on reducing the carbon intensity of the global fleet. This "short-term GHG reduction measure" consisting of mandatory technical and operational requirements, entered into force in

³⁸ Both the revised Annex VI and the NO_x Technical Code entered into force on 1 July 2010.

³⁹ ISWG-GHG 1/2, *Existing IMO activity related to reducing GHG emissions in the shipping sector*. 21 February 2017.

⁴⁰ MEPC.1/Circ.878, *Guidance on the Development of a Ship Implementation Plan for the consistent implementation of the 0.50% sulphur limit under MARPOL Annex VI*. 9 November 2018.

⁴¹ The Energy Efficiency Design Index (EEDI) was made mandatory for new ships and the Ship Energy Efficiency Management Plan (SEEMP) for all ships in July 2011 (MEPC 62) with the adoption of amendments to MARPOL Annex VI (resolution MEPC.203(62)), by Parties to MARPOL Annex VI. This was the first legally binding climate change treaty to be adopted since the Kyoto Protocol.

November 2022 and is designed to ensure the reduction of carbon intensity of international shipping in 2030 by at least 40% compared to 2008 levels, in accordance with the level of ambition identified in the in 2018 adopted Initial Strategy on the reduction of GHG from ships.

55. Consequently, States that have accepted MARPOL, its compulsory Annexes and optional Annexes, are bound by the specific obligations contained therein. Such specific obligations also apply to UNCLOS States Parties either as a matter of treaty law (if they are Parties to both treaty regimes), or insofar as specific obligations under MARPOL have the character of "generally accepted international rules and standards" as intended for subsequent development by UNCLOS. As explained previously, while it is not for IMO to define whether each and every one of such specific obligations have the character of "generally accepted international rules and standards", the status of acceptance of MARPOL and its Annexes may be indicative for such determination. As of June 2023, MARPOL Protocol 1997 which adopted Annex VI into the MARPOL regime, has 105 States Parties representing 96.81 per cent of global tonnage.

b. IMO's greenhouse gas (GHG) strategy

56. In 2018, Member States adopted the Initial IMO Strategy on reduction of GHG emissions from ships⁴² setting out IMO's ambition to reduce carbon intensity in shipping by at least 40% by 2030, pursuing efforts towards 70% by 2050, and to reduce total annual GHG emissions from international shipping by at least 50% by 2050 compared to 2008, with a view to phasing them out as soon as possible. The Strategy aligns to global goals set out in the Paris Agreement to respond to climate change by maintaining global average temperature increase to "well below" 2°C above pre-industrial levels and to strive for 1.5°C. The Initial IMO Strategy envisages the 2050 level of ambition as "a point in a pathway of CO₂ emissions reduction consistent with the Paris Agreement temperature goals". The Initial GHG Strategy also foresaw the adoption of a revised IMO GHG Strategy by 2023.
57. The Fourth IMO Greenhouse Gas Study 2020 stated that the greenhouse gas emissions from total shipping (international, domestic and fishing) in 2018 were 1,076 million tonnes. This represented a share of shipping emissions in global anthropogenic emissions of 2.89% in 2018.
58. Since the adoption of its Initial Strategy, IMO Member States have been actively working on transposing their commitments into mandatory requirements in MARPOL Annex VI that they would implement and apply to individual ships from all flags to ensure that the levels of ambition are effectively achieved in line with the agreed timelines (see paragraph 54 on the "short-term GHG reduction measure"). As such, IMO's commitments do not just remain aspirational targets but lay down a binding regulatory framework that applies to the world fleet and is enforced globally, both by the ship's flag State as well as any port State the ship visits.
59. MEPC agreed to initiate the revision of the Initial IMO GHG Strategy, recognizing the need to strengthen the ambition during the revision process. The decision came in the wake of the UN Climate Change Conference in Glasgow (COP 26) in 2021 and in view of the urgency for all sectors to accelerate their efforts to reduce GHG emissions.

⁴² Resolution MEPC.304(72), *Initial IMO Strategy on Reduction of GHG Emissions from Ships*. 13 April 2018.

MEPC considered concrete proposals including, inter alia, the level of ambition for 2050, intermediate GHG reduction targets for 2030 and 2040, and the need to ensure a "just and equitable" transition that addresses the interests of developing States, in particular small island developing States (SIDS) and least developed countries (LDCs), which are also often the most climate-vulnerable States.

60. In December 2022, MEPC further discussed proposals for the revision of the Initial GHG Strategy and reaffirmed its commitment to adopt a revised IMO GHG Strategy in all its elements, including with a strengthened level of ambition, by MEPC 80 in July 2023.⁴³
61. Presently, implementation of the GHG Strategy remains a strategy, with national action plans to address GHG emissions from ships being observed on a voluntary basis. It is envisaged, however, that mandatory measures to be adopted by IMO will ensure that the revised greenhouse gas reduction targets are met.

c. MEPC and PPR work on Black Carbon emissions

62. In November 2021, MEPC at its seventy-seventh session adopted a resolution on black carbon emissions in the Arctic, recognizing that black carbon is a potent short-lived contributor to climate warming. To this end MEPC 77 urged Member States and ship operators to voluntarily use distillate or other cleaner alternative fuels or methods of propulsion that are safe for ships and which could contribute to the reduction of Black Carbon emissions from ships when operating in or near the Arctic.⁴⁴
63. While there is yet to be a mandatory instrument adopted to specifically address black carbon in the Arctic, the PPR Sub-Committee continues to work on the development of draft guidelines on goal-based control measures to reduce the impact on the Arctic of black carbon emissions from international shipping. It is envisioned that following the development of voluntary guidelines, Member States could thereafter proceed with work to develop mandatory measures.

C. Question 2: "What are the specific obligations of States Parties to the United Nations Convention on the Law of the Sea, including Part XII, to protect and preserve the marine environment in relation to climate change impacts, including ocean warming and sea level rise, and ocean acidification?"

64. In responding to the above question, it is also submitted that the specific obligations of UNCLOS States Parties to protect and preserve the marine environment in relation to climate change impacts, are first, contained in UNCLOS itself, and second, elaborated through the generally accepted international rules and standards developed under the auspices of competent international organizations. Examples relevant to IMO's mandate and scope of work are provided hereunder.

1. Obligations under UNCLOS

65. As a preliminary matter, reference should again be generally made to Article 1(4) of UNCLOS defining "pollution of the marine environment", and provisions affirming States' authority to adopt and enforce rules and regulations on the protection and

⁴³ Paragraphs 7.21 to 7.24 of the report of the 79th session of MEPC (document MEPC 79/15).

⁴⁴ Resolution MEPC.342(77), *Protecting the Arctic from shipping black carbon emissions*. 26 November 2021.

preservation of the marine environment under their jurisdiction and control, or in relation to their exercise thereof, whether in their capacity as coastal States, flag States or port States.

66. In addition to specific obligations under Part XII of UNCLOS already discussed above, the following provisions also contain guidance that relate to the protection and preservation of the marine environment in relation to climate change impacts:

Article 192 General obligation

States have the obligation to protect and preserve the marine environment.

Article 193 Sovereign right of States to exploit their natural resources

States have the sovereign right to exploit their natural resources pursuant to their environmental policies and in accordance with their duty to protect and preserve the marine environment.

Article 196 Use of technologies or introduction of alien or new species

1. States shall take all measures necessary to prevent, reduce and control pollution of the marine environment resulting from the use of technologies under their jurisdiction or control, or the intentional or accidental introduction of species, alien or new, to a particular part of the marine environment, which may cause significant and harmful changes thereto.

67. In addition to the framework established by UNCLOS for the development of generally accepted international rules and regulations, article 237 thereof also underscores that States should carry out obligations under special conventions on the protection and preservation of the marine environment in a manner consistent with the general principles and objectives of UNCLOS, as follows (emphasis supplied):

Article 237 Obligations under other conventions on the protection and preservation of the marine environment

1. The provisions of this Part 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 general principles set forth in this Convention.

2. Specific obligations assumed by States under special conventions, with respect to the protection and preservation of the marine environment, should be carried out in a manner consistent with the general principles and objectives of this Convention.

2. Obligations under IMO treaties relating to climate change impacts, including ocean warming and sea level rise, and ocean acidification

68. It should be noted at the outset that IMO is not currently considering the matter of sea level rise in its agenda. Ocean warming and ocean acidification, on the other hand, are inherently and impliedly addressed in several of its instruments that concern ocean pollutants through shipping activity, which are harmful to marine organisms, human health, and the natural environment as a whole. Moreover, insofar as greenhouse gases and effluents discharged during shipping operations have been identified as contributory factors to global air pollution, these are also to be cumulatively factored into ocean warming and ocean acidification. To this extent, therefore, some of the specific obligations of States Parties in relation to ocean warming and ocean acidification have been addressed in the first part.

69. The different IMO instruments listed in this section describe the specific obligations of States insofar as they constitute, or contain, generally accepted international rules and standards developed by IMO as a competent international organization under UNCLOS. UNCLOS States Parties may also be individually obligated thereby as a matter of treaty law, if they have accepted to be bound by the individual instruments. States, therefore, are duty-bound to give effect to the provisions of such instruments

that they have accepted, by implementing them into their national legislation, providing relevant measures thereunder, and enforcing them as may be applicable. IMO instruments do not, however, address the consequences of non-compliance with the obligations contained in its instruments.

a. MARPOL and Annex I to VI thereof

70. Annex 1 of MARPOL charts regulations for the prevention of pollution by oil, while Annex 2 thereof contains regulations for the control of pollution by noxious liquid substances in bulk. Both annexes are compulsory to the MARPOL (73/78) Convention, and as such also entered into force on 2 October 1983 and currently have 161 Contracting Parties representing 98.89 per cent of world tonnage.
71. Annex III of MARPOL provides regulations for the prevention of pollution by harmful substances carried by sea in packaged form. It entered into force on 1 July 1992 and currently has 151 Contracting Parties representing 98.54% of world tonnage.
72. Annex IV of MARPOL provides regulations for the prevention of pollution by sewage from ships. It entered into force on 27 September 2003 and currently has 147 Contracting Parties representing 96.66% of world tonnage.
73. Annex V contains regulations for the prevention of pollution by garbage. It entered into force on 31 December 1988 and currently has 155 Contracting Parties representing 98.60% of world tonnage.
74. Finally, and as explained in the previous section, Annex VI providing regulations for the prevention of air pollution from ships, also indirectly addresses factors contributory to ocean warming and ocean acidification insofar as it regulates atmospheric pollutants the discharge of which causes cumulative effects coextensive with climate change. MARPOL Protocol 1997 which adopted Annex VI into the MARPOL regime, currently has 105 States Parties representing 96.81 per cent of global tonnage.

b. London Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 1972 (London Convention) and the 1996 Protocol (London Protocol)

75. IMO's mandate in developing a treaty regime for the prevention of marine pollution by dumping is directly provided for under the provisions of UNCLOS. The adoption of the London Convention follows in the wake of devastating incidents of marine pollution between the 1950s and 70s, and the international community's recognition that unregulated dumping and incineration of wastes at sea was detrimental to the marine environment and that "the capacity of the sea to assimilate wastes and render them harmless, and its ability to regenerate natural resources, is not unlimited".⁴⁵ The Parties also acknowledge that "marine pollution originates in many sources, such as dumping and discharges through the atmosphere, rivers, estuaries, outfalls and pipelines, and that it is important that States use the best practicable means to prevent such pollution and develop products and processes which will reduce the amount of harmful wastes to be disposed of".

⁴⁵ Preamble, London Convention.

76. The London Convention entered into force on 30 August 1975 and currently has 87 Contracting Parties. By Article 1 thereof, Contracting Parties "shall individually and collectively promote the effective control of all sources of pollution of the marine environment, and pledge themselves especially to take all practicable steps to prevent the pollution of the sea by the dumping of waste and other matter that 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." Article 2 of the London Convention also directs that Contracting Parties shall take "effective measures individually, according to their scientific, technical and economic capabilities, and collectively, to prevent marine pollution caused by dumping and shall harmonize their policies in this regard".
77. The London Protocol, which updates the London Convention to introduce more stringent obligations with respect to dumping, entered into force on 24 March 2006, and currently has 53 Contracting Parties. Together the two treaties have 100 Parties, which meet jointly annually. In 2006, the London Protocol was amended to regulate carbon capture and storage in sub-seabed geological formations for permanent isolation. This amendment entered into force on 10 February 2007 for all Parties. A further amendment was adopted in 2009 to enable the export of carbon dioxide streams for the purpose of sequestration in transboundary sub-seabed geological formations. As this amendment has not yet entered into force, Parties agreed in 2019 to allow provisional application of an amendment to article 6 of the Protocol (resolution LP.5(14)). Later amendments to the Protocol have resulted in the adoption of additional regulations relating to marine geoengineering—that is, the deliberate intervention in the marine environment to manipulate natural processes, including to counteract anthropogenic climate change and/or its impacts, and that has the potential to result in deleterious effects, especially where those effects may be widespread, long lasting or severe.⁴⁶
78. By Article 3(1) of the Protocol, Contracting Parties "shall apply a precautionary approach to environmental protection from dumping of wastes or other matter or from placement of matter for marine geoengineering activities which may be considered for permits according to annex 4 whereby appropriate preventative measures are taken when there is reason to believe that wastes or other matter introduced into the marine environment are likely to cause harm even when there is no conclusive evidence to prove a causal relation between inputs and their effects." Article 3(3) also provides that Contracting Parties "shall act so as not to transfer, directly or indirectly, damage or likelihood of damage from one part of the environment to another or transform one type of pollution into another".
79. It is intended that the London Protocol would eventually replace the London Convention, and that during the transition period, the two treaties shall operate in parallel through joint meetings of the Parties.

⁴⁶ Article 1(5 *bis*), London Protocol.

c. International Convention on the Control of Harmful Anti-Fouling Systems on Ships, 2001 (AFS Convention)

80. Anti-fouling systems refer to a "coating, paint, surface treatment, surface, or device"⁴⁷ used on ships to control or prevent the build-up of harmful organisms on ship surfaces and the spread of harmful aquatic organisms and pathogens. As acknowledged by its Contracting Parties, the AFS Convention seeks to phase out such anti-fouling systems that use organotin compounds as biocides, consistent with Chapter 17 of Agenda 21 adopted by the 1992 UN Conference on Environment and Development (UNCED). The AFS Convention was born of an acknowledgment that, "scientific studies and investigations have shown that certain anti-fouling systems used on ships pose a substantial risk of toxicity and other chronic impacts to ecologically and economically important marine organisms and also that human health may be harmed as a result of the consumption of affected seafood".⁴⁸ As early as November 1999, the IMO Assembly urged the adoption by Member States of a legally binding instrument that should ensure a global prohibition of the application of organotin compounds which act as biocides in anti-fouling systems on ships by 1 January 2003.⁴⁹ The Convention was adopted on 5 October 2001 and entered into force on 17 September 2008, and presently has 95 Contracting States representing 96.12 per cent of world tonnage.
81. Like MARPOL Annex VI, the AFS Convention also refers to the precautionary approach as set out in Principle 15 of the Rio Declaration. By Article 1 of the AFS Convention, the Parties undertake "to give full and complete effect to its provisions in order to reduce or eliminate adverse effects on the marine environment and human health caused by anti-fouling systems"⁵⁰ and "to encourage the continued development of anti-fouling systems that are effective and environmentally safe".⁵¹ On 1 January 2023 an amendment to the AFS Convention entered into force which bans the use of cybutryne as biocides.

d. International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004 (BWM Convention)

82. Ballast water is such "water with its suspended matter taken on board a ship to control trim, list, draught, stability or stresses of the ship".⁵² Ballast water management, on the other hand, refers to the "mechanical, physical, chemical, and biological processes, either singularly or in combination, to remove, render harmless, or avoid the uptake or discharge of harmful aquatic organisms and pathogens within ballast water and sediments"⁵³. The BWM Convention was also developed pursuant to a request by the 1992 UNCED and decisions of the Conference of the Parties of the 1992 Convention on Biological Diversity acknowledging that the transfer and introduction of harmful

⁴⁷ Article 2 (2).

⁴⁸ Preamble, AFS Convention.

⁴⁹ Resolution A.895(21), *Anti-fouling systems used on ships*. 25 November 1999.

⁵⁰ Article 1(1), AFS Convention.

⁵¹ Article 1(5), AFS Convention.

⁵² Article 1(2), BWM Convention.

⁵³ Article 1(3), BWM Convention.

aquatic organisms and pathogens via ships' ballast water threatens the conservation and sustainable use of biological diversity. Decision IV/5 of the 1998 Conference (COP 4) concerned the conservation and sustainable use of marine and coastal ecosystems, and decision VI/23 of the 2002 Conference (COP 6) concerned alien species that threaten ecosystems, habitats or species, including guiding principles on invasive species.

83. The BWM Convention makes specific reference to article 196(1) of UNCLOS on States' obligation to prevent, reduce and control marine pollution resulting from the use of technologies or the intentional or accidental introduction of species to the marine environment. It also refers to the precautionary approach set out in Principle 15 of the Rio Declaration. In its preamble, the Parties to the BWM Convention also acknowledge that the introduction of invasive species "demands action based on globally applicable regulations together with Guidelines for their effective implementation and uniform interpretation".
84. By Article 2 thereof, the Parties "undertake to give full and complete effect" to the BWM Convention "in order to prevent, minimize and ultimately eliminate the transfer of Harmful Aquatic Organisms and Pathogens through the control and management of ships' ballast water and Sediments". Furthermore, the Parties also "undertake to encourage the continued development of ballast water management and standards to prevent, minimize and ultimately eliminate the transfer of Harmful Aquatic Organisms and Pathogens through the control and management of ships' ballast water and Sediments".⁵⁴
85. The BWM Convention entered into force on 08 September 2017 and currently has 95 Contracting Parties representing 92.41 per cent of world tonnage. The mandatory Code for Approval of Ballast Water Management Systems (BWMS Code) has also been in effect since October 2019.

e. The International Convention on Oil Pollution Preparedness, Response and Co-Operation, 1990 (OPRC) and its Protocol on Preparedness, Response and Co-operation to Pollution Incidents by Hazardous and Noxious Substances, 2000 (OPRC-HNS)

86. The legal regime established under the OPRC and OPRC-HNS Conventions emphasizes the importance of effective preparation to combat oil pollution incidents and the discharge, release or emission of hazardous and noxious substances other than oil, which poses or may pose a threat to the marine environment, or to the coastline or related interests of one or more States, and which requires emergency action or immediate response. Together they establish systems for preparedness and response at the national, regional and global levels; improving scientific and technological understanding and knowledge in this field; promoting technical co-operation in response techniques; and developing specialized training programmes. Under the OPRC-HNS Convention, "hazardous and noxious substances" pertain to any substance other than oil which, if introduced into the marine environment is likely to

⁵⁴ Article 2(5), BWM Convention.

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.⁵⁵

87. By Article 1(1) of the OPRC-HNS 2000, Parties "undertake, individually or jointly, to take all appropriate measures" under the Protocol and its Annex containing the regulations, to prepare for and respond to a pollution incident by hazardous and noxious substances. Among such other specific obligations contained in the Protocol is that each Party shall require its flagged vessels to have on-board pollution incident emergency plans and "require masters or other persons having charge of such ships to follow reporting procedures to the extent required".⁵⁶
88. The OPRC Convention, which entered into force on 13 May 1995, currently has 117 Contracting Parties representing 79.27 per cent of world tonnage. The OPRC-HNS Protocol 2000, which entered into force on 14 June 2007, currently has 42 Contracting Parties representing 53.3 per cent of world tonnage.

f. Liability conventions in relation to oil pollution

89. In support of the objectives to prevent pollution incidents in the marine environment, instruments establishing the liability and compensation regime for damage resulting from oil spills and intentional discharges of hazardous and noxious substances have also been developed under the auspices of IMO, operating under the "polluter pays" principle, as follows:
- i. The International Convention on Civil Liability for Bunker Oil Pollution Damage, 2001 (BUNKERS 2001) entered into force on 21 November 2008 and currently has 105 Contracting Parties representing 95.20 per cent of world tonnage.
 - ii. International Convention on Civil Liability for Bunker Oil Pollution Damage (CLC 1969) and its Protocol of 1992 (CLC PROT 1992). Due to subsequent efforts at updating the limits in CLC 1969, it is presently recommended that States Parties denounce the said Convention, in favour of CLC PROT 1992. CLC PROT 1992 entered into force on 30 May 1996 and currently has 146 Contracting States representing 97.55 per cent of world tonnage.
 - iii. International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage, 1971 (FUND 1971) and FUND PROT 1992. Due to subsequent efforts at updating the limits established in FUND 1971, the current instrument due for acceptance by contracting parties is FUND PROT 1992, or FUND 1992, which amended FUND 1971⁵⁷ and aims to provide compensation for pollution damage to the extent that coverage in CLC PROT 1992 is inadequate. FUND 1992 also entered into force on 30 May 1996 and currently has 121 Contracting States representing 94.45 per cent of world tonnage. Contracting Parties to FUND 1992 may also accept the later FUND Protocol adopted in 2003 (FUND

⁵⁵ Article 2(2), OPRC-HNS, 2000.

⁵⁶ Article 3(1), OPRC-HNS, 2000.

⁵⁷ By virtue of FUND PROT 2000, FUND 1971 has ceased to be in force.

PROT 2003, also known as the Supplementary FUND Protocol) establishing a Supplementary Fund in addition to the compensation available under the 1992 Civil Liability and FUND Conventions.

3. Other measures and mechanisms complementary to IMO instruments

90. Besides the specific obligations contained in IMO instruments addressing threats to the marine environment, the following discussion examines measures and mechanisms that also implicitly assist in efforts to ensure that States and entities under their jurisdiction remain compliant with the relevant IMO instruments.

a. Port State Control and MOUs

91. The framework for Port State control contributes to the implementation of IMO instruments insofar as Port States, within their own territory or internal waters, are able to exercise their right to inspect foreign ships at their ports for compliance with IMO instruments and to prevent the operation of substandard ships as a secondary mechanism to flag State implementation. To this end, agreements or memoranda of understanding have been adopted by port States within the same geographical areas to establish Port State Control (PSC) regimes that follow the same standards in the inspection of vessels and to coordinate the conduct of such inspections without causing unnecessary delay to shipping.
92. The framework for such PSC regimes acknowledges "that in some cases it may be difficult for flag States to exercise full and continuous control over some ships entitled to fly their flag, for instance ships which do not regularly call at flag States' national ports".⁵⁸ It also reflects an understanding that "regional co-operation in the application of port State control measures in all parts of the world would enhance international standards and could further contribute to preventing the operation of substandard ships, thus making a significant contribution to maritime safety and pollution prevention".⁵⁹ There are currently ten PSC regimes.⁶⁰

b. Training requirements for seafarers

93. The International Convention on Standards of Training, Certification and Watchkeeping, 1978 (STCW 1978) provides the regime for the regulation of competencies and qualifications of seafarers serving onboard ships. Its preamble alludes to the need for detailed mandatory standards of competence and other mandatory provisions to ensure that all seafarers shall be properly educated and trained, adequately experienced, skilled and competent to perform their duties in a manner which provides for the safety of life, property and security at sea and the protection of the marine environment. A Conference of Parties adopted amendments to the Annex of STCW in 1995 resulting in the Seafarers' Training, Certification and Watchkeeping Code (STCW Code) setting forth both mandatory standards and recommended guidance. Further amendments were adopted by a Conference of

⁵⁸ Resolution A.682(17), *Regional Co-operation in the Control of Ships and Discharges*. 6 November 1991.

⁵⁹ *Ibid.*

⁶⁰ Nine regional agreements or memoranda of understanding (MoUs) on port State control ((Europe and the north Atlantic (Paris MoU); Asia and the Pacific (Tokyo MoU); Latin America (Acuerdo de Viña del Mar); Caribbean (Caribbean MoU); West and Central Africa (Abuja MoU); the Black Sea region (Black Sea MoU); the Mediterranean (Mediterranean MoU); the Indian Ocean (Indian Ocean MoU); and the Riyadh MoU) and the US Coast Guard's PSC regime.

Parties in 2010 (Manila Amendments) contributing to a strengthened regime for the training and certification of seafarers, with due consideration to updated standards of competence required for the protection of the marine environment. STCW 1978, which entered into force on 28 April 1984, currently has 167 States Parties representing 98.91 per cent of world tonnage.

94. IMO has also developed a range of model courses for the training needs of seafarers and other maritime personnel in accordance with the requirements of the STCW Convention, including among others, model courses in marine environment awareness, oil, chemical and liquefied gas tanker cargo operations, and the handling of dangerous, hazardous and harmful cargoes.

c. Routeing Measures and other area-based management tools

95. UNCLOS provides authority for coastal States to adopt laws and regulations relating to the passage of foreign ships through maritime zones under their jurisdiction in the exercise of innocent passage,⁶¹ transit passage and archipelagic sea lanes passage. Legislative authority with respect to innocent passage also comes with a caveat that any such laws and regulations do not apply to the design, construction, manning or equipment of such ships, unless they are giving effect to generally accepted international rules or standards.⁶² This is consistent with the regime laid down in Article 94, providing that flag States exercise jurisdiction and control over the administrative, technical and social matters concerning ships flying its flag.⁶³
96. UNCLOS provides for the adoption by coastal States of sea lanes and traffic separation schemes in the territorial sea,⁶⁴ straits used for international navigation⁶⁵, and archipelagic sea lanes,⁶⁶ and provides a direct role for IMO, as the competent international organization, to provide recommendations or consider proposals for the establishment of such ship routeing measures. IMO adopts a range of mandatory and recommendatory ship routeing measures,⁶⁷ which contribute to facilitating traffic and lowering risks of collisions at sea in accordance with the SOLAS Convention and the International Regulations for Preventing Collisions at Sea, 1972 (COLREG 1972), and consequently, to preventing the likelihood of marine pollution incidents.
97. Furthermore, Article 211 (6) (a) of UNCLOS refers to a modality by which "special mandatory measures for the prevention of pollution from vessels" may be adopted for a "particular, clearly defined area" of a State's exclusive economic zone, after appropriate consultations through IMO as the competent international organization.

⁶¹ Article 21. *Laws and regulations of the coastal State relating to innocent passage.* Article 22. *Sea lanes and traffic separation schemes in the territorial sea;* Article 23. *Foreign nuclear-powered ships and ships carrying nuclear or other inherently dangerous or noxious substances.*

⁶² Article 21(2), UNCLOS.

⁶³ Article 94(1), UNCLOS.

⁶⁴ Article 22, UNCLOS.

⁶⁵ Article 41, UNCLOS.

⁶⁶ Article 53, UNCLOS.

⁶⁷ These may include: traffic separation schemes, two-way routes, recommended tracks, areas to be avoided, inshore traffic zones, roundabouts, precautionary areas, deep-water routes, and archipelagic sea lanes.

The adoption of such measures must be due to "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", and must be supported by scientific and technical evidence. The authority established under this provision of UNCLOS is the basis for mechanisms in MARPOL for the designation of area-based management tools such as special areas and particularly sensitive sea areas (PSSAs).

98. The designation of special areas are covered under Annexes I, II, IV and V of MARPOL in accordance with the types of pollution addressed under those annexes. In relation thereto, emission control areas (ECAs) may also be designated under MARPOL Annex VI. Special areas and emission control areas enjoy higher levels of protection from vessel-sourced pollution and emissions, respectively. A Special Area may encompass the maritime zones of several States, or even an entire enclosed or semi-enclosed area.⁶⁸ The requirements of a Special Area designation can only become effective when adequate reception facilities are provided for ships in accordance with the provisions of MARPOL 73/78.⁶⁹ The adoption of special areas and emission control areas result in mandatory measures which States are obliged to give effect to and comply with.
99. A particularly sensitive sea area (PSSA) is an area that needs special protection through action by IMO because of its significance for recognized ecological, socio-economic, or scientific attributes where such attributes may be vulnerable to damage by international shipping activities.⁷⁰ At the time of designation of a PSSA, an associated protective measure, which meets the requirements of the appropriate legal instrument establishing such measure, must have been approved or adopted by IMO to prevent, reduce, or eliminate the threat or identified vulnerability.⁷¹ The associated protective measures to be applied may include the establishment of special areas under MARPOL, the adoption of ships' routing or ship reporting systems, designation of buffer zones, or "other measures aimed at protecting specific sea areas against environmental damage from ships, provided that they have an identified legal basis".⁷² As with special areas, the establishment of PSSAs and the adoption of associated protective measures result in mandatory obligations that States are obliged to give effect to and comply with.

d. IMO Member States Audit Scheme

100. Treaties adopted under the auspices of IMO do not contain enforcement provisions, and as a UN specialized agency, IMO is not possessed of enforcement powers. States Parties to IMO treaties have the primary responsibility to establish and maintain an adequate and effective system to discharge their obligations emanating from applicable international law as flag, port and/or coastal States. To further the consistent and

⁶⁸ Resolution A.1087(28), *2013 Guidelines for the designation of special areas under MARPOL 73/78 and Guidelines for the Identification and Designation of Particularly Sensitive Sea Areas*, paragraph 2.2. 4 December 2013.

⁶⁹ *Id.*, at paragraph 2.7.

⁷⁰ Resolution A.982(24), *Revised Guidelines for the Identification and Designation of Particularly Sensitive Sea Areas*, paragraph 1.2. 1 December 2005.

⁷¹ *Ibid.*

⁷² *Id.*, at paragraph 6.1.3.

effective implementation of applicable mandatory IMO instruments⁷³ while also strengthening the capacity of Member States for compliance, the IMO Member State Audit Scheme (IMSAS) was devised, first, on a voluntary basis in 2006, and from 2016 as a mandatory scheme. IMSAS became mandatory through the adoption of corresponding amendments in the relevant instruments, while also using the IMO Instruments Implementation (III) Code as the audit standard.

101. The Scheme follows the same rationale for the III Code that "parties to the relevant international conventions have, as part of the ratification process, accepted to fully meet their responsibilities and to discharge their obligations under the conventions and other instruments to which they are party".⁷⁴
102. It is also acknowledged that "the ultimate effectiveness of any IMO instrument depends, inter alia, upon all States becoming Parties thereto, implementing and enforcing them fully and effectively, and reporting to the Organization, as required."⁷⁵ It is further provided that "under the general provisions of treaty law and of IMO conventions, States are responsible for promulgating laws and regulations and for taking all other steps which may be necessary to give those instruments full and complete effect so as to ensure safety of life at sea and protection of the marine environment".⁷⁶
103. Under IMSAS, an audited Member State is provided with a comprehensive and objective assessment of the effectiveness of its administration and implementation of the relevant instruments. Thereafter, Member States are responsible for "implementing a programme of actions to address the findings, which should not exceed three years after the completion of the audit".⁷⁷ Member States are further guided by a non-exhaustive list of obligations⁷⁸ under the relevant instruments adopted and periodically revised by the IMO Assembly, in order to identify auditable areas relevant to IMSAS.
104. IMSAS is also furthered by relevant projects covered under IMO's Integrated Technical Cooperation Programme (ITCP), which has for its purpose the provision of assistance to States, especially developing States, SIDS and LDCs, in enhancing their human and institutional capacities for proper alignment with IMO's regulatory framework.

⁷³ SOLAS 1974 and its 1988 Protocol; MARPOL; the Convention on the International Regulations for Preventing Collisions at Sea, 1972, as amended (COLREG 1972); the International Convention on Load Lines, 1966 (LL 1966) and its 1988 Protocol; the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, 1978, as amended (STCW); and the International Convention on Tonnage Measurement of Ships, 1969 (TONNAGE 1969) have, as part of the ratification process, accepted the obligation under applicable international law to fully meet their responsibilities and to discharge their obligations as prescribed by the conventions and other instruments to which they are Party.

⁷⁴ Resolution A.1070(28), *IMO Instruments Implementation Code (III Code)*. 4 December 2013.

⁷⁵ Preamble, Resolution A.1067(28), *Framework and procedures for the IMO Member State Audit Scheme*. 4 December 2013.

⁷⁶ *Id. at Annex, para. 7.1.1.*

⁷⁷ *Id. at Annex, para. 8.2.5.*

⁷⁸ Resolution A.1157(32), *2021 Non-exhaustive list of obligations under instruments relevant to the IMO Instruments Implementation (III) Code*. 15 December 2021.

III. Summation

105. The specific obligations of UNCLOS States Parties in relation to the deleterious effects of climate change, caused by anthropogenic greenhouse gas emissions, and in relation to the protection and preservation of the marine environment against climate change effects such as ocean warming and ocean acidification, are grounded and well-established in the framework set out in the Convention. These are built into the jurisdictional framework set out for States in their capacity as coastal States, flag States or port States, with concomitant rights and obligations in the different maritime zones, the breadth of which are reckoned in accordance with the Convention. Furthermore, Part XII thereof provides a comprehensive structure for the allocation of the legislative and enforcement prerogative of States with respect to sources of pollution of the marine environment.
106. True to its character as a "framework" or "umbrella" convention, and a living instrument capable of addressing contemporary challenges to the oceans, UNCLOS has also enshrined a mechanism for the further development of specific obligations, through the work of competent international organizations, like IMO, to facilitate agreement on applicable rules and standards. In the IMO context, those specific obligations in line with the implementation of UNCLOS are contained in treaties, regulations, resolutions and instruments developed under its auspices.
107. Specific obligations under those instruments under the purview of competent international organizations may be regarded as having the character of "generally accepted international rules and standards". While there are no specific criteria for identifying when or how international rules and standards become generally accepted, in the context of rulemaking in IMO, participation in the work of the Organization by 175 Member States and virtually all bodies and organizations with an interest in the regulation of shipping and in the creation and acceptance of those same rules and standards, lends support to a notion of their being generally accepted.
108. UNCLOS States Parties, insofar as they have agreed to the regime set out by that Convention for the development of generally accepted international rules and standards through competent international organizations, also have the obligation to give full effect to such rules and standards, through the adoption of national legislation consistent therewith, and by enforcing them within the bounds of their respective jurisdiction.
109. Moreover, UNCLOS States Parties which are also IMO Member States could very well accept specific obligations under IMO instruments that derive from, are consistent with, and are without prejudice to, the provisions of UNCLOS. When they have also accepted the specific obligations under IMO instruments as a matter of treaty law, they are similarly duty-bound to give effect to the provisions of such instruments by implementing them into their national legislation, providing relevant measures thereunder, and enforcing them as may be applicable. IMO instruments do not, however, address the consequences of non-compliance with the specific obligations contained in its instruments.
110. As shown in the foregoing discussion, IMO has developed a range of mandatory and non-mandatory instruments and mandatory and voluntary measures, consistent with and complementary to UNCLOS, that may directly or indirectly seek to address the climate change causes and effects referred to in the request for an advisory opinion.

States Parties to those instruments are bound to comply with the specific obligations established thereunder to the extent that they have so accepted and consented to them. To the extent that these instruments or the provisions thereof comprise generally accepted international rules and standards developed under the auspices of a competent international organization under UNCLOS, UNCLOS States Parties are also effectively duty-bound to take such rules and standards into account in the exercise of their rights and obligations, or to conform or give effect thereto and act in a manner consistent therewith, or to establish regulations that are in line with and not less effective than the standards contained those rules and standards.
