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REPORT OF THE MARINE ENVIRONMENT PROTECTION COMMITTEE ON ITS EIGHTIETH SESSION

Attached are the annexes to the report of the Marine Environment Protection Committee on its eightieth session (MEPC 80/17).

LIST OF ANNEXES

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ANNEX 1

DRAFT ASSEMBLY RESOLUTION ON GUIDELINES ON PLACES OF REFUGE FOR SHIPS IN NEED OF ASSISTANCE

THE ASSEMBLY,

RECALLING Article 15(j) of the Convention on the International Maritime Organization concerning the functions of the Assembly in relation to regulations and guidelines concerning maritime safety and the prevention and control of marine pollution from ships,

CONSCIOUS of the possibility that ships at sea may find themselves in need of assistance relating to the safety of life and the protection and preservation of the marine environment, and that an incident involving a ship in need of assistance seeking a place of refuge can happen anywhere at sea,

RECOGNIZING the need to balance both the prerogative of a ship in need of assistance to seek a place of refuge and the prerogative of a coastal State to protect its coastline,

RECALLING that coastal States are not, under international law, under any obligation to grant places of refuge, and that the provision of a common framework to assist coastal States to determine places of refuge for ships in need of assistance and assess and respond effectively to requests for such places of refuge is undertaken in a spirit of cooperation and coordination among relevant parties involved, aiming to enhance maritime safety and the protection of the marine environment,

RECALLING ALSO that the Assembly, at its twenty-third session in 2003, adopted *Guidelines on places of refuge for ships in need of assistance* by resolution A.949(23),

RECALLING FURTHER that resolution A.949(23) requested the Maritime Safety Committee, the Marine Environment Protection Committee and the Legal Committee to keep the Guidelines under review and amend them, as appropriate,

RECOGNIZING that various organizational, operational and technological developments have taken place in a rapidly changing global maritime domain,

RECOGNIZING ALSO that experiences in handling situations of ships in need of assistance have increased around the world and that the experience gained and the resulting operational practice serve to identify improvements and practices,

RECOGNIZING FURTHER the importance of and need for providing guidance for coastal States, the masters and/or salvors as well as others involved in handling ships in need of assistance seeking a place of refuge,

RECOGNIZING THEREFORE that the Guidelines require revision to ensure they continue to serve as an effective instrument, providing a clear framework to deal with ships in need of assistance seeking a place of refuge in a consistent and harmonized manner,

HAVING CONSIDERED the recommendations made by the Maritime Safety Committee at its 106th session, by the Marine Environment Protection Committee at its […] session, and by the Legal Committee at its […] session, as developed by the Sub-Committee on Navigation, Communications and Search and Rescue at its ninth session, 1 ADOPTS the revised *Guidelines on places of refuge for ships in need of assistance*, the text of which is set out in the annex to the present resolution;

2 INVITES Governments to take the revised Guidelines into account, as a matter of priority, when determining and responding to requests for places of refuge from ships in need of assistance;

3 REQUESTS the Maritime Safety Committee, the Marine Environment Protection Committee and the Legal Committee to keep the annexed Guidelines under review and amend them, as appropriate;

4 REVOKES resolution A.949(23).

ANNEX

GUIDELINES ON PLACES OF REFUGE FOR SHIPS IN NEED OF ASSISTANCE

(Note: The structure of the Guidelines is such that each "party" involved has its own section. Hyperlinks are included for quick reference and to make the Guidelines more operational. It is therefore recommended to keep the Guidelines in an electronic format.)

SECTION 1 – GENERAL

SECTION 2 – ACTION REQUIRED OF MASTERS AND/OR SALVORS AND OTHERS INVOLVED WITH SHIPS IN NEED OF ASSISTANCE SEEKING A PLACE OF REFUGE

For masters please click here

SECTION 3 – ACTIONS EXPECTED OF COASTAL STATES

For coastal States please click here

SECTION 1 – GENERAL

1.1 Introduction

1.1.1 The issue of places of refuge cannot be subject to a purely theoretical or doctrinal debate. On the contrary, it should be addressed as a practical problem which requires operational decisions involving both relevant authorities and the industry. When a ship finds itself in serious difficulty or in need of assistance without presenting a risk to the safety of life of persons involved, there are two key questions: Should the ship be brought into shelter near the coast or into a port, or should it be taken out to sea?

1.1.2 It would be highly desirable if, taking the *Guidelines on places of refuge for ships in need of assistance* (hereafter referred as the Guidelines) into account, coastal States provided places of refuge for use when confronted with situations involving ships in need of assistance off their coasts and, accordingly, drew up relevant emergency plans, instead of being unprepared to face such situations and, because of that, risking the wrong decision being made by improvising or, in the heat of the moment, acting under pressure from groups representing various interests. The Guidelines seek to address and provide guidance on how to deal with a ship in need of assistance seeking a place of refuge.

1.2 Background

1.2.1 Situations leading to a request for a place of refuge often involve only one State and will be managed by that State, under the rules applicable in its jurisdiction. There may be cases where a situation may develop to involve neighbouring States or States in the vicinity of the incident, or a flag State. Therefore, the Guidelines may also apply, subject to relevant circumstances, to situations where it is possible that more than one State may be involved.

1.2.2 When a ship has suffered an incident, the best way of preventing the risk of further damage or pollution from its progressive deterioration would be to stabilize the situation, allowing for preventive actions such as lightening its cargo and bunkers, and to repair damage. Such operations are best carried out in a place of refuge due to the added protections this offers and the availability of resources. There are circumstances under which it may be desirable to carry out a cargo transfer operation or other operations to prevent or minimize damage or pollution.

1.2.3 In some circumstances, the longer a damaged ship is forced to remain at the mercy of the elements in the open sea, the greater the risk of the ship's condition deteriorating or the sea, weather or environmental situation changing and thereby becoming a greater potential hazard.

1.2.4 While coastal States may be reluctant to accept damaged or disabled ships into their area of responsibility due primarily to the potential for environmental damage, in fact it is rarely possible to deal effectively with a marine casualty in open sea conditions.

1.2.5 Taking a ship in need of assistance to a place of refuge has the advantage of limiting the extent of coastline at risk, but conversely the coastline at the place of refuge may be at greater risk. Consideration should also be given to the possibility of taking the affected ship to a port or terminal where the transfer of cargo or repair work could be done relatively easily. For this reason, the decision on the choice and use of a place of refuge will have to be carefully considered case by case and based on risk assessment.

1.2.6 The use of places of refuge may encounter local opposition and involve difficult decisions. The coastal States should recognize that an evidenced-based comprehensive risk assessment is indispensable for safe and efficient handling and decision-making. Regional cooperation agreements could, depending on circumstances, support the accommodation of a ship in need of assistance seeking a place of refuge.

1.2.7 Coastal States and ports that accommodate a ship that has been granted a place of refuge should receive prompt compensation in respect of liabilities that arise from the accommodation of a damaged ship, as appropriate. To that end, it is important that the relevant international conventions, and, if available, risk-sharing mechanisms, be applied.

1.2.8 At the international level, the conventions listed in the appendix to section 1, as may be updated, constitute, inter alia, the legal context within which coastal States (as well as flag and port States) and ships act in the envisaged circumstances.

1.2.9 Against this background, it is necessary to lay down provisions for accommodating ships in need of assistance and seeking a place of refuge in order to ensure the harmonized and effective implementation of this measure and to make them more operational in supporting States, ships' masters and other parties involved in meeting the objectives.

1.3 Objective

1.3.1 The objective is to provide a uniform, transparent process leading to well-informed, quicker decision-making. This will benefit States, ships' masters, operators and/or salvors or other parties where a ship in need of assistance requests a place of refuge in the interest of the protection of human life, maritime safety, security and the environment.

1.3.2 The process should promote cooperation and constructive engagement within and between State governing bodies, authorities and industry.

1.3.3 Based upon the services required by the master or any other person in charge of the ship (e.g. salvors), a State which may be asked to provide assistance should consider designating a place of refuge. This is particularly important if there is a risk that a ship will sink or ground resulting in environmental damage or a navigational hazard.

1.3.4 The objective is also that national plans for the accommodation of ships in need of assistance and seeking a place of refuge include procedures for international coordination and decision-making and, where possible or appropriate, cooperation in drawing up concerted plans to accommodate such. This may be desirable, or become necessary, for regional areas or sea basins shared with several littoral States.

1.3.5 Granting access to a place of refuge involves a decision which can only be taken on a case-by-case basis with due consideration given to the balance between the advantage for the affected ship, its crew and the environment resulting from bringing the ship into a place of refuge and the risk to the environment resulting from that ship, if it is not granted a place of refuge, being near the coast or if it is taken or ordered away from the coast.

1.4 Purpose of the Guidelines

1.4.1 The purpose of the Guidelines is to provide the basis of an operational framework for coastal States, ships' masters, operators and/or salvors as well as other parties involved to handle and take a decision when a ship is in need of assistance and seeks a place of refuge.

1.4.2 Such a framework could involve establishing an authority in a State, depending on the internal structure of that State, which has relevant expertise and the necessary powers to take independent decisions as regards the accommodation of a ship in a place of refuge – hereinafter referred to as a competent authority (CA).

1.4.3 This also includes guidance for such a CA on how and what should be done to efficiently deal with a ship in need of assistance requesting a place of refuge. Guidance should also be provided for the masters to assist them in clearly identifying any services or facilities they require in a place of refuge situation. Therefore, the Guidelines should also include guidance for masters on what is expected of them, including suggested procedures and information flows to be used.

1.4.4 However, cases of a ship in need of assistance seeking a place of refuge also routinely involve other parties such as the flag State,[1] the salvor, the classification society and the insurer. The Guidelines also include guidance for such parties.

1.4.5 The Guidelines address situations where only one CA is involved, as well as when more than one jurisdiction is or may become involved. Hence, it is recommended throughout the Guidelines that coastal States, subject to relevant circumstances, consider establishing regional cooperation and coordination mechanisms in order to develop common frameworks for assessing ships that need assistance and are seeking a place of refuge, including, where appropriate, putting concerted actions and plans into practice.

1.4.6 In any given situation, Member Governments, shipmasters, companies,[2] salvors and any other parties involved, should respond effectively and in such a way that efforts are complementary, ensuring that if one CA is not in a position to manage the situation or grant a request for a place of refuge, another CA should be informed and prepared to take over the decision-making for that request.

1.4.7 Where a ship is in need of assistance and is requesting a place of refuge, but safety of life is not involved, the Guidelines should be followed. The Guidelines do not address the issue of operations for the rescue of persons at sea.

1.4.8 If, however, in an evolving situation, the persons on board find themselves in distress, the rules applicable to rescue operations under the International Convention on Maritime Search and Rescue, 1979 (SAR Convention), the International Aeronautical and Maritime Search and Rescue (IAMSAR) Manual and documents arising therefrom have priority over the Guidelines (and procedures arising therefrom).

1.4.9 Even where a situation does not entail a rescue operation, as defined in the SAR Convention, the safety of persons has to be constantly borne in mind in the application of the Guidelines.

1.4.10 In any case, the competent maritime assistance service (MAS) / maritime rescue coordination centre (MRCC) should be informed about any situation which may develop into an SAR incident. Resolution A.950(23) recommends that coastal States establish a MAS. This service could "be discharged by an existing organization, preferably an MRCC", but resolution A.950(23) also recognizes that "the establishment of a MAS should not necessarily entail the setting up of a new organization", thereby giving consideration to coastal States' internal arrangements.

[1] Flag State duties are detailed in article 94 of UNCLOS.

[2] As defined in the ISM Code, part A, paragraph 1.1.2.

1.4.11 The Guidelines do not address the issue of liability and compensation for damage resulting from a decision to grant or deny a ship a place of refuge.

1.5 Definitions

1.5.1 *Ship in need of assistance* means a ship in a situation, apart from one requiring rescue of persons on board, that could give rise to loss of the ship or to an environmental or navigational hazard.

1.5.2 *Parties involved* means, for the purposes of the Guidelines, those mentioned in section 2, paragraphs 1 (master), 2 (salvor) and 5 (other – flag State, classification society, insurers, port, harbours and terminals, company/operator) and section 3 (coastal States) involved in resolving a situation when a ship in need of assistance seeks a place of refuge.

1.5.3 *Place of refuge* means a place where a ship in need of assistance can take action to enable it to stabilize its condition and reduce the risks to navigation, and to protect human life and the environment.

1.5.4 *MAS* means a maritime assistance service, as described in resolution A.950(23), responsible for receiving reports in the event of incidents and serving as the point of contact between the shipmaster and the authorities of the coastal State in the event of an incident.

1.5.5 *MRCC* means a maritime rescue coordination centre as described in the SAR Convention.[3]

1.5.6 *Competent authority* (CA) means an authority in a State, depending on the internal structure of that State, having the required expertise and the power to take independent decisions as regards the accommodation of a ship in a place of refuge.

1.5.7 *Emergency response service* (ERS) means the service provided by an entity, including many classification societies, able to perform technical assessments on damage stability and residual strength, etc. and provide the results of their assessment to the ship's crew, salvors or the CA.

Appendix to section 1

APPLICABLE INTERNATIONAL CONVENTIONS

At the international level, the following conventions and protocols are in force and constitute, inter alia, the legal context within which coastal States, flag States and ships act in the envisaged circumstances:[4]

[3] The SAR Convention uses the term "rescue coordination centre" (RCC). Not all States may have established a maritime rescue coordination centre (MRCC) or a maritime assistance service (MAS), and it is important that the master address either depending on the internal arrangements in the coastal State in question. They may therefore be used interchangeably throughout this document.

[4] It is noted that there is at present no international requirement for a State to provide a place of refuge for ships in need of assistance.

- United Nations Convention on the Law of the Sea (UNCLOS), in particular, part V, and article 221[5] thereof

- International Convention Relating to Intervention on the High Seas in Cases of Oil Pollution Casualties, 1969 (Intervention Convention 1969)

- Protocol Relating to Intervention on the High Seas in Cases of Pollution by Substances Other than Oil, 1973 (1973 Intervention Protocol)

- International Convention for the Safety of Life at Sea, 1974 (SOLAS Convention) in particular chapter V thereof

- International Convention on Salvage, 1989[6]

- International Convention on Oil Pollution Preparedness, Response and Cooperation, 1990 (OPRC Convention)

- Protocol on Preparedness, Response and Cooperation to Pollution Incidents by Hazardous and Noxious Substances, 2000 (OPRC-HNS Protocol)

- International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 (MARPOL 73/78)

- Protocol of 1997 to amend the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto (1997 MARPOL Protocol)

- International Convention on Maritime Search and Rescue, 1979 (SAR Convention)

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

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

- Convention Relating to Civil Liability in the Field of Maritime Carriage of Nuclear Material, 1971 (Maritime Carriage of Nuclear Substances)

[5] "1. Nothing in this Part shall prejudice the right of States, pursuant to international law, both customary and conventional, to take and enforce measures beyond the territorial sea proportionate to the actual or threatened damage to protect their coastline or related interests, including fishing, from pollution or threat of pollution following upon a maritime casualty or acts relating to such a casualty, which may reasonably be expected to result in major harmful consequences. 2. For the purposes of this article, "maritime casualty" means a collision of vessels, stranding or other incident of navigation, or other occurrence on board a vessel or external to it resulting in material damage or imminent threat of material damage to a vessel or cargo".

[6] Parties to the International Convention on Salvage, 1989 (Salvage 1989) are obliged under article 11 of the Convention when considering a request for a place of refuge to take into account the need for cooperation between salvors, other interested parties and public authorities to ensure the efficient and successful performance of salvage operations. Article 11 of the Salvage Convention states, "A State Party shall, whenever regulating or deciding upon matters relating to salvage operations such as admittance to ports of vessels in distress or the provision of facilities to salvors, take into account the need for co-operation between salvors, other interested parties and public authorities in order to ensure the efficient and successful performance of salvage operations for the purpose of saving life or property in danger as well as preventing damage to the environment in general".

- Convention on Limitation of Liability for Maritime Claims, 1976 (1976 LLMC Convention)

- Protocol of 1996 to amend the Convention on Limitation of Liability for Maritime Claims, 1976 (1996 LLMC Protocol)

- International Convention on Civil Liability for Oil Pollution Damage, 1969 (1969 Civil Liability Convention)

- Protocol of 1992 to amend the International Convention on Civil Liability for Oil Pollution Damage, 1969 (1992 Civil Liability Protocol)

- International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage, 1992 (1992 Fund Convention)

- Protocol of 2003 to the International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage, 1992 (Supplementary Fund Protocol)

- International Convention on Civil Liability for Bunker Oil Pollution Damage, 2001 (2001 Bunkers Convention)

- Nairobi International Convention on the Removal of Wrecks, 2007 (2007 Nairobi Wreck Removal Convention).

SECTION 2 – ACTION REQUIRED OF MASTERS AND/OR SALVORS AND OTHERS INVOLVED WITH SHIPS IN NEED OF ASSISTANCE SEEKING A PLACE OF REFUGE

2.1 The master

2.1.1 In the event of any maritime incident, the ship's master and/or the salvor are responsible for contacting the appropriate MAS, as designated in each State, to report the incident and initiate the necessary follow-up actions. Lists of MAS and MRCCs can be found in the Global Integrated Shipping Information System (GISIS), under the MAS section of the Contact Points module and the RCC section of the Global SAR Plan module, respectively.

2.1.2 The master of a ship to which the provisions of the International Safety Management (ISM) Code are applicable should, in accordance with that Code, inform the company of any incident or accident which occurs at sea. As soon as it has been informed of such a situation, the company should contact the competent coastal station and place itself at its disposal as necessary.

2.1.3 The master has the command of the ship and remains in command of the ship even when a salvage operation is under way. The master may decide to relinquish command, after which command is assumed by the salvor.

2.1.4 The master is responsible for:

.1 informing the CAs (of the nearest coastal State(s)) as well as the flag State,[7] as soon as possible, issuing an incident report with at least the following details:

.1 ship's identity;

.2 ship's position;

.3 port of departure;

.4 port of destination;

.5 information about the onboard cargo;

.6 address from which additional information may be obtained on any oil (fuel, cargo or otherwise) and dangerous cargo on board (i.e. copy of cargo manifest) to the extent known;

.7 quantity, location and type of bunkers on board;

.8 number of persons on board; and

.9 details of the incident;

.2 cooperating fully with the CAs; and

.3 communicating all requested or pertinent information to CAs.

[7] UNCLOS articles 94, 194 and 198 prompt notification procedures to the flag State. UNCLOS articles 92 and 94 further detail that the master is acting on behalf of the flag State to which the ship is registered.

2.1.5 The master is further responsible for (with the assistance of the company and/or the salvor where necessary):

.1 assessing the situation and identifying the reasons why the ship needs assistance;

.2 carrying out an analysis of the risks, threats, and hazards identified (to the best of the master's ability or knowledge at the time of the situation) considering, inter alia, the following:

  .1 fire;

  .2 explosion;

  .3 damage to the ship, including mechanical and/or structural failure;

  .4 collision;

  .5 pollution;

  .6 impaired ship stability; and

  .7 grounding;

The risk analysis factors as presented in appendix 2 to section 3, where applicable, are to be considered during this process;

.3 estimating the consequences of the incident, if the ship were to:

  .1 remain in the same position;

  .2 continue on its voyage;

  .3 reach a place of refuge; or

  .4 be taken out to sea;

.4 identifying the assistance required from the coastal State in order to overcome the inherent danger of the situation (refer to appendix to section 2, part 3 and appendix 2 to section 3, paragraph 3);

.5 informing the CA if the ship has access to ERS and make relevant contact details, activation status and details of the contracting party available to the CA; and

.6 undertaking any relevant response actions to minimize the consequences of the casualty.

2.2 The salvor[8]

2.2.1 In a situation where the master has relinquished command, the salvor, in addition to those in paragraph 2.1, is responsible for:

.1 keeping the CA fully informed about the condition of the ship and the progress of the salvage operation;

.2 cooperating fully with the CA in ensuring the safety of the ship, of persons, and the protection of the marine environment, by taking all appropriate measures;

.3 submitting an outline salvage plan showing immediate intentions, and following up with a detailed plan at the appropriate juncture, to the CA for approval before operations commence; and

.4 initiating direct contact with the ERS (if there is an ERS in place and active for the incident) to provide them with updates on the condition of the ship.

2.3 Requesting a place of refuge – process

2.3.1 When a decision has been taken by the party in charge of the ship to make a formal place of refuge request, without prejudice to the CA's right to take the decision, the following process should be followed.

2.3.2 The formal request should be made in writing via electronic transmission and should include Form A (appendix to section 2). Any other information that the CA might require, for example to ensure compliance with local legislation, such as cargo manifests, stowage plans and the salvor's outline salvage plan, should also be forwarded with Form A.

2.3.3 The formal request for a place of refuge should be transmitted by the master, using the fastest means available, to the CA or MAS, as applicable (see paragraph 2.1.1).

2.3.4 A formal request for a place of refuge may also be made by:

.1 a ship operator/company designated person ashore/contracted salvor; and

.2 any other person who is in charge of the ship at the time and is recognized by national law.

2.3.5 Unless in extremis, formal requests should be made to one CA only, through the national point of contact (MAS), and should not be forwarded directly to ports or harbours, unless agreed with the MAS and CA. The CA should always be informed if a third party was involved.

2.3.6 Simultaneous requests to other CAs or MAS should be avoided.

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8 The duties of the salvor are set out in article 8 of the International Convention on Salvage, 1989, which is incorporated into Lloyd's Open Form, and will apply when no contract is in place. If a contract other than Lloyd's Open Form is in place, responsibilities will be different and will be specific to each casualty.

2.4 Response actions

2.4.1 Subject, where necessary, to the coastal State's prior consent, the ship's master and the shipping company concerned should take any necessary response actions, such as signing a salvage or towage agreement or the provision of any other service for the purpose of dealing with the ship's situation. When granting access, the coastal State may establish additional or different measures to be complied with by the master and/or salvor.

2.4.2 The master, the company and, where applicable, the salvor of the ship should comply with the practical requirements resulting from the coastal State's decision-making process referred to in paragraph 3.5.

2.5 Other parties involved

2.5.1 *Flag State*

The flag State, apart from complying with its obligation under international law, should be asked to cooperate with the CA if there is a need for specific information on the ship's certificates and any other relevant documentation (i.e. safety and pollution prevention). The flag State itself or, if requested, the recognized organization or organizations that issue the ship's certificates on its behalf, should provide all relevant information, certification and documentation regarding the ship to the CA. The flag State should also facilitate for any ERS information to be made available. The CA should keep the flag State aware of developments.

2.5.2 *Classification society*

When a ship is in need of assistance and seeking a place of refuge, the ship's classification society can contribute to a safe course of action to protect the ship, crew, cargo and the marine environment. A ship's crew and management need rapid precise technical information on the behaviour of the ship after the incident as well as information on the consequences of any proposed remedial actions.

It is strongly recommended that the classification society be involved in the information gathering and risk assessment with respect to preserving the hull strength and stability of the ship and mitigating environmental pollution, and in particular when a formal request for a place of refuge has been made, and to provide any relevant information.

2.5.3 *Emergency response service*

.1 Many shipowners and/or classification societies have set up ERSs. The aim of an ERS is to provide rapid technical assistance[9] to masters/the contracting party and their representatives or other authorities in a casualty situation by, for example, assessing the damage stability and residual longitudinal strength of the ship.

.2 Where the ship has been enrolled in a shore-based ERS service, the service should be activated as soon as possible to assess the vessel damage condition. The availability of ERS as a resource should be communicated without delay to the CA by the master or operator.

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[9] The International Association of Classification Societies (IACS) recommends that ERSs provide rapid technical assistance to the master and to other authorities. IACS Recommendation N.145 (May 2016): https://www.iacs.org.uk/Publications/recommendations/141-160

.3 The CA should have access to all information that it deems necessary, i.e. ERS reports and/or support information, where provided, cargo manifests, etc. Such information should be made available to the CA by the shipowner, the contracting party or, where authorized by it, the ERS without delay.

2.5.4 ***Insurers***

.1 Protection and Indemnity ("P & I") Insurance covers a wide range of liabilities including personal injury to crew, passengers and others on board, cargo loss and damage, oil pollution, wreck removal and dock damage. Generally, P & I Clubs also provide a wide range of services to their members on claims, legal issues and loss prevention, and often play a leading role in the management of casualties. Hence, establishing communication with the P & I Club as early as possible during an incident is important as they can be instrumental in obtaining relevant information from the ship operator.

.2 In an incident, they may be asked to provide financial guarantees which may include guarantees for damages or losses to ports during the accommodation of a ship in need of assistance seeking a place of refuge.

.3 Hull and machinery ("H & M") insurance covers damage to the ship's hull, machinery and equipment. This is often covered by two or more underwriters. It is sufficient to obtain the contact details of the lead hull insurer, who is authorized to act on behalf of all followers and often plays a leading role during a salvage situation.

.4 Cargo insurance covers damages to the cargo on board the ship, including cargo contributions to the general average.

2.5.5 ***Ports, harbours and terminals***

.1 Depending on circumstances and following the risk assessment, a port or harbour or a specific terminal may be identified as a potential place of refuge.

.2 If a port or harbour is identified as a potential place of refuge for a ship in need of assistance, the following issues, inter alia, will need to be considered:

.1 the availability of a suitable berth, designated emergency reception berth, or otherwise, to accommodate the ship;

.2 the risk to safety and/or human health, particularly if the port or harbour is in close proximity to populated areas; and

.3 technical considerations of the port's operations (e.g. assessment of the potential risk of lengthy disruption, the ship blocking or restricting access through navigation channels, damage to infrastructure).

2.5.6 ***The company/operator***

The company/operator should:

.1 provide a point of contact for any information required by the CA/MAS if the master is unable to do so (for whatever reason) or to reduce the requests for information to the master, allowing the master to manage the situation on board;

.2 support the CA/MAS if requested during and post the situation; and

.3 coordinate the provision of ERS information between the CA and the ERS provider.

Appendix to section 2

FORM A – FORMAL PLACE OF REFUGE REQUEST FORM

Note: For Places of Refuge requests following SAR action, it is likely that much of the ship/cargo/bunker information will already be held by the MRCC or MAS.

	Request for Place of Refuge
Date:	…………
From	Master: MV/ …………… ………. Salvage PLC
To	Competent authority (or via MAS/MRCC) …………..
	For the attention of: Competent authority
Part 1	**Appraisal of the situation (refer to paragraph 2.1.5.1)** The master should, where necessary with the assistance of the company and/or the salvor, identify the reasons for their ship's need of assistance.
Part 2	**Identification of hazards and assessment of associated risks (refer to paragraphs 2.1.5.2 and 2.1.5.3)** Having made the appraisal above, the master, where necessary with the assistance of the company and/or the salvor, should estimate the consequences of the potential casualty, in the following hypothetical situations, taking into account both the casualty assessment factors in their possession and also the cargo and bunkers on board: - if the ship remains in the same position; - if the ship continues on its voyage; - if the ship reaches a place of refuge; or - if the ship is taken out to sea.
Part 3	**Identification of the required actions (refer to paragraph 2.1.5.4)** The master and/or the salvor should identify the assistance they require from the coastal State in order to overcome the inherent danger of the situation. (appendix 2 to section 3, paragraph 3 refers).
Part 4	**Supporting documentation**
Part 5	**Any other coastal States/ports contacted to date**
Part 6	**Information from the MAS/port contacted** (At the end of its assessment process) The recipient CA should inform the requestor of its action.

SECTION 3 – ACTIONS EXPECTED OF COASTAL STATES

When a ship in need of assistance is seeking a place of refuge, a decision has to be taken as regards the accommodation of that ship in a place of refuge. Each coastal State should therefore examine its ability to provide a place of refuge.
This is particularly important in the event of an incident that could give rise to an environmental or navigational hazard or the loss of a ship.

3.1 Competent authority

3.1.1 When a ship in need of assistance is seeking a place of refuge, it is necessary to be able to call on an authority in that coastal State, depending on the internal structure of that State, with the required expertise and power to take independent decisions as regards the accommodation of a ship in a place of refuge.

3.1.2 Therefore, coastal States should designate a CA. The CA should have the required expertise and authority to take independent decisions on their own initiative concerning the accommodation of ships in need of assistance seeking a place of refuge. It is desirable that the CA be permanent in nature.

3.1.3 Coastal States are advised to establish and maintain a MAS and/or, as appropriate, make the necessary arrangements for a joint service with neighbouring States.

3.1.4 Coastal States should make the name and contact details of the competent authorities and MAS and MRCC available to the public in the Contact Points module and the Global SAR Plan module of GISIS.

3.2 Plans for accommodating ship(s) in need of assistance seeking a place of refuge

3.2.1 Under international law, a coastal State has the right to require the ship's master or company to take appropriate action within a prescribed time limit with a view to mitigating a risk or danger. In cases of failure or urgency, the coastal State can exercise its authority in taking responsive action appropriate to the threat.

3.2.2 It is therefore important that coastal States establish plans with clear procedures to address these issues, even if no established damage and/or pollution has occurred.

3.2.3 It is recommended that coastal States establish plans and procedures consistent with the Guidelines for the accommodation of ship(s) in order to respond to risks presented by ships in need of assistance seeking a place of refuge in the waters under their jurisdiction. The CA should participate in drawing up and carrying out those plans.

3.2.4 The plans should describe precisely the decision-making chain with regard to alerting and dealing with the situation in question. The authorities concerned and their specific role/competence should be clearly described, as should the means of communication between the parties involved. The applicable procedures should ensure that an appropriate decision can be taken quickly on the basis of specific maritime expertise and best possible information available to the CA.

3.2.5 When drawing up the plans, coastal States should gather the information on potential places of refuge to allow the CA to identify clearly and quickly the most suitable place for accommodating a ship in need of assistance seeking a place of refuge. It can be a sheltered area, a port or any other suitable place; it may be any appropriate place, depending on the situation, along the entire coast of a State.

3.2.6 Information about potential places should include a description of certain characteristics of the sites as well as any equipment and installations available to accommodate a ship in need of assistance.

3.2.7 The coastal State should also include procedures or agreements for international/regional coordination and decision-making, in line with the Guidelines for the handling of requests for assistance and authorizing, where appropriate, the use of a suitable place of refuge. They may therefore include availability of information on plans for other neighbouring States and all parties involved in a response operation.

3.2.8 Appendix 1 to section 3 contains a non-exclusive list of what such plans may include.

3.3 Assessment of places of refuge

The CA, and where necessary, in consultation with the port authorities and, as appropriate, terminal operators, should, for each request for a place of refuge, make an objective analysis of the advantages and disadvantages of allowing a ship in need of assistance to proceed to a place of refuge under their jurisdiction or via the waters for which they are responsible, taking into consideration the risk analysis factors listed in appendix 2 to section 3.

3.4 Event-specific assessment

Expert analysis/inspection

3.4.1 The analysis or inspection should include a comparison between the risks involved if the ship remains at sea and the risks that it would pose to the place of refuge and its environment. Such comparison should cover each of the following points:

.1 safeguarding of human life at sea;

.2 safety of persons at the place of refuge and its industrial and urban environment (risk of fire or explosion, toxic risk, etc.);

.3 risk of pollution (particularly in designated areas of environmental sensitivity);

.4 if the place of refuge is a port, risk of disruption to the port's operation (channels, docks, equipment, terminals, other installations);

.5 if the place of refuge is an anchorage, accessibility for lightering operation should be considered and the tidal situation must be monitored at all times;

.6 evaluation of the consequences if a request for place of refuge is refused, including the possible effect on neighbouring States; and

.7 due regard should be given, when drawing the analysis, to the preservation of the hull, machinery and cargo of the ship in need of assistance, as well as possible risks to navigation.

Analysis factors

3.4.2 The event-specific analysis should include the following analysis factors:

.1 seaworthiness of the ship concerned, in particular buoyancy, stability, availability of means of propulsion and power generation, and docking ability;

.2 nature and condition of cargo, stores, bunkers, in particular hazardous goods;

.3 distance and estimated transit time to a place of refuge;

.4 whether the master (or representative of the master, e.g. chief mate) is still on board;

.5 the number of other crew and/or salvors and other persons on board and an assessment of human factors, including fatigue;

.6 the legal authority of the country concerned to require action of the ship in need of assistance;

.7 agreement by the master and company of the ship to the proposals of the coastal State/salvor to proceed or be brought to a place of refuge;

.8 provision on financial security, if required;

.9 commercial salvage contracts already concluded by the master or company of the ship;

.10 information on the intention of the master and/or salvor;

.11 designation of a representative of the company at the coastal State concerned;

.12 risk analysis factors identified in the formal place of refuge request form (appendix to section 2); and

.13 any measures already taken.

Expert inspection

3.4.3 Where it is deemed safe to do so and where time permits, an assessment team designated by the CA should board the ship requesting a place of refuge, for the purpose of gathering evaluation data to support the decision-making process (cf. risk analysis factors).

3.4.4 A team composed of persons with expertise appropriate to the situation should be established. Where one or more coastal States may be involved with the incident, and where other parties may be potentially involved, then the formation of a multinational or "regional" inspection team should be considered. The coastal State CA receiving the request for a place of refuge will retain responsibility for selecting the appropriate team members and inviting participation from other States/competent authorities. Due care should be exercised to ensure that the formation of a multinational/regional team does not delay the deployment of the inspection team.

3.5 Decision-making process for granting a place of refuge

3.5.1 The CA should decide on the acceptance of a ship in a place of refuge following a prior assessment of the situation carried out on the basis of the plans referred to in 3.2 and any expert assessment as per paragraphs 3.3 and 3.4. The CA should grant a place of refuge to a ship if they consider such an accommodation the best course of action for the purpose of the protection of human life, the environment or the ship or its cargo. When permission to access a place of refuge is requested, there is no obligation for the CA to grant it, but before taking any decision, the necessary risk assessments and/or expert onboard assessments should always be completed, unless deemed unsafe. The CA should weigh all the factors and risks in a balanced manner and give shelter whenever reasonably possible.

3.5.2 The CA may verify whether the ship is covered by insurance or some other effective form of financial security permitting appropriate compensation for costs and damages associated with its accommodation in a place of refuge. Operational response to the incident should not be delayed while verification of insurance cover takes place. The absence of insurance or financial security should not in itself be a reason to refuse to assess the request for a place of refuge as there might be a risk to the marine environment and to decide on the acceptance of the ship in a place of refuge.

3.5.3 The decision by the CA as a representative of a State to grant a place of refuge on their territory should be immediately communicated to all parties involved and should include any practical requirements set as a condition of entry.

3.5.4 While each State should remain independent in making their decision, if a CA is unable to accept a request for a place of refuge it should immediately communicate to the shipowner/operator the information on the basis of which its decision has been made and including any assessment relating to:

.1 the safety of persons on board and risks to public safety onshore;

.2 environmental sensitivities;

.3 lack of availability of suitable resources at desired place of refuge and concern over structural stability and ability for ship to make successful safe transit to the same;

.4 prevailing and forecast weather conditions, i.e. lack of sheltered area for proposed works;

.5 physical limitations and constraints including bathymetry, navigational characteristics;

.6 escalation of foreseeable consequences, i.e. pollution, fire, toxic and explosion risk; and

.7 any other applicable reason.

3.5.5 In situations where regional agreements are in place, the same information should be communicated to the other parties involved. Copies of the risk assessment and/or inspection report(s) should also be made available, as appropriate, through such regional agreements.

3.5.6 The action of the coastal State, via its CA, does not prevent the company or its representative from being called upon to take steps, within the framework of international law, that are necessary to avert, lessen or remove a serious and imminent risk to its coastline or related interests, the safety of other ships and their crews and passengers or of persons onshore or to protect the marine environment. That CA may, inter alia:

.1 restrict the movement of the ship or direct it to follow a specific course. This requirement does not affect the master's responsibility for the safe handling of his or her ship;

.2 give official notice to the master of the ship to put an end to the threat to the environment or maritime safety; and

.3 instruct the master to put in at a place of refuge in the event of imminent peril or cause the ship to be piloted or towed.

In the case of a ship that is towed under a towage or salvage agreement, the measures taken by the CA of a State under paragraphs 3.5.6.1 and 3.5.6.3 may also be addressed to the assistance, salvage and towage companies involved.

Appendix 1 to section 3

PLACES OF REFUGE PLANS

The plans referred to in paragraph 3.2 should be prepared after consultation of the parties concerned, where necessary, and contain at least the following items:

.1 the identity of the authority or authorities responsible for receiving and handling alerts;

.2 the identity of the CA for assessing the situation and taking a decision on acceptance or refusal of a ship in need of assistance seeking a place of refuge;

.3 information on the coastline of the State and all elements facilitating a prior assessment and rapid decision regarding the place of refuge for a ship, including a description of environmental, economic and social factors and natural conditions;

.4 the assessment procedures for acceptance or refusal of a ship in need of assistance in a place of refuge;

.5 the resources and installations suitable for assistance, rescue and combating pollution;

.6 procedures for international coordination and decision-making, taking into account characteristic regional features (see section 4); and

.7 the financial guarantee and liability procedures in place for ships accommodated in a place of refuge.

Appendix 2 to section 3

RISK ANALYSIS FACTORS

When conducting the risk analysis as described in paragraphs 2.1.5 and 3.3, the following should be considered:

1 Environmental and social factors, such as:

- Safety of those on board

- Risk to public safety
  What is the nearest distance to populated areas?

- Pollution caused by the ship

- Designated environmental areas
  Are the place of refuge and its approaches located in sensitive areas such as areas of high ecological value which might be affected by possible pollution?
  Is there, on environmental grounds, a better choice of place of refuge close by?

- Sensitive habitats and species

- Fisheries
  Are there any offshore and fishing or shellfishing activities in the transit area or in the approaches to the place of refuge or vicinity which can be endangered by the incoming ship in need of assistance?

- Economic/industrial facilities
  What is the distance to the nearest industrial areas?

- Amenity resources and tourism areas

- Facilities available
  Are there any specialist ships and aircraft and other necessary means for carrying out the required operations or for providing necessary assistance?
  Are there transfer facilities, such as pumps, hoses, barges, pontoons?
  Are there reception facilities for harmful and dangerous cargoes?
  Are there repair facilities, such as dockyards, workshops, cranes?

2 Natural conditions, such as:

- Prevailing winds in the area
  Is the place of refuge safely guarded against heavy winds and rough seas?

- Tides and tidal currents

- Weather and sea conditions

- Local meteorological statistics and number of days of inoperability or inaccessibility of the place of refuge

- Bathymetry
  Minimum and maximum water depths in the place of refuge and its approaches?
  The maximum draught of the ship to be admitted?
  Information on the condition of the bottom, i.e. hard, soft, sandy, regarding the possibility to ground a problem ship in the haven or its approaches?

- Seasonal effects including ice

- Navigational characteristics
  In the case of a non-sheltered place of refuge, can salvage and lightering operations be safely conducted?
  Is there sufficient space to manoeuvre the ship, even without propulsion?
  What are the dimensional restrictions of the ship, such as length, width and draught?

- Risk of stranding the ship, which may obstruct channels, approaches or ship navigation

- Description of anchorage and mooring facilities, in the place of refuge?

- Operational conditions, particularly in the case of a port
  Is pilotage compulsory and are pilots available?
  Are tugs available? State their number and bollard pull.
  Are there any restrictions? If so, whether the ship will be allowed in the place of refuge, e.g. escape of poisonous gases, danger of explosion.
  Is a bank guarantee or other financial security needed and if so, acceptable to the coastal State before admission is granted into the place of refuge?

3 Contingency planning, such as:

- Competent MAS

- Roles and responsibilities of authorities and responders
  Fire-fighting capability

- Response equipment needs and availability

- Response techniques
  Is there a possibility of containing any pollution within a compact area?

- International/regional cooperation and coordination (reference to section 4)

- Evacuation facilities

4 Foreseeable consequences of the different scenarios envisaged with regard to safety of persons and pollution, fire, toxic and explosion risks.

SECTION 4 – INTERNATIONAL/REGIONAL COOPERATION AND COORDINATION FOR PLACES OF REFUGE

4.1 Many times, situations leading to a request for a place of refuge involve only one State and will be handled by the same State, under its jurisdiction. There may however be cases where a purely national situation may turn into a situation involving neighbouring Member States or Member States in the vicinity of the incident. As a complement in national place of refuge plans (see section 3.2.7 and appendix 1 to section 3, point 6), procedures for international/regional coordination and decision-making should be included and apply to situations where it is likely that more than one State may become involved.

4.2 The right of a coastal State to take action to protect its coastline from marine pollution is well established in international law.[10] UNCLOS establishes obligations[11] on coastal States to prevent, reduce and control pollution of the marine environment caused by – among other factors – shipping, as well as not to transfer environmental hazards on to other sea areas. In addition, there are provisions[12] for coordination rules for neighbouring States dealing with pollution incidents, including a duty to notify each other and to draw up joint contingency plans for responding to threats to the marine environment, i.e. pollution incidents. A ship in need of assistance seeking a place of refuge may well constitute such a threat leading to or causing pollution.

4.3 A right of a foreign ship to enter a port or internal waters of another State in situations of force majeure or distress is not provided for in UNCLOS. This, however, does not preclude the adoption of rules or guidelines as long as they are consistent with UNCLOS.

4.4 Therefore, where appropriate, States sharing a common area or sea should cooperate with a view to consulting each other regarding necessary action to be taken and pooling their capacities for joint action. Establishing regional cooperation arrangements to this end may lead to quicker response.

4.5 The appendix to section 4 provides an outline for what such international/regional cooperation and coordination may include.

4.6 In any case, any State where the CA of which has been informed, pursuant to the Guidelines or in any other way, of facts which involve or increase the risk to human life or to marine pollution in shipping areas or coastal zones of another State or other States, should take appropriate measures to inform such State(s) thereof, as soon as possible, before a situation requiring a place of refuge arises.

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[10] Relevant provisions include: UNCLOS, articles 194, 195, 198, 199, 211, 221, 225; Salvage Convention, article 9; and Facilitation Convention, article V(2).

[11] Articles 194 and 195 of UNCLOS part XII establish obligations of coastal States to prevent, reduce and control pollution of the marine environment caused by – among other factors – shipping, as well as not to transfer environmental hazards on to other sea areas.

[12] Articles 198 and 199 of UNCLOS part XII, section 2 – Global and Regional Cooperation lay down coordination rules for neighbouring States dealing with pollution incidents, including a duty to notify each other and to draw up joint contingency plans.

Appendix to section 4

INTERNATIONAL/REGIONAL COOPERATION AND COORDINATION FOR PLACES OF REFUGE

In circumstances where there are coastal States sharing a common area or sea wanting to jointly address situations requiring provision of places of refuge, the guidance below is given for use and consideration by coastal States which may jointly deal with a request for a place of refuge.

When there is a regional arrangement in place, the principle is that each State involved starts to examine their ability to provide a place of refuge and that, in the interest of resolving the situation, there is direct contact between those CAs involved to decide who is best placed to take the coordinating role. Regional arrangements may cover additional specifics related to granting a place of refuge, such as:

1 Deciding which coastal State's competent authority to be in the lead

If a place of refuge is requested when no SAR operation has taken place, the deciding factor should be the maritime assistance service (MAS) declared by the State in whose area of jurisdiction the ship is located. If there is no MAS declared, in the first instance the State with jurisdiction over the waters in which the ship is located (e.g. through a declared EEZ) should coordinate the place of refuge request unless and until an agreement has been reached to transfer coordination to another coastal State.

For place of refuge requests arising from an incident commencing outside the jurisdiction of any one coastal State, the search and rescue region (SRR) can be the deciding criterion for determining who should take on the coordination role in the first instance. The State in whose SRR the ship is located will be deemed in charge of the coordination of the event in the first instance,[13] even though there may not be a SAR component to the operation.

The coastal State in whose SRR the vessel is located at the time of the place of refuge request should retain the coordination of the response to that request unless and until an agreement has been reached to transfer coordination to another coastal State in the region which might grant a place of refuge.

Coastal States which are involved by virtue of geography, or because they are home to some of the ship's interests, should endeavour to support the action by cooperating with the coordinating State to gather information, share expertise, provide logistical assets, participate in the risk assessment, and search for potential places of refuge in their territory.

2 Coordinating authority and neighbouring coastal States

When it has been decided that taking the ship to a place of refuge is the most appropriate course of action, the coordinating coastal State should work with neighbouring States to identify the nearest, most appropriate place of refuge, which may be in another State.

At all times, the principal focus should remain the protection of human life, the environment, the ship and cargo and the reduction of the risk to navigation.

[13] A SAR coordination and the need to consider granting refuge might coexist, but the two institutions are not to be confused.

3 Coordinating and supporting coastal States

The authority (or authorities) referred to in point 2 above which has assumed coordination will be known as the coordinating coastal State (CCS). Other States supporting the CCS will be known, for the purpose of the Guidelines, as supporting coastal States (SCS).

The CCS will be responsible for:

.1 ensuring that the CA is in charge of overall coordination of the incident;

.2 initiate their national place of refuge procedure, in order to identify a potential site on their territory;

.3 being the main point of contact for liaison with representatives of the parties involved, including the flag State, the shipowner and/or operator, the master, the P & I club, salvors, the classification society and if necessary, the operator of a port of refuge and, where applicable, the terminal operator;

.4 where necessary, coordinating the response to the place of refuge request with potential SCS, in order to gain their assistance;

.5 issuing SITREPs and alerting SCS on actions taken to date and proposed plans;

.6 determining whether a coastal State cooperation group and a secretariat should be set up for the incident;

.7 organizing evaluation teams: arrange for transportation, constitution of teams, in collaboration with the other States involved;

.8 undertaking a thorough analysis of the factors listed in the Guidelines in order to decide whether to allow a ship in need of assistance to proceed to a place of refuge within their jurisdiction (see point above);

.9 communicating the results of that analysis, once complete, to the other authorities concerned and to the master/salvor and company; and

.10 ensuring that those authorities who may become responsible for the ship once in a place of refuge are:

   .1 informed as early as possible of that possibility; and

   .2 involved in the risk assessment process and are given all relevant information.

Following an assessment of all the factors (as in section 3, paragraphs 3.3 to 3.5), ensure that ships are admitted to a place of refuge if they consider such an accommodation the best course of action for the purpose of the protection of human life, the environment or the ship or its cargo; or where appropriate, initiating a dialogue to formalize the transfer of coordination to another State.

The CCS considering a formal place of refuge request should not enter into direct contact with different port authorities or shore-based authorities in another State. Although the Guidelines do not have mandatory status, the reporting requirements should be similar to those in SOLAS and MARPOL and it is important that all information exchanges go through the competent maritime authorities in the State concerned. This approach is supported by the recommendations made under paragraph 1(d) of resolution A.950(23).

4 Responsibilities of the supporting coastal States

The States supporting the CCS in handling the place of refuge request procedures include:

.1 those nearest to the vicinity of the ship in need of assistance; and

.2 the flag State.

Each SCS should:

.1 ensure that any relevant incident-related information is passed to the CCS without delay;

.2 be prepared to examine any requests from the CCS for assistance (logistical, expertise or evaluation);

.3 be prepared to examine a request for a place of refuge within their jurisdiction by the CCS; and

.4 be prepared to plan in parallel and proactively assess any possible alternative options should the CCS be unable to grant a place of refuge.

In particular, neighbouring States, including the port of initial destination of the ship, should examine the possibility of granting a place of refuge in their territory – even though the incident, at the time, is taking place outside their area of jurisdiction.

5 Transfer of coordination

Responsibility for coordinating the incident may be transferred, depending on the evolution of the situation aboard the ship, or depending on agreements reached between the States involved, i.e. the State able to offer a place of refuge. However, for reasons of operational continuity, it may be appropriate for the initial CCS to assume coordination throughout the entire process, with the agreement of the other coastal State(s) concerned.

The transfer of coordination to another coastal State is accomplished with a formal notification, preferably in an electronic format, from the State taking over coordination to the State initially in charge of the event.

Such a formal notification should include, as appropriate, details on:

- the identity of the casualty ship;
- reason for refuge;
- coastal State transferring coordination;
- coastal State accepting coordination;
- dates and times;

- position of coordination transfer;

- place of refuge (if known);

- other coastal State(s);

- transfer completion – coastal State accepting coordination; and

- reason for not granting a place of refuge.

6 Decision-making and outcomes

Decision-making and outcomes should be undertaken and communicated as described in section 3, paragraph 3.5.

7 Subsequent request to another CS to grant a place of refuge

When the risk assessment carried out following an incident concludes that a place of refuge on another State's territory is the only solution in order to preserve the safety of the ship involved and the safety of navigation, and to protect or mitigate the risks to the environment, the CCS that is unable to accept the request for a place of refuge for objective reasons should forward all information relevant to the circumstances on which their decision is based to the State or States to whom the subsequent request is made. That coastal State then becomes the CCS (and the previous CCS becomes the SCS). Forwarding all relevant information should greatly facilitate the risk assessment and decision-making on the subsequent request if a handover has not been already agreed and a passage plan arranged between the CCS and the SCS.

8 Passage plan and monitoring

When a suitable place of refuge has been determined and agreed, the CCS will assume responsibility for agreeing a passage plan with the requesting party and will engage with the SCSs as necessary, but in particular where the casualty may have to pass through or transit in close proximity to another coastal State's jurisdiction.

In order to be prepared to face potential difficulties during the transit to the designated place of refuge, coastal States should consider one or more backup places of refuge en route.

SECTION 5 – MEDIA AND INFORMATION MANAGEMENT

Conscious of the widespread use of social media for spreading information today, it is recommended that States include in their organization capacities (including training) the management of media and requests for information in connection with a ship in need of assistance seeking a place of refuge. The following is a non-exhaustive list of some key guidance points.

5.1 Media and information management

The delivery of accurate, clear, timely and up-to-date information and advice to the public and other key stakeholders is an important aspect of the successful management of any shipping incident. It is recommended that media management be incorporated into national contingency planning and a media management procedure be developed.

5.2 Key principles

.1 Media activities should not interfere with the management of the incident in any way; in particular, it should not impede the operational activities of the emergency services. Media speculation should not be considered when making the decision to grant a place of refuge.

.2 All steps should be taken to protect victims from press intrusion.

.3 Only factual information should be provided. There should be no speculation about causes, future developments or actions.

.4 Information and advice should not be released by one organization if it covers the area of responsibility of another, unless the information (and its release) has been agreed by the responsible organization.

5.3 Key interest groups

.1 Press and media.

.2 General public, including NGOs and civil society.

.3 Ministers, national and local authorities, international organizations.

.4 Shipping and insurance industries, ports, harbours, terminal operators.

5.4 Key actions for persons managing the incident

.1 KNOW who is responsible for activating the media management process/establishment of the media team for the incident (on the understanding that the media team may be required for a longer duration);

.2 ARRANGE regular briefings between different response cells (e.g. Salvage Control, MRCC, onshore clean-up team);

.3 IDENTIFY the designated responsible person(s), who will:

.1 liaise between the CA and the press;

.2 take the lead in providing strategic SITREPS; and

.3 communicate with key interest group contacts when there are significant developments to report; and

.4 FOLLOW key principles at all times.

SECTION 6 – LESSONS LEARNED

6.1 National and regional debriefs

States may consider holding debrief sessions after each significant incident:

.1 Debriefs could consider the incident background, response factors, e.g. coordination, communications, risk assessment, decision-making and any other aspects considered relevant. Depending on the nature of the incident, the debrief could either be for all the authorities and stakeholders involved, or smaller subgroups could be convened to focus on particular aspects of the incident.

.2 Where appropriate, neighbouring or other regional coastal States should be invited to participate. If the debrief identifies issues that might be of wider interest, the outcomes from the debrief process could be shared with the organization for information.

.3 If it is thought appropriate, lessons learned from an incident could be the subject of a regional or national exercise, or a smaller exercise at a more local level.

.4 For regional cooperation in relation to section 4, exercises to test national and regional arrangements, either as "live" or as tabletop exercises, should be considered and planned at regular intervals, as appropriate.

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ANNEX 2

RESOLUTION MEPC.369(80) (adopted on 7 July 2023)

AMENDMENTS TO THE INTERNATIONAL CONVENTION FOR THE CONTROL AND MANAGEMENT OF SHIPS' BALLAST WATER AND SEDIMENTS, 2004

Amendments to appendix II

(Form of Ballast Water Record Book)

THE MARINE ENVIRONMENT PROTECTION COMMITTEE,

RECALLING Article 38(a) of the Convention on the International Maritime Organization concerning the functions of the Marine Environment Protection Committee conferred upon it by international conventions for the prevention and control of marine pollution from ships,

RECALLING ALSO article 19 of the International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004 (the BWM Convention), which specifies the amendment procedure and confers upon the Marine Environment Protection Committee of the Organization the function of considering amendments thereto for adoption by the Parties,

HAVING CONSIDERED, at its eightieth session, proposed amendments to appendix II of the BWM Convention regarding the form of Ballast Water Record Book,

1 ADOPTS, in accordance with article 19(2)(c) of the BWM Convention, amendments to appendix II, the text of which is set out in the annex to the present resolution;

2 DETERMINES, in accordance with article 19(2)(e)(ii) of the BWM Convention, that the amendments shall be deemed to have been accepted on 1 August 2024 unless, prior to that date, more than one third of the Parties have notified the Secretary-General that they object to the amendments;

3 INVITES the Parties to note that, in accordance with article 19(2)(f)(ii) of the BWM Convention, the said amendments shall enter into force on 1 February 2025 upon their acceptance in accordance with paragraph 2 above;

4 REQUESTS the Secretary-General, for the purposes of article 19(2)(d) of the BWM Convention, to transmit certified copies of the present resolution and the text of the amendments contained in the annex to all Parties to the BWM Convention;

5 ALSO REQUESTS the Secretary-General to transmit copies of the present resolution and its annex to Members of the Organization which are not Parties to the BWM Convention;

6 FURTHER REQUESTS the Secretary-General to prepare a consolidated certified text of the BWM Convention.

ANNEX

AMENDMENTS TO THE INTERNATIONAL CONVENTION FOR THE CONTROL AND MANAGEMENT OF SHIPS' BALLAST WATER AND SEDIMENTS

Appendix II
Form of Ballast Water Record Book

1 Appendix II is replaced by the following:

"**BALLAST WATER RECORD BOOK**

INTERNATIONAL CONVENTION FOR THE CONTROL AND MANAGEMENT OF

SHIPS' BALLAST WATER AND SEDIMENTS

Name of ship: ………………………………..…………………………………………………......

IMO number, distinctive numbers or letters: ….………………………………………………...…

Gross tonnage: ………………………………………………………………………………………

Flag: ………………………………………………………………………………………………..…

Total ballast water capacity (in cubic metres): …………………………………………………….

Number of the International Ballast Water Management Certificate: ………………….…..………

Period From: …..……………………. To: …………………………

A diagram identifying the ballast tanks of the ship, corresponding to the Ballast Water Management Plan, including any multi-use tank, space or compartment designed to allow carriage of ballast water, is integral to and shall be a part of this Ballast Water Record Book.

Introduction

In accordance with regulation B-2 of the annex to the International Convention for the Control and Management of Ships' Ballast Water and Sediments, a record is to be kept of each ballast water operation. This includes discharges at sea and to reception facilities.

"Ballast water" means water with its suspended matter taken on board a ship to control trim, list, draught, stability, or stresses of a ship. Management of ballast water shall be in accordance with an approved Ballast Water Management Plan and taking into account guidelines developed by the Organization.

The Ballast Water Record Book entries should be completed taking into account any guidelines to be developed by the Organization.

The volume of ballast water on board should be estimated in cubic metres. It is recognized that the accuracy of estimating volumes of ballast is left to interpretation.

ENTRIES IN THE BALLAST WATER RECORD BOOK

Entries in the Ballast Water Record Book shall be made on each of the following occasions:

(A) When ballast water is taken on board from the aquatic environment (ballasting operation)

.1 Start time and location (port of uptake or latitude/longitude)

.2 Completion time and location (port of uptake or latitude/longitude and minimum depth of water during uptake)

.3 The identity of the tanks affected

.4 Estimated volume of uptake and final total quantity retained in cubic metres

.5 Whether conducted in accordance with the approved Ballast Water Management Plan

.6 Ballast water treatment method

(B) When ballast water is discharged into the aquatic environment (deballasting operation)

.1 Start time and location (port of discharge or latitude/longitude)

.2 Completion time and location (port of discharge or latitude/longitude and minimum depth of water during discharge)

.3 The identity of the tanks affected

.4 Estimated volume of discharge and final total quantity retained in cubic metres

.5 Whether conducted in accordance with the approved Ballast Water Management Plan

.6 Ballast water treatment method

(C) Whenever ballast water is exchanged, treated through internal circulation or treated in tank

1 Ballast water exchange

.1 Start time and location (latitude/longitude)

.2 Completion time and location (latitude/longitude)

.3 Minimum distance from the nearest land and minimum depth of water during the exchange or, if applicable, identify the designated exchange area in accordance with regulation B-4.2

.4 Whether conducted in accordance with the Ballast Water Management Plan and state the ballast water exchange method (Sequential or Flow-through or Dilution) used

.5 The identity of the tanks affected

.6 Total quantity exchanged and final total quantity on board in cubic metres

.7 Treatment method for the incoming ballast water

2 Ballast water internal circulation for treatment or in-tank treatment

.1 Start time

.2 Completion time

.3 The identity of the tanks affected (identifying source and destination tanks if applicable)

.4 Total quantity treated (through circulation or in tank) in cubic metres

.5 Ballast water treatment method

(D) Uptake or discharge of ballast water from/to a port-based or reception facility

.1 Start time and location of uptake/discharge (state facility name)

.2 Completion time

.3 Operation carried out (whether uptake or discharge)

.4 The identity of the tanks affected

.5 Total quantity in cubic metres and final quantity retained on board

.6 Whether conducted in accordance with the approved Ballast Water Management Plan

.7 Onboard ballast water treatment method

(E) Accidental discharge/ingress or other exceptional uptake or discharge of ballast water

.1 Start time and location of ingress/uptake/discharge (port name or latitude/longitude)

.2 Completion time

.3 Operation carried out (whether ingress, uptake or discharge)

.4 The identity of the tanks affected

.5 Total quantity of ballast water in cubic metres

.6 State the circumstances of ingress, uptake, discharge or loss, the reason thereof, any treatment method used and general remarks

(F) Failures and inoperabilities* **of the ballast water management system**

.1 Time and location (port name or latitude/longitude) of failure of the ballast water management system

.2 Operation carried out (state whether uptake or discharge)

.3 Description of the issue (e.g. kind of alarm or other description of circumstances)

.4 Time and location (port name or latitude/longitude) when the ballast water management system has been made operational

(G) Ballast tank cleaning/flushing, removal and disposal of sediments

.1 Time and ship's location on commencement of ballast tank cleaning/flushing, removal or disposal of sediments (port name or latitude/longitude)

.2 Time and ship's location on completion of ballast tank cleaning/flushing, removal or disposal of sediments (port name or latitude/longitude)

.3 Tank(s) identification (name of the ballast tanks as per the Ballast Water Management Plan)

.4 Discharge or disposal to a reception facility (state quantity in cubic metres and name of the facility)

.5 Disposal or discharge to the aquatic environment as per Ballast Water Management Plan (state quantity in cubic metres, minimum distance from the nearest land in nm and minimum depth of water in metres)

* Failures and inoperabilities include malfunctions, shutdowns or critical alarms indicating a failure of the ballast water management system which may indicate non-compliance with the D-2 standard (except routine information and warnings).

(H) Additional operational procedures and general remarks

Sample Ballast Water Record Book Page

Name of ship: ……………………………………………………………………………………………

IMO number, distinctive numbers or letters: ………………………………………………………

Date	Code (letter)	Item (number)	Record of operations / signature of officer in charge

Signature of the master …………………"

***

ANNEX 3

UNIFIED INTERPRETATION TO THE FORM OF THE INTERNATIONAL BALLAST WATER MANAGEMENT CERTIFICATE AND REGULATIONS B-3.5 AND B-3.10 OF THE BWM CONVENTION

1 Date to meet the standard in regulation D-2 in accordance with resolution MEPC.297(72).

Regulation B-3
Ballast water management for ships

Regulations B-3.5 and B-3.10 read as follows:

"5 A ship constructed on or after 8 September 2017 shall conduct ballast water management that at least meets the standard described in regulation D-2.

10 Notwithstanding regulation E-1.1.2, the renewal survey referred to in paragraphs 1.1, 1.2, 2 and 4 is:

.1 the first renewal survey, as determined by the Committee*, on or after 8 September 2017 if:

.1 this survey is completed on or after 8 September 2019; or

.2 a renewal survey is completed on or after 8 September 2014 but prior to 8 September 2017; and

.2 the second renewal survey, as determined by the Committee,* on or after 8 September 2017 if the first renewal survey on or after 8 September 2017 is completed prior to 8 September 2019, provided that the conditions of paragraph 10.1.2 are not met."

Interpretation:

1.1 A ship constructed before 8 September 2017 which has undergone a major conversion on or after 8 September 2017 should be deemed as a ship constructed on or after 8 September 2017 and comply with regulation B-3.5. If the major conversion has occurred before the renewal survey specified in regulation B-3.10, the said ship should meet the D-2 standard from the date of completion of the major conversion. If the major conversion has occurred after the renewal survey specified in regulation B-3.10, the said ship should meet the D-2 standard from the date of completion of the renewal survey specified in regulation B-3.10.

2 "Date of construction" for a ship which has undergone a major conversion.

Appendix I
Form of International Ballast Water Management Certificate

The following information regarding "Date of construction" and "Date of major conversion" is to be provided on the certificate:

"Date of construction ...."

Interpretation:

2.1 For the International Ballast Water Management Certificate for a ship that has undergone a major conversion, the date of the commencement of the major conversion should be filled in the item "Date of construction".

***

ANNEX 4

RESOLUTION MEPC.370(80)
(adopted on 7 July 2023)

AMENDMENTS TO THE GUIDELINES FOR BALLAST WATER MANAGEMENT AND DEVELOPMENT OF BALLAST WATER MANAGEMENT PLANS (G4) (RESOLUTION MEPC.127(53), AS AMENDED BY RESOLUTION MEPC.306(73))

THE MARINE ENVIRONMENT PROTECTION COMMITTEE,

RECALLING Article 38(a) of the Convention on the International Maritime Organization concerning the functions of the Marine Environment Protection Committee conferred upon it by international conventions for the prevention and control of marine pollution from ships,

RECALLING ALSO that the International Conference on Ballast Water Management for Ships held in February 2004 adopted the International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004 (the Ballast Water Management Convention) together with four Conference resolutions,

NOTING that regulation A-2 of the Ballast Water Management Convention requires that discharge of ballast water shall only be conducted through ballast water management in accordance with the provisions of the Annex to the Convention,

NOTING ALSO that regulation B-1 of the Annex to the Ballast Water Management Convention provides that each ship shall have on board and implement a Ballast Water Management Plan approved by the Administration, taking into account Guidelines developed by the Organization,

NOTING FURTHER that, at its fifty-third session, it adopted, by resolution MEPC.127(53), the *Guidelines for ballast water management and development of Ballast Water Management Plans* (G4),

NOTING that, at its seventy-third session, it adopted, by resolution MEPC.306(73), amendments to the Guidelines (G4),

HAVING CONSIDERED, at its eightieth session, proposed further amendments to the Guidelines (G4),

1 ADOPTS amendments to the *Guidelines for ballast water management and development of Ballast Water Management Plans* (G4), as set out in the annex to the present resolution;

2 INVITES Governments to apply the Guidelines, as amended, as soon as possible;

3 AGREES to keep the Guidelines, as amended, under review.

ANNEX

AMENDMENTS TO THE GUIDELINES FOR BALLAST WATER MANAGEMENT AND DEVELOPMENT OF BALLAST WATER MANAGEMENT PLANS (G4)

1 Paragraph 2.1.2 of part A of the *Guidelines for ballast water management and the development of Ballast Water Management Plans* (G4) (resolution MEPC.127(53), amended by resolution MEPC.306(73)) is amended as follows:

> "2.1.2 When carrying out any ballast water operation the details are to be recorded in the Ballast Water Record Book together with any exemptions granted in accordance with regulation B-3 or C-1. In recording these operations and exemptions, the *Guidance on ballast water record-keeping and reporting* (BWM.2/Circ.80, as may be amended) should be taken into account."

2 A new paragraph 2.1.2*bis* is inserted into part A of the *Guidelines for ballast water management and the development of Ballast Water Management Plans* (G4) (resolution MEPC.127(53), amended by resolution MEPC.306(73)) as follows:

> "2.1.2*bis* Where a port State requires specific information regarding the management of ballast water on a ship bound for a port, offshore terminal or anchorage area in that port State, a completed ballast water reporting form (BWRF) as set out in the *Guidance on ballast water record-keeping and reporting* (BWM.2/Circ.80, as may be amended) may be submitted prior to entry into that port State in a time frame required by that port State. Keeping records on a tank-by-tank basis, while not mandatory, may facilitate the completion of a BWRF. An example form for maintaining voluntary tank-by-tank records is annexed to the *Guidance on ballast water record-keeping and reporting*."

***

ANNEX 5

RESOLUTION MEPC.371(80)
(adopted on 7 July 2023)

AMENDMENTS TO THE 2017 GUIDELINES FOR BALLAST WATER EXCHANGE (G6) (RESOLUTION MEPC.288(71))

THE MARINE ENVIRONMENT PROTECTION COMMITTEE,

RECALLING Article 38(a) of the Convention on the International Maritime Organization concerning the functions of the Marine Environment Protection Committee conferred upon it by international conventions for the prevention and control of marine pollution from ships,

RECALLING ALSO that the International Conference on Ballast Water Management for Ships held in February 2004 adopted the International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004 (the Convention) together with four Conference resolutions,

NOTING that regulation A-2 of the Convention requires that discharge of ballast water shall only be conducted through ballast water management in accordance with the provisions of the Annex to the Convention,

NOTING ALSO that regulation B-4 of the Annex to the Convention addresses the conditions under which ballast water exchange should be conducted, taking into account Guidelines developed by the Organization,

NOTING FURTHER that, at its fifty-third session, it adopted, by resolution MEPC.124(53), the *Guidelines for ballast water exchange* (G6) and resolved to keep them under review,

NOTING that, having considered draft revised Guidelines (G6), at its seventy-first session, it adopted, by resolution MEPC.288(71), the *2017 Guidelines for ballast water exchange* (G6),

HAVING CONSIDERED, at its eightieth session, proposed amendments to the 2017 Guidelines (G6),

1 ADOPTS amendments to the *2017 Guidelines for ballast water exchange (G6)* as set out in the annex to this resolution;

2 INVITES Governments to apply the Guidelines, as amended, as soon as possible;

3 AGREES to keep the Guidelines, as amended, under review.

ANNEX

AMENDMENTS TO THE 2017 GUIDELINES FOR BALLAST WATER EXCHANGE (G6)

1 Paragraph 3.4 of the *2017 Guidelines for ballast water exchange* (G6) (resolution MEPC.288(71)) is amended as follows:

> "3.4 Where a port State requires specific information regarding the management of ballast water on a ship bound for a port, offshore terminal or anchorage area in that port State, a completed ballast water reporting form as set out in the ~~appendix~~ *Guidance on ballast water record-keeping and reporting* (BWM.2/Circ.80, as may be amended) may be submitted prior to entry into that port State in a time frame required by that port State."

2 The appendix to the *2017 Guidelines for ballast water exchange* (G6) (resolution MEPC.288(71)) is deleted.

***

ANNEX 6

RESOLUTION MEPC.372(80)
(adopted on 7 July 2023)

GUIDELINES FOR THE USE OF ELECTRONIC RECORD BOOKS UNDER THE BWM CONVENTION

THE MARINE ENVIRONMENT PROTECTION COMMITTEE,

RECALLING Article 38(a) of the Convention on the International Maritime Organization concerning the functions of the Marine Environment Protection Committee conferred upon it by international conventions for the prevention and control of marine pollution from ships,

RECALLING ALSO that the International Conference on Ballast Water Management for Ships held in February 2004 adopted the International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004 (the BWM Convention) together with four Conference resolutions,

NOTING that regulation B-2 of the BWM Convention enables the use of electronic record books,

RECOGNIZING the need to develop guidance for the use of electronic record books under the BWM Convention,

HAVING CONSIDERED, at its eightieth session, draft Guidelines for the use of electronic record books under the BWM Convention,

1 ADOPTS the *Guidelines for the use of electronic record books under the BWM Convention*, the text of which is set out in the annex to this resolution;

2 INVITES Governments to apply the Guidelines as soon as possible;

3 AGREES to keep the Guidelines under review in light of experience gained.

ANNEX

GUIDELINES FOR THE USE OF ELECTRONIC RECORD BOOKS UNDER THE BWM CONVENTION

1 INTRODUCTION

1.1 A key element of the International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004 (BWM Convention) regulations is the recording of ballast water operations from ships.

1.2 The format for the recording of ballast water operations under the BWM Convention is provided in appendix II to the BWM Convention.

1.3 As companies and shipowners increasingly focus on ways to operate in an environmentally responsible manner and aim to reduce the heavy burden associated with paperwork through electronic means, the concept of operational logs in an electronic format has become a popular consideration. It is considered that this approach to recording and reporting should be encouraged as it may have many benefits for the retention of records by companies, crew and officers.

1.4 It is expected that, as companies and shipowners increasingly explore electronic record-keeping, flag State Administrations will be requested to approve electronic recording systems (henceforth referred to as an electronic record book). This guidance aims to provide standardized information on approving an electronic record book to ensure the obligations of the BWM Convention are met and that there is a consistent approach to approving such systems.

2 APPLICATION

2.1 These Guidelines are only applicable to the use of electronic record books on board to meet the requirements of the Ballast Water Record Books and recording requirements under the BWM Convention.

2.2 The use of an electronic record book to record operational logs is an alternative method to a hard copy record book. The electronic record book may allow ships to utilize their technology to reduce administrative burdens and contribute to on board environmental initiatives, e.g. reduction of paper use.

2.3 These Guidelines do not provide information on the management of electronic access to, or electronic versions of, certificates and other documents that do not log continuous operations of a ship.

2.4 These Guidelines do not address the exchange of information from a ship to a company headquarters or other body, as this exchange is not a requirement of record books under the BWM Convention.

2.5 If a shipowner decides to use an electronic record book to record operational logs, instead of a hard copy record book, the following guidance should be taken into consideration by the Administration when approving the electronic record book for use.

3 DEFINITIONS

For the purposes of these Guidelines, the following definitions apply to the extent consistent with the BWM Convention:

.1 **Administration:** means the Government of the State under whose authority the ship is operating. With respect to a ship entitled to fly a flag of any State, the Administration is the Government of that State. With respect to fixed or floating platforms engaged in exploration and exploitation of the seabed and subsoil thereof adjacent to the coast over which the coastal State exercises sovereign rights for the purposes of exploration and exploitation of their natural resources, the Administration is the Government of the coastal State concerned.

.2 **Audit logging:** means logs recording user activities, exceptions and information security events, where logs are kept for an agreed period to assist in future investigations and access control monitoring (ISO/IEC 27001:2006). The time and date for the log should be in Coordinated Universal Time (UTC) and the Ship Mean Time.

.3 **Backup:** means to make a duplicate copy of a file, programme, etc., as a safeguard against loss or corruption of the original. The specific properties of the backup such as its format, frequency, storage location, retention period, are unique to each business organization and should be defined in accordance with a business continuity plan.

.4 **Business continuity plan:** means a collection of procedures and information that is developed, compiled and maintained in readiness for use in the event of an emergency or disaster.

.5 **Company:** means the owner of the ship or any other organization or person such as the manager or the bareboat charterer, who has assumed the responsibility for the operation of the ship from the shipowner and who on assuming such responsibility has agreed to take over all the duties and responsibility imposed.

.6 **Credentials:** means data that is transferred to establish the claimed identity of an entity (ISO 7498-2). Examples of credentials include a unique code/password, electronic key, digital certificate, hardware key, biometric data (e.g. fingerprint).

.7 **Cryptography:** means the discipline which embodies principles, means and methods for the transformation of data in order to hide its information content, prevent its undetected modification and/or prevent its unauthorized use (ISO 7498-2).

.8 **Data:** means a re-interpretable representation of information in a formalized manner suitable for communication, interpretation or processing (ISO/IEC 2382-1).

.9 **Digital certificate:** means a cryptographic transformation (see "cryptography") of a data unit in an asymmetric (public key) cryptosystem, using a digital signature to unite an identity with a public key.

.10 **Digital signature:** means data appended to, or a cryptographic transformation (see "cryptography") of, a data unit that allows a recipient of the data unit to prove the source and integrity of the data unit and protect against forgery e.g. by the recipient (ISO 7498-2).

.11 **Document:** means books, manuals, plans, instructions and similar media that are not certificates and are used to convey a ship's information.

.12 **Electronic record book:** means a device or system used to electronically record the entries for discharges, transfers and other operations as required under the BWM Convention.

.13 **Functional unit:** means an entity of hardware, software, or both, capable of accomplishing a specified purpose (ISO/IEC 2382-1:1993 Information technology – Vocabulary - Part 1: Fundamental terms, definition 10.01.40).

.14 **Graphic character:** means a character, other than a control character, that has a visual representation and is normally produced by writing, printing or displaying (ISO 2382-4).

.15 **IEC 60092 (series):** means standards published by the International Electrotechnical Commission (IEC) on Electrical Installations on Ships.

.16 **IEC 60533:** means standard published by the International Electrotechnical Commission (IEC) on Electrical and Electronic Installations on Ships – Electromagnetic Compatibility.

.17 **Offline:** means usage #1. Pertaining to the operation of a functional unit when not under the direct control of the system with which it is associated. Offline units are not available for immediate use on demand by the system. Offline units may be independently operated. Usage #2. Pertaining to equipment that is disconnected from a system, is not in operation, and usually has its main power source disconnected or turned off.

.18 **Portable Document Format (PDF):** means a digital form for representing documents that enables users to exchange and view electronic documents easily and reliably, independent of the environment in which they were created and the environment in which they are viewed or printed (ISO 32000).

.19 **Port:** means any port, terminal, offshore terminal, ship and repair yard or roadstead which is normally used for the loading, unloading, repair and anchoring of ships, or any other place at which a ship can call.

.20 **Key:** means a sequence of symbols that controls the operation of encipherment and decipherment (see "cryptography").

.21 **Private key:** means (in a public key cryptosystem) that key of a user's key pair which is known only by that user (ISO/IEC 9594-8).

.22 **Public key:** means (in a public key cryptosystem) that key of a user's key pair which is publicly known (ISO/IEC 9594-8).

.23 **Role-based access control (RBAC):** means a control mechanism that provides different access levels to guarantee that individuals and devices can only gain access to and perform operations on network elements, stored information, and information flows for which they are authorized (ISO/IEC 27033-2:2012).

.24 **Shipowner:** means one who owns or operates a ship, whether a person, a corporation or other legal entity, and any person acting on behalf of the owner or operator.

.25 **Signature:** means the handwritten means of identifying the signer of a document or an electronic equivalent which is uniquely and securely linked to an individual.

.26 **Standardized:** means the prescription of an authoritative rule, principle, means of judgement or estimation, criterion, measure of correctness, measure of perfection or some definite degree of any quality that determines what is adequate for a purpose.

.27 **Storage (device):** means a functional unit into which data can be placed, in which they can be retained, and from which they can be retrieved (ISO/IEC 2382-1:1993 Information technology – Vocabulary – Part 1: Fundamental terms).

4 SYSTEM SPECIFICATIONS

4.1 Ability of the electronic record book to meet regulations under the BWM Convention.

4.1.1 The use and output presentation of any electronic record book approved by an Administration should satisfy the requirements of all relevant regulations under the BWM Convention.

4.1.2 As the BWM Convention specifies the recording of a range of information for specific circumstances, an approved system should only allow a complete entry to be saved for verification by the master. For example, when ballast water is discharged into the sea, the entry should not be able to be saved without the entry of the latitude and longitude of the discharge. It is suggested that, where possible, technology which can automatically input required data be installed to ensure accuracy. In the case of equipment failure, manual input should be allowed and the change of the source of data recorded. The automatic data value inputs should be protected by measures aimed at preventing attempts at manipulation or falsification. The system should automatically record any attempts to manipulate or falsify any data.

4.1.3 To assist with consistent recording of data such as dates and positions, the system should be developed to display entry fields and request data formats that are as consistent as possible with other electronic reporting required by IMO and other shipboard systems. Electronic record books should be presented in the form as specified in the BWM Convention in order to assist the smooth transition from hard copy record books to electronic ones.

4.1.4 In order to comply with the BWM Convention's requirements, an electronic record book should have the capability to retain all records made for the minimum period as specified in the BWM Convention. The capability to produce a hard copy of verified records for the master to certify as a true copy, upon request from relevant authorities, should also be provided.

4.2 Updates to the electronic record book

As the BWM Convention continues to evolve, it is essential that all approved electronic record books are reviewed and appropriately updated to ensure relevant BWM Convention amendments are incorporated in the electronic record book. Any updates should not cause loss of existing records, nor make them unreadable, and the system should continue to present all records in the form specified by the BWM Convention. Updates to the system should be completed prior to the entry into force of the relevant BWM Convention amendments.

4.3 Security and accountability of the electronic record book

4.3.1 To ensure the security of an electronic record book, it is critical that the system implements role-based access control. At a minimum, all access to the application should use a unique personal login identifier and password for each user. This level of security ensures that the user making entries into the application is accountable for any false entries or omissions.

4.3.2 The BWM Convention requires the signature of the relevant officer entering a record. As such, the electronic record book should implement audit logging. Audit logging should record a user code, identifying symbol, such as a graphic character, or an equivalent identifier against each entry to uniquely identify the user and whether the user provided, accessed or amended an entry.

4.3.3 Electronic signatures applied to an electronic record book should meet authentication standards, as adopted by the Administration.

4.3.4 Records and entries should be protected by measures aimed at preventing and detecting attempts at unauthorized deletion, destruction or amendment. After an entry is saved by the user, the system should secure the information against unauthorized or untraceable changes. Any change(s) to the entry by the same user or a different user should be automatically recorded and made visible both in the system and in any output presentation or printed versions of the electronic record book. The entry should appear in the list of entries in a format that makes it clear that the entry has been amended. To create transparency of changes to saved or verified entries, it is essential that the system is designed to retain both the original entry and the amendment(s).

4.3.5 If an entry requires amendment, it is recommended that the reason and user identifier, for the officer making the amendment, be recorded for verification by the master. The original entries and all amendments should be retained and visible.

4.3.6 The BWM Convention also requires that information in the record book be verified (e.g. regulation B-2.5 of the BWM Convention requires that each page of the Ballast Water Record Book be signed by the master of the ship). For verification of a single or series of saved entries by the master, the electronic record book should have an additional authentication factor to allow verification. This additional authentication factor should be in the form of additional credentials supplied by the master at the time of verification.

4.3.7 The electronic record book should also be able to log and identify the entries made, amended or verified by time. This will assist in identifying those situations where actions requiring an entry are undertaken over days or weeks and all entered at one time, where such an approach to making entries is consistent with the BWM Convention (e.g. regulation B-2.5 requires that each operation concerning ballast water shall be fully recorded without delay in the Ballast Water Record Book).

4.3.8 To provide for different stages of the data entry and approval process, the electronic record book should provide a status field for each entry that clearly determines the verification stage of the entry. For example, when an entry has been saved in the system by the user, the entry should reflect a term such as "pending" or "awaiting verification". Once the master has verified an entry, a term such as "verified" should be automatically reflected.

4.3.9 If an entry is amended after the master has verified it, the electronic record book should automatically return the entry to "pending" or "re-verification" notifying the master that the entry requires re-verification.

4.3.10 To ensure that entries are verified in a timely manner, the system should provide a reminder that verification by the master is required. Verifications should occur weekly or prior to arrival in-port (as appropriate). Entries not verified should be accompanied by comments advising of the reason for non-verification.

4.3.11 If a recorded entry correlates with a receipt for services (such as a receipt received when ballast water is discharged to a reception facility), or the endorsement provided during regulatory surveys or inspections (such as endorsement of the Cargo Record Book), the electronic record book should allow this receipt or endorsement to be identified or attached to the relevant entry in the system. This receipt can be referenced in the system with a hard copy receipt or endorsement made available upon request. Alternatively, the receipt or endorsement can be attached to the entry in any form deemed acceptable by the Administration (such as a scanned copy of the original in PDF), and the original retained.

4.4 Storage of data recorded in the electronic record book

4.4.1 To create the same level of confidence as a hard copy record book, any electronic record book should form part of the Information Technology Business Continuity Plan. This includes having an appropriate method for backing up data and data recovery if the system were to fail or not be available from the ships' network. Consideration should also be given to alternate power supplies to ensure consistent access to the system. Both data recovery and power sources are essential to allow ongoing entries to be made and facilitate port State control (PSC) inspections.

4.4.2 The electronic record book should have the capability to allow automatic backup of data in the system to offline storage. Backups should ensure the offline record is updated automatically every time changes are made to entries to ensure the backing up process is not forgotten by the user.

4.4.3 The recorded data stored in the offline space should be:

.1 developed using cryptography so that unauthorized access to the information is not possible, and so that once the data has been saved it is in a read-only format with no amendments able to be made to the record (unless done so through the application or by a user with the appropriate level of authorization);

.2 in a format that can be transferred from the point of record to another storage location. Examples include a local (removable) storage peripheral device, local and remote network storage;

.3 maintained in a format that ensures the longevity and integrity of the record; and

.4 in a format that allows output presentation and printing of the record.

4.4.4 This offline record may be provided in any format deemed appropriate by the Administration and should be digitally signed by the master. The properties of the digital signature need to appear on the offline record, including the title; full name of the signer; and date and time of signing. It is recommended that the document be presented in PDF; however, an alternative format may be used. Alternative formats should allow the exchange and view of electronic documents independent of the environment in which they were created and the environment in which they are viewed or printed, in a simple way and with fidelity.

4.4.5 An electronic record book and infrastructure related to the system, including computers and peripherals, should be installed in compliance with IEC 60092 and IEC 60533, where applicable.

5 DECLARATION

5.1 Any electronic system deemed to meet the above criteria should be provided with written confirmation by the Administration and carried on board the ship for the purpose of regulatory surveys or inspections. An example of a declaration can be seen in the appendix.

5.2 Delegating the assessment of the electronic record book against these Guidelines and the issuing of a declaration on behalf of the Administration by recognized organizations (ROs) is at the discretion of the Administration.

6 BWM CONVENTION INSPECTION AND ENFORCEMENT

6.1 Inspection

6.1.1 An electronic record book should have the ability to meet the company verification/audit requirements (such as integration with the ship's safety management system (International Safety Management Code)). The record book should also have the ability to meet all flag State and survey requirements. In addition, an electronic record book should meet all control provisions as set out in the BWM Convention. Such a system should also meet any general requirements set out in the *Procedures for port State control, 2021* (resolution A.1155(32))), as amended, as well as support the detection of violations and enforcement of the Convention as outlined in article 10 of the BWM Convention.

6.1.2 The use of and reliance upon electronic record books in no way relieves shipowners of their existing duty to accurately maintain and produce records during an inspection, as required by the BWM Convention. It is recommended that, if a ship cannot produce the electronic record book or a declaration provided by the Administration during the PSC inspection, the PSC officer should request to view an alternative verified copy of the records or a hard copy record book for verification.

6.2 Equipment requirements during an inspection

As the electronic record book will be presented using the ships' onboard equipment, it should not be necessary for officers to carry additional equipment (e.g. electronic devices to view the records) during inspections. Officers may choose to carry additional equipment on board to aid in the verification process if the ships' onboard equipment is unavailable.

6.3 Prosecution

To accommodate current procedures when investigating illegal discharges under the BWM Convention, the electronic record book should allow for the specific entry, relevant page, pages or the entirety of the electronic record book to be printed at the time of an investigation and each printed page physically signed by the master to certify it as a "true copy". All printed pages should provide the following details in addition to those required under the BWM Convention for record books:

.1 the title and full name of the person that entered the record (in addition to the person's unique username and/or ID in the electronic record book);

.2 any changes that were made to the entries;

.3 the date and time of printing;

.4 the name and version number of the electronic record book from which the true copy was produced; and

.5 page numbering and number of pages to ensure the report is complete.

APPENDIX

EXAMPLE DECLARATION

DECLARATION OF BWM CONVENTION ELECTRONIC RECORD BOOK

Issued under the authority of the Government of:
……………………………………………………………………
(full designation of the country)

In reference to the requirements set out in the
International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004 (BWM Convention)

Name of ship…………………………………………………………………

IMO number …………………………………………………………………

Flag State of ship……………………………………………………………..

Gross tonnage………………………………………………………………..

This is to declare that the electronic system designed to record entries in accordance with the BWM Convention installed on board the ship listed above has been assessed by this Administration to meet the relevant requirements as set out in the BWM Convention and is consistent with the Guidelines developed by the International Maritime Organization (IMO).

Electronic Record Book Manufacturer	--
Electronic Record Book Supplier	--
Electronic Record Book Installer	--
Electronic Record Book Software Name/Version	--
Electronic Record Book is in accordance with MEPC resolution/s	--
Date of installation (dd/mm/yy)	--

A copy of this declaration should be carried on board a ship fitted with this Electronic Record Book at all times.

……………………….	………………………………………………………	……………
NAME	SIGNATURE	DATE (dd/mm/yy)

Seal or stamp of the Authority, as appropriate

***

ANNEX 7

DRAFT AMENDMENTS TO REGULATIONS A-1 AND B-2 OF THE BWM CONVENTION

1 In regulation A-1, a new paragraph 9 in inserted after paragraph 8, as follows:

"9 *Electronic record book* means a device or system, approved by the Administration, used to electronically record the entries for each ballast water operation as required under this Convention in lieu of a hard copy record book."

2 Regulation B-2.1 is amended as follows:

"1 Each ship shall have on board a Ballast Water Record Book, which may be an electronic record ~~system~~ book, or which may be integrated into another record book or system, and which shall at least contain the information specified in Appendix II. Electronic record books shall be approved by the Administration taking into account the guidelines to be developed by the Organization[*]."

3 Regulation B-2.5 is amended as follows:

"5 Each operation concerning ballast water shall be fully recorded without delay in the Ballast Water Record Book. Each entry shall be signed by the officer in charge of the operation concerned and each completed page shall be signed by the master or in the case of a group of electronic entries shall be verified by the master in a timely manner. The entries in the Ballast Water Record Book shall be in a working language of the ship. If that language is not English, French or Spanish the entries shall contain a translation into one of those languages. When entries in an official national language of the State whose flag the ship is entitled to fly are also used, these shall prevail in case of a dispute or discrepancy."

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[*] Refer to the *Guidelines for the use of electronic record books under the BWM Convention* (resolution MEPC.372(80), as may be amended).

ANNEX 8

RESOLUTION MEPC.373(80)
(adopted on 7 July 2023)

2023 GUIDELINES FOR THERMAL WASTE TREATMENT DEVICES (TWTD)

THE MARINE ENVIRONMENT PROTECTION COMMITTEE,

RECALLING Article 38(a) of the Convention on the International Maritime Organization concerning the functions of the Marine Environment Protection Committee (the Committee) conferred upon it by international conventions for the prevention and control of marine pollution from ships,

RECALLING ALSO that, at its fifty-eighth session, the Committee adopted, by resolution MEPC.176(58), a revised MARPOL Annex VI, which mentions in paragraph 5.2 of regulation 16 that this regulation should not preclude the development, installation and operation of alternative design shipboard thermal waste treatment devices that meet or exceed the requirements of this regulation,

NOTING that regulation 4 of MARPOL Annex VI allows the use of alternative compliance methods at least as effective in terms of emissions reductions as those required by the Annex,

RECOGNIZING the need to develop guidelines for the use of thermal waste treatment devices as alternative methods to comply with the standards set forth in regulation 16 on shipboard incineration,

HAVING CONSIDERED, at its eightieth session, *2023 Guidelines for Thermal Waste Treatment Devices (TWTD)* (hereinafter referred to as the "2023 TWTD Guidelines"), prepared by the Sub-Committee on Pollution Prevention and Response at its tenth session,

1 ADOPTS the 2023 TWTD Guidelines, as set out in the annex to the present resolution;

2 INVITES Administrations to take the annexed Guidelines into account in developing provisions for regulating the use of thermal waste treatment devices as equivalent means of compliance in accordance with regulation 4 of MARPOL Annex VI;

3 REQUESTS Parties to MARPOL Annex VI and other Member Governments to bring the 2023 TWTD Guidelines to the attention of shipowners, ship operators, shipbuilders, marine equipment manufacturers and any other interested groups;

4 AGREES to keep these Guidelines under review in light of experience gained with their application.

ANNEX

2023 GUIDELINES FOR THERMAL WASTE TREATMENT DEVICES (TWTD)

Contents:

1 Introduction

1.1 These Guidelines cover the approval, certification and in-service controls applicable to thermal waste treatment devices (TWTD) as equivalent means, under regulation 4 of MARPOL Annex VI, to incinerators as covered by regulation 16 of that Annex and as specifically provided for by paragraphs 1 and 5.2 of that regulation.

1.2 These Guidelines, as directed by PPR 6, are written on the basis of a technology-neutral, goal-based approach that can be applied to any thermal waste treatment device using, for example, gasification, hydrothermal carbonization, pyrolysis, plasma or other thermal means for the disposal of permitted garbage and other shipboard wastes generated during a ship's normal service.

1.3 As an alternative to conventional incinerators, as a means of disposal of garbage and other shipboard wastes, these thermal waste treatment devices remain subject to the same prohibitions as to those materials which are not to be so disposed of as given in regulation 16.2 of MARPOL Annex VI.

1.4 A TWTD certified in accordance with these Guidelines should meet Performance Level 1 in terms of emissions to air which is comparable to the emission limit requirements given in the *2014 Standard specification for shipboard incinerators* (resolution MEPC.244(66), as amended) – this Performance Level should be demonstrated by in-service emission measurements. Where there is a related water discharge to sea, that also should be controlled as given in these Guidelines.

1.5 Additionally, an applicant may request certification to Performance Level 2. In that case not only should the Performance Level 1 requirements be met but there are detailed additional testing requirements which should be met prior to approval as an equivalent means together with tighter in-service emission limits.

2 General – Basis of these Guidelines

2.1 In order to be "technology-neutral" these Guidelines follow a goal-based approach, the basis of which is:

.1 the in-service monitoring and recording of specified emissions;

.2 the identification of relevant Functional Objectives; and

.3 the applicant-proposed/demonstrated resolution of each Functional Objective by means of an applicant-compiled Thermal Waste Treatment Device Technical Report. The aspects which should be covered as part of that TWTD Technical Report may include, but are not limited to, the items listed in table 2 as given in these Guidelines.

2.2 The TWTD Technical Report should be assessed for completeness in respect of the Functional Objectives by the reviewing Administration and further developed by the applicant as considered necessary by the Administration together with such physical surveys as required of the device in production and, as a unit, as installed and in operation. This TWTD Technical Report should thereafter form the basis of the overall approval package of that thermal waste treatment device as an equivalent means to incineration for permitted onboard garbage and waste disposal. Thereafter individual unit certification should be in accordance with the procedures as agreed in respect of the related Functional Objective – Unit certification resulting in the issue to each unit of a TWTD Certificate, the form of which is given in the annex, and the approval of that unit's TWTD File.

2.3 These Guidelines cover only the MARPOL Annex VI, prevention of air pollution, aspects related to the use of TWTD. The manufacturer, installer, shipowner and others, as applicable, are responsible for ensuring that all other relevant statutory requirements, together with relevant classification requirements, are complied with as and where appropriate.

2.4 These Guidelines may involve hazardous materials, operations and equipment. These Guidelines do not purport to address the safety aspects associated with the use of thermal waste treatment devices. It is the responsibility of the user of these Guidelines to establish appropriate safety and health practices and determine the applicability of regulatory and classification limitations prior to use, including possible port State limitations.

3 Definitions

Table 1: Definitions

Applicant	This may be the device manufacturer or another party – in all cases the applicant is responsible for providing the required information, performance testing (where required) and subsequent required ongoing support of the certification
Carbon monoxide (CO)	Controlled as an indicator of incomplete oxidation of waste material – otherwise as per the NO_x Technical Code 2008
Event Record Points	Events to be recorded for the purpose of reflecting compliant operation of the device as installed
Functional Objectives	These are the objectives which should be met in order that the thermal waste treatment device is designed, manufactured, installed, operated, maintained and serviced such that the required emission performance is achieved and that as an equivalent means other uncontrolled pollution streams are not generated
PAH	Polycyclic Aromatic Hydrocarbons – expressed in terms of phenanthrene equivalent as defined in the *2021 Guidelines for Exhaust Gas Cleaning Systems* (resolution MEPC.340(77))
Performance Level 1	See section 4.1.1 for the requirements for Performance Level 1. This performance level, where limited, is comparable to the existing requirements for incinerators (resolution MEPC.244(66), as amended) but as appropriate to in-service monitoring applied on a continuous basis to a thermal waste treatment device
Performance Level 2	Requirements set out in section 4.1.2. This level has tighter emission to air limits than Performance Level 1. The report from that testing should be included in the TWTD Technical Report
Sewage sludge	Material from the ship's sewage system which would include, but not be limited to, de-watered sewage prior to treatment or the residues from a sewage treatment plant
Supporting information annex	Commercially sensitive material submitted to the approving Administration covering detailed aspects of the TWTD Technical Report, which should not be circulated outside that Administration
Thermal waste treatment device (TWTD)	A device for disposing, by thermal action, of onboard generated garbage other than by use of an incinerator as defined by paragraph 2.2 of the *2014 Standard specification for shipboard incinerators* (resolution MEPC.244(66), as amended). The thermal waste treatment device includes the waste reduction unit itself together with all other necessary support systems and equipment

TWTD File	The document prepared by the applicant for each certified thermal waste treatment device and approved by the Administration. The TWTD File should be retained on board with the device during its service life. The TWTD File details the device and how it is to be surveyed or inspected
TWTD Operating Manual	The document supplied with the thermal waste treatment device describing to the user how the device is to be installed, operated, maintained and serviced
TWTD Technical Report	The document prepared by the applicant detailing how the Functional Objectives are met. The TWTD Technical Report would form part of the information supplied to the Organization by the Administration of a Party approving a thermal waste treatment device as an equivalent means in accordance with the requirements of regulation 4 of MARPOL Annex VI
UTC	Universal Time Coordinated

4 Emission limits

4.1 Discharges to air

This section does not apply to systems which do not generate any emissions to air, such as hydrothermal carbonization (HTC).

4.1.1 Performance Level 1

4.1.1.1 A TWTD certified under these Guidelines should not exceed the following in-service maximum emission limits:

CO 185 ppm (dry basis) at 11.00% O_2 – averaged over each UTC three-hour period

Soot number maximum average: Bacharach 3 or Ringelman 1 (20% opacity) (A higher soot number is acceptable only during very short periods such as starting up)

4.1.1.2 CO should be measured in accordance with section 6.4 of the NO_x Technical Code 2008 (direct measurement and monitoring) and should be monitored at a frequency of not less than 0.05 Hz.

4.1.1.3 Oxygen content, temperature and pressure profiles, as applicable, through the TWTD should be monitored and controlled in accordance with the relevant Functional Objective.

4.1.2 Performance Level 2

4.1.2.1 Where requested by the applicant, the TWTD may additionally be certified as meeting Performance Level 2. This involves a detailed pre-certification test together with in-service emission limits which are tighter than those of Performance Level 1.

4.1.3 Pre-approval Test

4.1.3.1 As part of the initial approval process for Performance Level 2 as an equivalent means, the TWTD model should be subject to a Pre-approval Test.

4.1.3.2 The Pre-approval Test should be of 6 to 8 hours duration with the TWTD in its operating condition.

4.1.3.3 Pre-approval Test emission limit values are given on a dry basis, other than for HC which is measured on a wet basis, at 11.00 % O_2 concentration and at 273 K, 101.3 kPa:

Pre-approval Test

Species	**Limit**	**Test Method**
CO	50 ppm	NTC **
NO_x	100 ppm – as NO_2	NTC **
HC	15 ppmC_1	NTC **
Particulate matter	10 mg/m^3	US EPA Method 5
Hydrogen Chloride (HCl)	10 mg/m^3	US EPA Method 26/26A
Dioxins and Furans*	0.1 ng/m^3	US EPA Method 1613B

In addition oxygen, temperature and pressure profiles, as applicable, through the device should be monitored over the duration of the test period and given in the test report.***

* as listed and with equivalency calculated in accordance with EU Directive 2010/75/EU Annex-VI Part 2

** in accordance with the NO_x Technical Code 2008 chapter 5

*** oxygen content, temperature and pressure, as applicable, should be measured in accordance with NO_x Technical Code 2008 chapter 5

4.1.3.4 Pre-approval Test procedures:

.1 testing should be undertaken while operating with a) sludge oil (if applicable to the TWTD system) and b) solid waste compositions both as given in paragraph 1 of appendix IV to MARPOL Annex VI;

.2 sampling position should be after any exhaust gas treatment components, such as water washing, but prior to any dilution of that exhaust gas;

.3 CO, NO_x and HC should be monitored at a frequency of not less than 0.05 Hz over the duration of each test and those readings averaged to give the result to be compared to the respective limit value;

.4 CO and NO_x limits are given on a dry basis. Consequently, if these are measured on a wet basis, those findings should be converted to dry basis reading using a concurrently measured water vapour content in order to determine the relevant dry/wet correction factor (concentration, dry = concentration, wet/exhaust gas non-water fraction);

.5 correction to reference 11.00% O_2 should be on the basis of:

$C_{reference} = C_{measured} \times (20.95 - O_2 \text{ measured}) / (20.95 – 11.00)$;

.6 oxygen content, temperature and pressure profiles, as applicable, through the TWTD should be monitored over the duration of each test for conformity with the required values as given by the relevant Functional Objective;

.7 not less than three separate HCl and particulate matter readings should be taken over the duration of each test period at approximately equally spaced intervals and those results averaged to give the result to be compared to the limit value. For thermal waste treatment devices with intermittent loading those test procedures should commence no later than 10 minutes after a loading; and

.8 alternative emission species test methods which provide equivalent results to those given above may be used with the agreement of the Administration.

4.1.3.5 A test report detailing the TWTD tested, the test sequence followed, the measurement devices/procedures used, the traces of the CO, NO_x, HC and O_2, the temperature and pressure profile readings and the test results of the other emissions measured together with details of the actual sludge oil (if applicable), and solid waste compositions and waste loading quantities and times should form part of the TWTD Technical Report. If the TWTD is not built for handling sludge oil and testing is therefore not undertaken with sludge oil, this should be specified in the test report.

4.1.3.6 In service, the emissions from thermal waste treatment devices certified to Performance Level 2 should not exceed the following in-service maximum emission limits:

CO 50 ppm (dry basis) at 11.00% O_2 – averaged over each UTC three-hour period

Opacity 10%

4.1.3.7 CO should be measured in accordance with section 6.4 of the NO_x Technical Code 2008 (direct measurement and monitoring) and should be monitored at a frequency of not less than 0.05 Hz.

4.1.3.8 Oxygen content, temperature and pressure profiles, as applicable, through the TWTD should be monitored and controlled in accordance with the relevant Functional Objective.

4.2 Discharge Water to Sea

4.2.1 This section applies if there is:

.1 a direct water discharge as a by-product of the thermal waste treatment process used; and/or

.2 water used to wash the exhaust gas from the TWTD before discharge to the atmosphere, where that water is then subsequently discharged to sea.

Alternatively, these discharge water streams may be collected in a holding tank for discharge ashore.

4.2.2 If discharged to sea, the discharge water should not be diluted or mixed with water from other sources before monitoring for the turbidity and PAH limit parameters. After monitoring for PAH and turbidity, the discharge water may be diluted as required or chemically treated prior to pH monitoring.

4.2.3 The discharge water to sea should not exceed the following limits at any time when the TWTD is in operation:

.1 pH: minimum 6.5 or a maximum difference of 2 pH units between the inlet water and the discharged water after dilution values – if chemically treated the requirements of 10.1.6.1 of the *2021 Guidelines for Exhaust Gas Cleaning Systems* (resolution MEPC.340(77)) should also be applied;

.2 Turbidity: maximum continuous turbidity in the discharge water should not be greater than 25 FNU (formazine nephelometric units) or 25 NTU (nephelometric turbidity units) or equivalent units, above the inlet water turbidity assessed on the basis of 15-minute average values; and

.3 PAH: phenanthrene equivalent concentration should not exceed that equivalent to 2.2 g/h per nameplate capacity in MW at the discharge water flow rate(s) above the inlet water PAH concentration.

4.2.4 The monitoring methods used for pH, turbidity and PAH should be in accordance with the *2021 Guidelines for exhaust gas cleaning systems* (resolution MEPC.340(77)) and should be monitored at a frequency of not less than 0.05 Hz.

4.2.5 Performance, calibration and permissible deviations of the discharge water monitoring devices should be in accordance with the relevant sections of the *2021 Guidelines for exhaust gas cleaning systems* (resolution MEPC.340(77)).

4.3 Residues from thermal waste treatment devices

4.3.1 Any solid residues or other materials from TWTD, including any washings or other material collected as part of maintenance or servicing activities, should be discharged ashore to appropriate reception facilities.

4.3.2 Any residues from a TWTD discharge water treatment system, either in-service or as collected during maintenance or servicing activities, should be discharged ashore to appropriate reception facilities.

5 Functional Objectives and TWTD Technical Report

5.1 These are the Functional Objectives which should be met in order to achieve the in-service Performance Level 1 emission limit requirements and, if applicable, those of Performance Level 2. The following listing of core Functional Objectives represents a technology-neutral approach to the review of the design, manufacture, installation, use and ongoing management of a TWTD. The applicant is therefore additionally responsible for identifying any other Functional Objectives which may potentially affect the device's performance in terms of emissions to air and, if applicable, water and to duly address those as part of the TWTD Technical Report such that the requirements of regulation 4.4 of MARPOL Annex VI are met. Consequently, the TWTD Technical Report is to cover, but is not limited to, an assessment of the following functional requirements and is to be compiled against the Functional Objective references as listed in table 2. In the case of operational, servicing or maintenance requirements, the TWTD Technical Report may cite the relevant section of the TWTD Operating Manual which is to be supplied with the device rather than reproducing in full the applicable text. Where a particular Functional Objective is not applicable owing to the operating principle applied, the waste streams to be processed or other factors would be given as “not applicable”, together with supporting justification, in the TWTD Technical Report.

5.2 It is recognized that the applicant may need to provide commercially sensitive information to the Administration in order to demonstrate that a particular Functional Objective has been met by the design of the TWTD and/or would be met in service. In view of this, such information may instead be included in a supporting information annex to the TWTD Technical Report which would not be circulated outside the approving Administration. Where information is provided in that category, it may be cited rather than being given in full in the TWTD Technical Report itself.

Table 2: Thermal Waste Treatment Device – Functional Objectives

These Guidelines have been developed on a technology-neutral basis. Therefore, particular Functional Objectives as listed below may not be applicable to certain types of TWTD since the point being covered does not exist. The applicant should indicate in the TWTD Technical Report submitted why certain Functional Objectives are not applicable to the TWTD under consideration and provide justification for that assertion.

	Functional objective	Content of TWTD Technical Report
1. Device design and manufacture		
1.1	The device should be designed to meet the Performance Level 1 criteria under all operating conditions with the waste materials it is designed to process To include those in-service controls and measurements used to regulate the device	Description and basis of how the device has been designed and tested to demonstrate the required performance
1.2	Device capacity should be defined	How capacity (i.e. MW, m^3/day, or as applicable) is assessed and defined for the device
1.3	The device should be designed so that when installed it will operate as required when the ship is upright and when inclined at any angle of list up to and including 15° either way under static conditions and 22.5° under dynamic conditions (rolling) either way and simultaneously inclined dynamically (pitching) 7.5° by bow or stern	Description of how the device has been designed and tested to ensure that it will operate as required under those conditions
1.4	The device should be designed so that there will not be leakage out of the device to the surrounding environment	Description and basis of how the device has been so designed and how is that demonstrated and maintained in service
1.5	The device should be designed to handle the various temperatures to which it will be exposed	Description and basis of how the device has been so designed and how that is demonstrated and maintained in service
1.6	The device should be designed to resist corrosion and erosion that may be result from the process method applied, the waste materials to be handled or the resulting products	Description and basis of how the device has been so designed and how that is demonstrated and maintained in service
1.7	The device should be designed to minimize the amount of by-product, unburnt and partially combusted material in the exhaust gas stream	Description and basis of how the device has been so designed and how that is demonstrated and maintained in service
1.8	The device should be designed to control intake air flow such that the required oxygen content and operating conditions are achieved through the device for it to function as intended	Description and basis of how the device has been so designed and how that is demonstrated and maintained in service together with the required oxygen content profile across the device in operation
1.9	The device should be designed to maintain the required pressure levels through the device for it to function as intended	Description and basis of how the device has been so designed and how that is demonstrated and maintained in service together with the required pressure profile across the device in operation

	Functional objective	Content of TWTD Technical Report
1.10	The device should be designed to minimize visible smoke and particulate emissions	Description and basis of how the device has been so designed and how that is demonstrated and maintained in service
1.11	The device should be designed to minimize the formation of dioxins in the exhaust gas stream when disposing of garbage containing PVC	Description and basis of how the device has been so designed and how that is demonstrated and maintained in service
1.12	The device should be designed so that if there is an emergency shutdown, either triggered by the device itself or the user, there will not be abnormal levels of emissions	Description and basis of how the device has been so designed and how that is demonstrated and maintained in service
1.13	The device should be designed so that on restart following an emergency shutdown the emission limits will normally not be exceeded	Description and basis of how the device has been so designed and how that is demonstrated and maintained in service
1.14	Unless discharged ashore, the discharge water arrangements of the device should be designed to meet the discharge limits under all operating conditions with the waste materials it is designed to process to include those in-service controls and measurements used to regulate the device together with emergency shutdown and re-starting procedures	Description and basis of how the discharge water arrangements of the device have been designed and tested to demonstrate in service that the required performance will be achieved under all operating conditions
1.15	Where the nature of the device operating principles results in a discharge water stream with pollution aspects additional to those controlled in section 4 of these Guidelines then those should be duly controlled	Identification of additional discharge water criteria applicable to the operating principle applied and how those are controlled in order to meet the requirements of regulation 4.4 of MARPOL Annex VI
1.16	The capacity of the device (minimum and maximum) should be stated and should be such that when operating at any point in that range the emission limits would not be exceeded	How that capacity range has been established and demonstrated
1.17	All different capacity options/models of the device should meet the emission limits	How those capacity ranges have been established and demonstrated
1.18	The design of the device should be defined and there should be an agreed conformity of production arrangement to ensure each unit as delivered will not exceed the emission limits in service Each unit should be identified in a manner which provides for its inclusion under the approval given together with its waste handling capacity (MW or as applicable)	Device definition and proposed conformity of production arrangement and how that is to be audited/inspected to ensure ongoing consistency with that definition
1.19	There should be a means of unit certification	Proposed means by which each unit will be certified and how that is to

	Functional objective	Content of TWTD Technical Report
		function between the applicant and the Administration leading to the issue of individual TWT Device Certificates
1.20	Where there are design/manufacturing changes after approval as an equivalent means that affect the emissions performance of the device, those changes should be approved before being applied to devices to be considered for certification under that approval	Proposed change management process and how that will function to ensure that changes are not introduced to certified devices prior to their acceptance by the Administration
1.21	Additional device design and/or manufacture related Functional Objectives as applicable to this type of device which are relevant in terms of meeting the emission limits and the objectives of regulation 4.4 of MARPOL Annex VI should be identified	Resolution of those additional Functional Objectives
2. Installation on board		
2.1	The installation on board should be such that the device performance is as required	The onboard installation requirements, including if applicable discharge water arrangements, to ensure that the performance of the device is not adversely affected by, but not limited to, heat, vibration, ship movement or the functioning of other equipment. How it is demonstrated, by post installation tests or other means, that these requirements have been met
2.2	The exhaust duct arrangements and fittings should be such that the device performance is as required	The design, arrangement and installation requirements of the exhaust duct design from the device to atmosphere to ensure that the performance of the device is not adversely affected. All necessary connections for operating features, monitoring devices and control arrangements to be positioned as necessary. The means by which it is demonstrated these have been met
2.3	The necessary supply services (fuel, air, compressed air, electrical, etc.) for the device to operate as required should be provided	Listing of all the requirements in respect of those support services necessary for the correct operation and performance of the device including any associated discharge water arrangements. The means by which it is demonstrated that these have been met

	Functional objective	Content of TWTD Technical Report
2.4	Installation test demonstrating that the device performance is as required including that of any discharge water arrangements	Installation test procedures which are to be applied and associated acceptance criteria
2.5	Additional device installation related Functional Objectives as applicable to this type of device which are relevant in terms of meeting the emission limits and the objectives of regulation 4.4 of MARPOL Annex VI should be identified	Resolution of those additional Functional Objectives
3. In-service operation		
3.1	When in an idle condition there should not be any significant emissions from the device (these systems can be difficult to quickly shut completely on and off and thus may require an idle status when they do not receive any feedstock)	Means by which this requirement is achieved or basis on which this is not applicable
3.2	The warm-up phase should ensure that on completion the device will operate as required	Means by which this requirement is achieved
3.3	The preparation of solid waste (sorting, size screening etc.) should be such that the device will operate as required	Operating procedures in respect of the preparation of solid waste
3.4	The preparation of liquid wastes/sludge oil should be such that the device will operate as required	Operating procedures in respect of the preparation of liquid wastes
3.5	The preparation of sewage sludge should be such that the device will operate as required	Operating procedures in respect of the preparation of sewage waste
3.6	The procedure for loading solid waste should be such that the device performs as required	Operating procedures in respect of the loading of solid waste into the device
3.7	The procedure for loading liquid waste should be such that the device performs as required	Operating procedures in respect of the loading of liquid waste into the device
3.8	The procedure for loading sewage sludge should be such that the device performs as required	Operating procedures in respect of the loading of sewage waste into the device
3.9	If applicable – the procedure for concurrently loading solid waste, liquid waste or sewage sludge should be such that the device performs as required	Operating procedures in respect of the concurrent loading of solid waste, liquid waste or sewage waste into the device
3.10	When processing solid waste, the emission to air should be controlled to not exceed the emission limits	Operating procedures for the disposal of solid waste
3.11	When processing liquid waste, the emission to air is to be controlled to not exceed the emission limits	Operating procedures for the disposal of liquid waste
3.12	When processing sewage sludge, the emission to air should be controlled to not exceed the emission limits	Operating procedures for the disposal of sewage sludge

	Functional objective	Content of TWTD Technical Report
3.13	If applicable - when concurrently disposing of solid waste, liquid waste or sewage sludge the emission to air should be controlled to not exceed the emission limits	Operating procedures when operating concurrently on solid waste, liquid waste or sewage sludge
3.14	The loading of further waste material should not result in one or more of the emission limits being exceeded	Operating procedures in respect of loading additional solid waste, liquid waste or sewage sludge while the device is in operation
3.15	The device should demonstrate ongoing compliance with the emission limits to air at all times when in operation, including warm-up and shutdown phases	Means by which ongoing compliance with the emission limits is to be demonstrated
3.16	The means by which ongoing compliance with the emissions to air are monitored should produce reliable measurement data	Means by which monitoring equipment, and any associated equipment, are operated, zero and span checked, maintained and serviced to achieve the required measurement performance
3.17	The device should be shut down in a manner which ensures that all thermal processes are terminated and that the device and associated exhaust system to atmosphere is purged of all residual gases	Operating procedures and procedures relating to the shutdown of the device
3.18	The means and procedures for the removal of solid residues from the device should ensure that these are fully and securely contained for landing ashore	Operating means and procedures in respect of the removal of solid residue material from the device and subsequent onboard storage prior to discharge ashore
3.19	The discharge water arrangements should be prepared, operated and shutdown such that the emission to sea limits are met under all operating conditions including during the device warm-up and shutdown phases	Operating procedures of the discharge water arrangements, including control and monitoring functions, relating to the preparation for use, in-service application and shutdown
3.20	Discharge water PAH limit should be expressed as a concentration (µg/litre) as appropriate to the device across its operating range	PAH limit(s) should be given against discharge water flow rate(s)
3.21	The means by which ongoing compliance with the discharges to sea is monitored should produce reliable measurement data	Means by which monitoring equipment, and any associated equipment, are operated, zero and span checked maintained and serviced to achieve the required measurement performance
3.22	Additional Functional Objectives related to device operations, as applicable to this type of device and relevant in terms of meeting the emission limits and the objectives of regulation 4.4 of MARPOL Annex VI, should be identified	Resolution of those additional Functional Objectives
4. Record-keeping		

	Functional objective	Content of TWTD Technical Report
4.1	There should be an Events Record for each TWTD device installed. That Events Record is to cover all phases of operation of the device when in service	What the Events Record is to include and the manner of its recording
4.2	There should be retained records in respect of emissions to air	Form of records which are required to be kept demonstrating the performance and self-checking functions against respective limits showing that the device performed as required set against the recorded Event Record points
4.3	There should be records of the oxygen content, temperature and pressure values, as applicable to the principle of operation, through the device showing that it operated within the required profiles	Form and extent of records which should be kept demonstrating that the required oxygen content, temperature and pressure values were achieved set against the recorded Event Record points
4.4	There should be records in respect of emissions to sea	Form of records which are required to be kept demonstrating the performance and self-checking functions against respective limits showing that the device performed as required set against the recorded Event Record points
4.5	There should be records of solid, and any other, residue materials or related liquids discharged ashore	Related record-keeping requirements
4.6	Records should be against date and UTC. These records should be retained on board at least 18 months from date of recording. If the recording device is changed over that period, it should be ensured that the required data is retained on board and available as required. The recording device should be capable of producing reports as required demonstrating past performance	Means by which the required records are to be recorded and retained on board in a tamper-proof manner. The extent and form of the reports that the recording device is capable of producing
4.7	Additional Functional Objectives related to device record-keeping, as applicable to this type of device and relevant in terms of meeting the emission limits and the objectives of regulation 4.4 of MARPOL Annex VI, should be identified	Resolution of those additional Functional Objectives
5. Maintenance and servicing		
5.1	The extent, frequency and details of device maintenance necessary by user is to be specified – including like for like replacements – should be specified	Basis and details of the required onboard maintenance in terms of activities and timings in order to maintain the effectiveness of the device

	Functional objective	Content of TWTD Technical Report
5.2	Extent, frequency and details of device servicing requirements should be specified	Basis and details of the required servicing in terms of activities and timings in order to maintain the effectiveness of the device to operate with the emission limits
5.3	Extent, frequency and details of maintenance and servicing requirements of emission monitoring devices should be specified	Basis and details of the required maintenance and servicing in terms of activities and timings in order to maintain the effectiveness of the devices to operate as required
5.4	Maintenance and servicing records should be retained on board for a duration at least 18 months from the date of performance	Means by which the recordkeeping requirements related to maintenance and servicing are recorded and retained on board in a tamper-proof manner and will be available as required
5.5	Additional Functional Objectives related to device maintenance and servicing related as applicable to this type of device and relevant in terms of meeting the emission limits and the objectives of regulation 4.4 of MARPOL Annex VI, should be identified	Resolution of those additional Functional Objectives
6. Instructions and training		
6.1	A TWTD Operating Manual should be supplied with the device covering as necessary those Functional Objective sections 2 to 5	The TWTD Operating Manual, which may be divided into a number of separate documents as appropriate, should provide all necessary direction and guidance for the installation, in-service operation and onboard maintenance of the device together with appropriate fault finding and resolution guidance. Also included should be the servicing extent and timing requirements
6.2	A person who is to operate or maintain the device is to be trained to implement the guidance provided by the TWTD Operating Manual – training records are to be retained on board at least 18 months from date of training or while that person is performing those tasks – whichever is the longer	Description and content of the provided training programme, which may include test material, to be provided which would allow the user to train persons to apply the guidance as given in the TWTD Operating Manual and means to record, in a tamper-proof manner, which persons had been successfully trained as appropriate to their assigned tasks
7. TWTD File		
7.1	To enable the device to be surveyed, or inspected, a TWTD File should be provided The TWTD File should include, but is not limited to, the following:	An example of a TWTD File covering the required topics should be included

	Functional objective	Content of TWTD Technical Report
	1. Identification of the device to which the File refers, including model, rating and serial number 2. Description of the device and its manner of operation – including any exhaust gas treatment arrangements 3. The means by which the device should be surveyed both initially and in-service to verify that it is conforms to its as certified condition and is operating and performing as required 4. The means by which it would be verified that the guidance given in the TWTD Operating Manual has been applied as required 5. Means of verification that the required maintenance and servicing has been performed as required 6. Description of the emission monitoring arrangements and components and necessary ancillary equipment or requirements. Including details of the respective sampling points relative to the layout of the device including, if fitted, the discharge water handling arrangements 7. Details of monitoring device zero and span check, calibration, maintenance and servicing requirements and timings and the means of verification that those actions have been undertaken as required 8. Description of the monitoring and record-keeping arrangements and the capability of the recording device to produce operating/emission reports for selected parameters as required 9. The means by which recorded emissions values, set against the Events Record, compared to the respective limit values would be reviewed In addition, the TWTD File should include other checkpoints, as appropriate to the particular type of thermal waste treatment device and its manner of operation, that would confirm its correct operation and performance	
7.2	The TWTD File for each TWTD model should be approved by the Administration	Means by which TWTD File for each device will be submitted for approval
7.3	Amendments to the TWTD File which reflect changes that affect aspects covered by these Functional Objectives and the associated TWTD Technical	Means by which amendments to previously approved TWTD File will be submitted for approval prior to application to in-service devices

	Functional objective	Content of TWTD Technical Report
	Report or emissions performance, should be approved by the Administration. Where these are to be applied to previously certified devices and reflect necessary changes to the TWTD File as approved, those changes should not be applied prior to their approval by the Administration. Where additions, deletions or amendments to the TWTD File are separate to the TWTD File as initially approved, they should be retained with the TWTD File and should be considered as part of it	
8. Performance Level 2		
8.1	Where a device is to be approved and individual units certified to Performance Level 2, and as a result the device requires additional or alternative fittings, settings, operating procedures, documentation or other aspects in order to achieve that performance level, then that should be reflected as relevant in each of the respective Functional Objectives as listed above	Information, procedures, records, restrictions or other as appropriate to achieving and maintaining Performance Level 2

6 Certification process

6.1 The certification process divides into two parts. The first is the approval of the proposed TWTD model as an equivalent means under regulation 4 of MARPOL Annex VI. The second part is the approval of individual units of that TWTD operating on the basis of the equivalent means as approved.

6.2 The approval by the Administration of the TWTD model as an equivalent means should be on the basis of the applicant-submitted TWTD Technical Report together with, if appropriate, any additional information in the supporting information annex. The TWTD Technical Report should specify whether the units are to be certified to Performance Level 1 or Performance Level 2 and, in the latter case, contain the necessary supporting data including the Pre-approval Test report.

6.3 Any subsequent amendments to the information as given in the TWTD Technical Report or which affect emissions performance as controlled by these Guidelines should be approved by the Administration before being applied to individual thermal waste treatment devices in service.

6.4 Following approval of the TWTD model as an equivalent means then individual units should be certified by the Administration in accordance with the agreed procedures as set out in the TWTD Technical Report as approved.

6.5 An approved TWTD should be issued with a TWTD Certificate, as set out in the annex, by the Administration and have TWTD File as approved by that Administration.

6.6 Following satisfactory completion of installation test procedure as given in the TWTD File, section 2.6 of the Supplement to the International Air Pollution Prevention Certificate should be duly updated.

6.7 Individual thermal waste treatment devices should thereafter be subject to the survey procedures as given in the approved TWTD File at those times the ship on which the device is installed is surveyed in accordance with the applicable MARPOL Annex VI survey regime.

6.8 Amendments to the TWTD as installed, operated or monitored should be duly covered by amendments to the TWTD File as approved by the Administration before they are applied in service.

ANNEX

FORM OF TWTD CERTIFICATE

Name of Administration

Thermal Waste Treatment Device Approval Certificate

Issued under the provisions of the Protocol of 1997, as amended, to amend the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 related thereto under the authority of the Government of:

………
(*full designation of the country*)

by ……………………………………………………………………………………………………...
(*full designation of the competent person or organization
authorized under the provisions of the Convention*)

This is to certify that the thermal waste treatment device (TWTD), as an equivalent means under regulation 4 to incineration under regulation 16, as detailed below has been surveyed and related documentation approved in accordance the *2023 Guidelines for thermal waste treatment devices* adopted by resolution MEPC…(..).

Manufacturer	**Model/ Type**	**Serial Number**	**Maximum capacity**	**Equivalent means – approval reference**
[…]	[…]	[…]	[…]	[…]

This TWTD is certified to:
Performance Level 1 ..……………………………………………………...……… ☐
Performance Level 2 ..……………………………………………………....……… ☐

The TWTD does not generate any emissions to air …………………………………… ☐

Title	**Approval reference**
TWTD File	

A copy of this Certificate together with the approved TWTD File should be carried on board the ship fitted with this TWTD at all times and should be available as required.

This Certificate is valid for the life of the TWTD, subject to surveys in accordance with regulation 5 of MARPOL Annex VI, installed in ships under the authority of this Government.

Issued at ………………………………………………………………………………..
(*place of issue of Certificate*)

Date (dd/mm/yyyy) ………………….. ……………………………
(*date of issue*) (*signature of duly authorized official issuing the Certificate*)

(*seal or stamp of the authority, as appropriate*)

***

ANNEX 9

DRAFT AMENDMENTS TO MARPOL ANNEX VI

(Low-flashpoint fuels and other fuel oil related issues, marine diesel engine replacing a steam system, accessibility of the data in the IMO Ship Fuel Consumption Database (IMO DCS) and inclusion of data on transport work and enhanced level of granularity in the IMO DCS)

Regulation 2
Definitions

1 Paragraph 1.14 is replaced by the following:

"1.14 *Fuel oil* means any fuel delivered to and intended for use on board a ship."

2 A new paragraph 1.33 are added after paragraph 1.32, as follows:

"1.33 *Gas fuel* means a fuel oil having a vapour pressure exceeding 0.28 MPa absolute at a temperature of 37.8°C.*"

* Refer to paragraph 2.2.18 of the *International Code of Safety for Ships using Gases or other Low-flashpoint Fuels (IGF Code)*

Regulation 13
Nitrogen oxides (NO_X)

Major conversion

3 Paragraph 2.2 is replaced by the following:

"2.2 For a major conversion involving the replacement of a marine diesel engine with a non-identical marine diesel engine, or the installation of an additional marine diesel engine, the standards in this regulation at the time of the replacement or addition of the engine shall apply. For the purpose of this regulation, the installation of a marine diesel engine replacing a steam system shall be considered a replacement engine. In the case of replacement engines only, if it is not possible for such a replacement engine to meet the standards set forth in paragraph 5.1.1 of this regulation (Tier III, as applicable), then that replacement engine shall meet the standards set forth in paragraph 4 of this regulation (Tier II), taking into account the guidelines developed by the Organization. A Party shall notify the Organization in those instances where a Tier II rather than a Tier III replacement engine has been installed in accordance with the provisions of this paragraph."

Regulation 14
Sulphur oxides (SO_X) and particulate matter

4 Paragraph 12 is replaced by the following:

"12 The requirements of paragraphs 10 and 11 above are not applicable to a fuel oil service system used for a low-flashpoint fuel or a gas fuel."

Regulation 18
Fuel oil availability and quality

5 The chapeau of paragraphs 3 is replaced by the following:

"3 Fuel oil delivered to and used on board a ship to which this Annex applies shall meet the following requirements:"

6 The chapeau of paragraph 3.2 is replaced by the following:

"3.2 fuel oil derived by methods other than petroleum refining shall not:"

7 Paragraphs 4 is replaced by the following:

"4 This regulation does not apply to coal in its solid form or nuclear fuels. Paragraphs 5.1, 8.1 and 8.2 of this regulation do not apply to a low-flashpoint fuel or a gas fuel."

8 Paragraph 5 is replaced by the following paragraphs 5.1 and 5.2, as follows:

"5.1 For each ship subject to regulations 5 and 6 of this Annex, details of fuel oil delivered to and used on board that ship shall be recorded by means of a bunker delivery note that shall contain at least the information specified in appendix V to this Annex.

5.2 For each ship subject to regulations 5 and 6 of this Annex, details of low-flashpoint fuel or gas fuel delivered to and used on board that ship shall be recorded by means of a bunker delivery note that shall include at least the information specified in items 1 to 6 of appendix V to this Annex, the density as determined by a test method appropriate to the fuel type together with the associated temperature and a declaration signed and certified by the fuel oil supplier's representative that the fuel oil is in conformity with paragraph 3 of this regulation. In addition the sulphur content of a low-flashpoint fuel or a gas fuel delivered to a ship specifically for use on board that ship shall be documented on the bunker delivery note by the supplier in terms of either the actual value as determined by a test method appropriate to the fuel type or, with the agreement of the appropriate authority at the port of supply, a statement that the sulphur content, when tested by such a method, is less than 0.001% m/m."

9 Paragraph 9.2 is replaced by the following:

"9.2 require local suppliers to provide the bunker delivery note and, if applicable, the MARPOL delivered sample as required by this regulation, certified by the fuel oil supplier that the fuel oil meets the requirements of regulations 14 and 18 of this Annex;"

Regulation 27
Collection and reporting of ship fuel oil consumption data

10 New paragraphs 14 and 15 are added after paragraph 13, as follows:

"14 On an ad hoc basis, the Secretary-General of the Organization may share data with analytical consultancies and research entities, under strict confidentiality rules.

15 The Secretary-General of the Organization, on the request of a company, shall grant access to the fuel oil consumption reports of the company's owned ship(s) in a non-anonymized form to the general public."

Appendix I
Form of International Air Pollution Prevention (IAPP) Certificate (regulation 8)

11 Paragraphs 2.3.5 is replaced by the following:

"In accordance with regulation 14.12, the requirement for fitting or designating sampling point(s) in accordance with regulation 14.10 or 14.11 is not applicable for the fuel oil service system used for a low-flashpoint fuel or a gas fuel………………□"

Appendix IX
Information to be submitted to the IMO Ship Fuel Oil Consumption Database (regulation 27)

12 Appendix IX is replaced by the following:

" Appendix IX

Information to be submitted to the IMO Ship Fuel Oil Consumption Database (regulation 27)

Identity of the ship

IMO Number …………………………………………………………………………………………

Period of calendar year for which the data is submitted

Start date (dd/mm/yyyy) ……………………………………………………………………….

End date (dd/mm/yyyy) …………………………………………………………………………

Technical characteristics of the ship

Year of delivery………………………..…………………………………………………………...

Ship type, as defined in regulation 2.2 of this Annex or other (to be stated) …………………….

Gross tonnage (GT)[1] ……………………………………………………………………………...

Net tonnage (NT)[2] …………………………………………………………………………………

[1] Gross tonnage should be calculated in accordance with the International Convention on Tonnage Measurement of Ships, 1969.

[2] Net tonnage should be calculated in accordance with the International Convention on Tonnage Measurement of Ships, 1969. If not applicable, note "N/A".

Deadweight tonnage (DWT)[3] …………………………………………………………………………

Power output (rated power)[4] of main and auxiliary reciprocating internal combustion engines over 130 kW (to be stated in kW) ……………………………………………………………………...

Attained EEDI[5] (if applicable)……………………………………………………………………………

Attained EEXI[6] (if applicable) …………………………………………………………………………

Ice class[7] ………………………………………………………………………………………….....

Fuel oil consumption per combustion systems by fuel oil type in metric tonnes and methods used for collecting fuel oil consumption data:

Main engine(s):…………………………………………………………………………….

Auxiliary engine(s)/generators:……………………………………………………………...

Oil-fired boilers:…………………………………………………………………………….

Others (specify):……………………………………………………………………………

Fuel oil consumption while the ship is not under way ………………………………………………

Total Distance travelled (nm)………………………………………………………………………….

Laden distance travelled (nm) (on a voluntary basis) ………………………………………

Hours under way ……………………………………………………………………………………..

Total amount of onshore power supplied (kWh) …………………………………………………...….

For ships to which Regulation 28 of MARPOL Annex VI applies

Total transport work …………………………………………………………………………………

Applicable CII[8]: □ AER □ cgDIST

Required annual operational CII[9]…………………………………………………….……………...

---

3 DWT means the difference in tonnes between the displacement of a ship in water of relative density of 1,025 kg/m^3 at the summer load draught and the lightweight of the ship. The summer load draught should be taken as the maximum summer draught as certified in the stability booklet approved by the Administration or an organization authorized by it. If not applicable, note "N/A".

4 Rated power means the maximum continuous rated power as specified on the nameplate of the engine.

5 Refer to the *2022 Guidelines on the method of calculation of the attained Energy Efficiency Design Index (EEDI) for new ships* (resolution MEPC.364(79)).

6 Refer to the *2022 Guidelines on the method of calculation of the attained Energy Efficiency Existing Ship Index (EEXI)* (resolution MEPC.350(78)).

7 Ice class should be consistent with the definition set out in the International Code for Ships Operating in Polar Waters (Polar Code) (resolutions MEPC.264(68) and MSC.385(94)). If not applicable, note "N/A".

8 Refer to the *2022 Guidelines on operational carbon intensity indicators and the calculation methods (CII guidelines, G1)* (resolution MEPC.352(78)).

9 Refer to the *2022 Guidelines on the reference lines for use with operational carbon intensity indicators (CII reference lines guidelines, G2)* (resolution MEPC.353(78)) and *2021 Guidelines on the operational carbon intensity reduction factors relative to reference lines (CII reduction factors guidelines, G3)* (resolution MEPC.338(76)).

Attained annual operational CII before any correction[10]……………………………………………

Attained annual operational CII[11]……………………………………………………………………...

Installation of innovative technology[12], if applicable:

□ A □ B-1 □ B-2 □ C-1 □ C-2

Operational carbon intensity rating[13]: □ A □ B □ C □ D □ E

CII for trial purpose (on voluntary basis)[14]:

☐ EEPI (gCO_2/t/nm) ……………………………………………………………………

☐ cbDIST (gCO_2/berth/nm) ……………………………………………………………

☐ clDIST (gCO_2/m/nm) ………………………………………………………………..

☐ EEOI (gCO_2/t/nm)[15] ……………………………………………………………..."

***

10 As calculated in accordance with the *2022 Guidelines on operational carbon intensity indicators and the calculation methods (CII guidelines, G1)* (resolution MEPC.352(78)) before any correction using *Interim guidelines on correction factors and voyage adjustments for CII calculations (G5)* (resolution MEPC.355(78)).

11 As calculated in accordance with the *2022 Guidelines on operational carbon intensity indicators and the calculation methods (CII guidelines, G1)* (resolution MEPC.352(78)) and having been corrected taking into account *Interim guidelines on correction factors and voyage adjustments for CII calculations (G5)* (resolution MEPC.355(78)).

12 Refer to the *2021 Guidance on treatment of innovative energy efficiency technologies for calculation and verification of the attained EEDI and EEXI* (MEPC.1/Circ.896)

13 Refer to the *2022 Guidelines on the operational carbon intensity rating of ships (CII rating guidelines, G4)* (resolution MEPC.354(78)).

14 Refer to the *2022 Guidelines on operational carbon intensity indicators and the calculation methods (CII guidelines, G1)* (resolution MEPC.352(78)).

15 Refer to the *Guidelines for voluntary use of the ship energy efficiency operational indicator (EEOI)* (MEPC.1/Circ.684).

ANNEX 10

UNIFIED INTERPRETATIONS TO REGULATIONS 18.5 AND 18.6 OF MARPOL ANNEX VI

NOTE: Paragraph 12.2 is new and concerns bunker delivery notes being acceptable in either hard copy of electronic format. The section below (section 12) will replace the existing section 12 in a further revision of MEPC.1/Circ.795 (i.e., MEPC.1/Circ.795/Rev.8).

12 Applicability of the requirements for a bunker delivery note

Regulation 18
Fuel oil availability and quality

Regulation 18.5 reads as follows:

> "For each ship subject to regulations 5 and 6 of this Annex, details of fuel oil for combustion purposes delivered to and used on board shall be recorded by means of a bunker delivery note that shall contain at least the information specified in appendix V to this Annex."

Regulation 18.6 reads as follows:

> "The bunker delivery note shall be kept on board the ship in such a place as to be readily available for inspection at all reasonable times. It shall be retained for a period of three years after the fuel oil has been delivered on board."

Interpretation:

12.1 For the application of these regulations, they should be interpreted as being applicable to all ships of 400 gross tonnage or above and, at the Administration's discretion, to ships of less than 400 gross tonnage.

12.2 The Bunker Delivery Note (BDN) required by regulation 18.5 is acceptable in either hard copy or electronic format provided it contains at least the information specified in appendix V to MARPOL Annex VI and is retained and made available on board in accordance with regulation 18.6. In addition, an electronic BDN should be protected from edits, modifications or revisions and authentication be possible by a verification method such as a tracking number, watermark, date and time stamp, QR code, GPS coordinates or other verification methods.

***

ANNEX 11

RESOLUTION MEPC.374(80)
(adopted on 7 July 2023)

AMENDMENTS TO THE 2022 GUIDELINES ON SURVEY AND CERTIFICATION OF THE ENERGY EFFICIENCY DESIGN INDEX (EEDI) (RESOLUTION MEPC.365(79))

THE MARINE ENVIRONMENT PROTECTION COMMITTEE,

RECALLING Article 38(a) of the Convention on the International Maritime Organization concerning the functions of the Marine Environment Protection Committee conferred upon it by international conventions for the prevention and control of marine pollution from ships,

NOTING that regulation 5 (Surveys) of MARPOL Annex VI, as amended, requires ships to which chapter 4 applies shall also be subject to survey and certification taking into account guidelines developed by the Organization,

NOTING ALSO that the Committee adopted, at its seventy-ninth session, the *2022 Guidelines on survey and certification of the Energy Efficiency Design Index (EEDI)* (resolution MEPC.365(79)),

HAVING NOTED, at its eightieth session, the need to amend the *2022 Guidelines on survey and certification of the Energy Efficiency Design Index (EEDI)* (resolution MEPC.365(79)),

1 ADOPTS the amendments to the *2022 Guidelines on survey and certification of the Energy Efficiency Design Index (EEDI)*, as set out in the annex to the present resolution;

2 REQUESTS the Parties to MARPOL Annex VI and other Member Governments to bring the amendments to the attention of shipowners, ship operators, shipbuilders, ship designers and any other interested groups;

3 AGREES to keep these Guidelines, as amended, under review, in light of the experience gained with their application.

ANNEX

AMENDMENTS TO THE 2022 GUIDELINES ON SURVEY AND CERTIFICATION OF THE ENERGY EFFICIENCY DESIGN INDEX (EEDI) (RESOLUTION MEPC.365(79))

1 Table in paragraph 4.2.3.2 is replaced by the following:

"

Type of fuel	Density (kg/m^3)	Low Calorific Value (kJ/kg)	Filling rate for tanks
Diesel/gas oil	900	42700	0.98
Heavy fuel oil	991	40200	0.98
Liquefied natural gas (LNG)	450	48000	0.95*

* Subject to verification of tank loading limit in the IGF and/or IGC Codes, where applicable, corresponding to the normal density used in the calculation of f_{DFgas}"

***

ANNEX 12

RESOLUTION MEPC.375(80)
(adopted on 7 July 2023)

AMENDMENTS TO THE 2021 GUIDELINES ON THE SHAFT / ENGINE POWER LIMITATION SYSTEM TO COMPLY WITH THE EEXI REQUIREMENTS AND USE OF A POWER RESERVE (RESOLUTION MEPC.335(76))

THE MARINE ENVIRONMENT PROTECTION COMMITTEE,

RECALLING Article 38(a) of the Convention on the International Maritime Organization concerning the functions of the Marine Environment Protection Committee conferred upon it by international conventions for the prevention and control of marine pollution from ships,

NOTING that the 2021 revised MARPOL Annex VI, which entered into force on 1 November 2022, contains amendments concerning mandatory goal-based technical and operational measures to reduce carbon intensity of international shipping,

NOTING ALSO that ships may be equipped with a Shaft / Engine Power Limitation system in order to comply with regulation 25 (Required EEXI),

NOTING FURTHER that, at its seventy-sixth session, the Committee adopted, by resolution MEPC.335(76), the *2021 Guidelines on the shaft/engine power limitation system to comply with the EEXI requirements and use of a power reserve*,

HAVING CONSIDERED, at its eightieth session, proposed amendments to the *2021 Guidelines on the shaft/engine power limitation system to comply with the EEXI requirements and use of a power reserve*,

1 ADOPTS amendments to the *2021 Guidelines on the shaft/engine power limitation system to comply with the EEXI requirements and use of a power reserve*, the text of which is set out in the annex to the present resolution;

2 REQUESTS the Parties to MARPOL Annex VI and other Member Governments to bring the annexed amendments to Guidelines to the attention of masters, seafarers, shipowners, ship operators and any other interested parties.

ANNEX

AMENDMENTS TO THE 2021 GUIDELINES ON THE SHAFT/ENGINE POWER LIMITATION SYSTEM TO COMPLY WITH THE EEXI REQUIREMENTS AND USE OF A POWER RESERVE (RESOLUTION MEPC.335(76))

1 Paragraph 3.2 is replaced by the following:

"Any use of a power reserve should be recorded in the record page of the OMM for SHaPoLi/EPL, signed by the master and should be kept on board. The record should include:

.1 ship type;

.2 IMO number;

.3 ship size in DWT and/or GT, as applicable;

.4 ship's limited shaft/engine power and ship's maximum unlimited shaft/engine power;

.5 position of the ship and timestamp when the power reserve was used;

.6 reason for using the power reserve;

.7 Beaufort number and wave height or ice condition in case of using the power reserve under adverse weather condition;

.8 supporting evidence (e.g. expected weather condition) in case of using the power reserve for avoidance action;

.9 records from the SHaPoLi/EPL system for the electronically controlled engine during the use of the power reserve; and

.10 position of the ship and timestamp when the power limit was reactivated or replaced.

Supporting evidence and records as indicated in sub-paragraphs 3.2.8 and 3.2.9 above should be submitted to the Administration or RO for verification and do not need to be submitted to the Organization as part of annual submission of use of a power reserve in accordance with paragraph 3.4."

2 Paragraph 3.4 is replaced by the following:

"In case of having used a power reserve, the ship should without delay notify its Administration or RO responsible for issuing the relevant certificate and the competent authority of the relevant port of destination with the information recorded in accordance with paragraph 3.2. On an annual basis by 30 June every year, the Administration should report to the IMO Secretariat uses of a power reserve over a 12-month period from 1 January to 31 December for the preceding calendar year with the information recorded in accordance with paragraph 3.2, using the format as set out in the appendix to these guidelines."

3 A new appendix is added as follows:

APPENDIX

FORMAT FOR REPORTING OF EPL/SHAPOLI OVERRIDE ACTIVATION, USE OF A POWER RESERVE AND REACTIVATION OF EPL/SHAPOLI

Ship type:
IMO number:
DWT:
GT:
Maximum unlimited shaft/engine power (kW):
Limited shaft/engine power (kW):

Table 1

Date (dd/mm/yyyy)	Time (UTC)	Position		Override activation/Reactivation	Reason for using the power reserve[1]	Beaufort number[2]	Wave height[2]	Ice condition[2]
		Longitude	Latitude					

1 Reason for override (select at least one option):
- .1 operating in adverse weather
- .2 operating in ice-infested waters
- .3 participation in search and rescue operations
- .4 avoidance of pirates
- .5 engine maintenance
- .6 description of other reasons consistent with regulation 3.1 of MARPOL Annex VI

2 Beaufort number and wave height or ice condition, as applicable, to be entered in case of using the power reserve under adverse weather condition.

***

ANNEX 13

REVIEW PLAN OF THE SHORT-TERM GHG REDUCTION MEASURE

This review plan provides the scope, timeline, data sources and respective roles of stakeholders and is aimed at ensuring that the review of the short-term measure is conducted by 1 January 2026 in an effective and efficient way.

Scope

Regulations 25.3 and 28.11 of MARPOL Annex VI provide the general scope of the review of the EEXI and CII regulations.

The Committee agreed to keep all the associated guidelines related to the EEXI, CII rating and SEEMP framework under review in light of the experience gained with their implementation and in light of the review of CII regulations to be completed by 1 January 2026.

The review should focus, in particular, on the following elements:

.1 effectiveness of the short-term measure in reducing the carbon intensity of international shipping;

.2 experiences with enforcement of the short-term measure by flag and port States, including the review of (plans of) corrective actions, and the use of incentives by relevant stakeholders;

.3 data needs and need for enhancement of the ship fuel oil consumption data collection system (IMO DCS);

.4 impacts on States;

.5 revision of the Z factor and CII_R values as set out in the CII guidelines G3 and G2 to reduce the carbon intensity of international shipping in accordance with regulation 20 of MARPOL Annex VI;

.6 consideration on further amendment to the CII metrics, as set out in the CII guidelines G1;

.7 consideration of further amendments to the correction factors and voyage adjustments for CII (Guidelines G5);

.8 application of the LCA Guidelines; and

.9 any consequential amendments to existing instruments.

Timeline

Considering the timeline of the availability of relevant data and the meeting schedule of the Committee, the timeline for the review of the short-term measure is described as follows:

.1 *Data gathering stage*: from MEPC 80 to MEPC 82 (autumn 2024);

.2 *Data analysis stage*: working group at MEPC 82 to be continued by a correspondence group; and

.3 *Convention and Guidelines review stage*: an intersessional working group between MEPC 82 and MEPC 83 (spring 2025) as well as a working group at MEPC 83.

Data sources and respective roles of stakeholders

In order to monitor the effectiveness of the short-term measure in reducing carbon intensity of international shipping, relevant data from the mandatory ship fuel oil consumption data collection system (IMO DCS) can inform the review of the short-term measure.

From the second half of 2023 onwards, the Secretariat will also monitor development in annual carbon intensity improvement using both demand-based and supply-based measurements.

Interested Member States and international organizations are invited to collect data and submit information and proposals to the relevant MEPC meetings during the data gathering stage.

Additionally, other stakeholders (e.g. shipowners, charterers, manufacturers, ports authorities, etc.) are invited to provide data to facilitate the review process, through the designated email address: ghg@imo.org

The Secretariat will make every effort in facilitating the review process, including collating data and providing an initial analysis of the reported data. Support from external parties (e.g. WMU) may also be required as appropriate.

***

ANNEX 14

RESOLUTION MEPC.376(80)
(adopted on 7 July 2023)

GUIDELINES ON LIFE CYCLE GHG INTENSITY OF MARINE FUELS (LCA GUIDELINES)

THE MARINE ENVIRONMENT PROTECTION COMMITTEE,

RECALLING Article 38(a) of the Convention on the International Maritime Organization (the Committee) concerning the functions of the Marine Environment Protection Committee conferred upon it by international conventions for the prevention and control of marine pollution from ships,

RECALLING ALSO that at its seventy-second session, the Committee adopted resolution MEPC.304(72) on *Initial IMO Strategy on Reduction of GHG Emissions from Ships* (Initial Strategy),

NOTING that the Initial Strategy calls for the development of robust life cycle GHG/carbon intensity guidelines for all types of fuels, in order to prepare for an implementation programme for effective uptake of alternative low-carbon and zero-carbon fuels,

NOTING ALSO that at its eightieth session, the Committee adopted resolution MEPC.377(80) on the *2023 IMO Strategy on Reduction of GHG Emissions from Ships* (2023 IMO Strategy) setting out the levels of ambition for the international shipping sector in reducing GHG emissions,

NOTING FURTHER that the 2023 IMO Strategy provides that the levels of ambition and indicative checkpoints should take into account the well-to-wake GHG emissions of marine fuels as addressed in the guidelines on life cycle GHG intensity of marine fuels developed by the Organization,

NOTING that the 2023 IMO Strategy provides that the basket of candidate mid-term GHG reduction measures should take into account the well-to-wake GHG emissions of marine fuels as addressed in the guidelines on life cycle GHG intensity of marine fuels developed by the Organization,

HAVING CONSIDERED, at its eightieth session, the draft guidelines on life cycle GHG intensity of marine fuels (LCA Guidelines),

1 ADOPTS the *Guidelines on life cycle GHG intensity of marine fuels (LCA Guidelines)*, as set out in the annex to the present resolution;

2 AGREES that any regulatory application and implications of the LCA Guidelines should be determined by the Committee in the process of developing regulatory provisions,

3 REQUESTS Member Governments to bring the annexed Guidelines to the attention of shipowners, ship operators, shipbuilders, ship designers, energy companies, fuel producers, bunkering companies, engine manufacturers and any other interested parties;

4 AGREES to keep these Guidelines under review in light of experience gained with their implementation.

GUIDELINES ON LIFE CYCLE GHG INTENSITY OF MARINE FUELS

(LCA Guidelines)

CONTENTS

PART I: GENERAL

1 INTRODUCTION

1.1 These guidelines provide guidance on life cycle GHG intensity assessment for all fuels and other energy carriers (e.g. electricity) used on board a ship. These guidelines aim at covering the whole fuel life cycle (with specific boundaries), from feedstock extraction/cultivation/ recovery, feedstock conversion to a fuel product, transportation as well as distribution/bunkering, and fuel utilization on board a ship. These guidelines also specify sustainability themes/aspects for marine fuels and define a Fuel Lifecycle Label (FLL), which carries information about fuel type, feedstock (feedstock type and feedstock nature/carbon source), conversion/production process (process type and energy used in the process), GHG emission factors, information on fuel blends and sustainability themes/aspects. These guidelines specify the elements of FLL subject to verification/certification and include a general procedure on how the certification scheme/standards could be identified.

2 SCOPE

2.1 The scope of these guidelines is to address well-to-tank (WtT), tank-to wake (TtW), and well-to-wake (WtW) greenhouse gases (GHG) intensity and sustainability themes/aspects related to marine fuels/energy carriers (e.g. electricity for shore power) used for ship propulsion and power generation onboard. The relevant GHGs included are carbon dioxide (CO_2), methane (CH_4) and nitrous oxide (N_2O). These guidelines are not intended to provide guidance for a complete IMO GHG inventory for international shipping. Emissions from cargo (e.g. volatile organic compounds (VOC)), or use of refrigerants are not included; other short-lived climate forcers and precursors such as non-methane volatile organic compounds (NMVOC), sulphur oxides (SO_x), carbon monoxide (CO), particulate matter (PM) and Black Carbon are not part of the scope of these LCA guidelines.

2.2 The system boundaries of the WtW GHG emission factors calculation, in the context of these guidelines span the life cycle of fuels from their sourcing to production, conversion, transport, distribution, and eventually their use on board ships based on an attributional approach.[1] The possibility to expand the system boundaries for specific pathways in which the feedstock is displaced from present use(s) will be assessed on a case-by-case basis.[2] As such, emissions associated with the following life cycle stages of the fuel life cycle chain will be accounted for:

.1 feedstock extraction/cultivation/acquisition/recovery;
.2 feedstock (early) processing/ transformation at source;
.3 feedstock transport to conversion site;
.4 feedstock conversion to product fuel;
.5 product fuel transport/storage/delivery/retail storage/bunkering; and
.6 fuel utilization on board a ship.

2.3 Consistently with the attributional approach and using best available scientific evidence, the WtT emissions calculations (i.e. emissions related to the fuel sourcing, production, conversion, transport and delivery) are assessed regardless of the final use of

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1 Attributional Life Cycle Assessment (LCA): LCA aiming to describe the environmentally relevant physical flows to and from a system and its subsystems over their life cycle; Consequential Life cycle Analysis (LCA): LCA aiming to describe how environmentally relevant flows will change in response to possible decisions. (Finnveden G, Hauschild MZ, Ekvall T, Guinée J, Heijungs R, Hellweg S, et al. "Recent developments in life cycle assessment". *Journal of Environmental Management*. 2009;91(1):1-21).

2 Such as for captured CO_2 transportation and storage.

fuels/energy carriers, and the TtW emissions (i.e. emissions related to the fuel use) are quantified regardless of the sourcing/production/conversion/transport and delivery steps of the fuel/energy carrier. WtW emissions are given by the sum of the two parts, providing the full emission performance associated with the fuel production and use of a certain fuel/energy in a specific converter onboard.

2.4 The GHG emissions are calculated as CO_2-equivalent (CO_{2eq}), using the Global Warming Potential over a 100-year time-horizon (GWP100) to convert emissions of other gases than CO_2, as given in the fifth IPCC Assessment Report,[3] for CO_2, CH_4 and N_2O, as follows:

- $g_{CO_{2eq}(100y)} = GWP_{CO_2(100y)} \times g_{CO_2} + GWP_{CH_4(100y)} \times g_{CH_4} + GWP_{N_2O\,(100y)} \times g_{N_2O}$

(CO_2 1; CH_4 28; N_2O 265), this would read as:

- $g_{CO_{2eq}(100y)} = 1 \times gCO_2 + 28 \times gCH_4 + 265 \times gN_2O)$

These GWP100 values should be used for the purpose of quantifying the GHG intensity in accordance with these guidelines.

A calculation using a Global Warming Potential over a 20-year horizon (GWP20) may be provided as information for comparative purposes, as follows:

- $g_{CO_{2eq}(20y)} = GWP_{CO_2(20y)} \times g_{CO_2} + GWP_{CH_4(20y)} \times g_{CH_4} + GWP_{N_2O\,(20y)} \times g_{N_2O}$

(CO_2 1; CH_4 84; N_2O 264), this would read as:

- $g_{CO_{2eq}(20y)} = 1 \times gCO_2 + 84 \times gCH_4 + 264 \times gN_2O$

2.5 These guidelines provide:

.1 WtW GHG emission factors based on a life cycle attributional methodology, expressing the GHG profile of each representative fuel using on Global Warming Potential (GWP) values over a 100-year time-horizon of included GHG (CO_2, CH_4 and N_2O);

.2 WtT GHG emission factors (CO_2, CH_4 and N_2O) quantified consistently with the attributional approach;

.3 TtW GHG emission factors (CO_2, CH_4 and N_2O); and

.4 sustainability themes/aspects for marine fuels.

2.6 These guidelines define a FLL that carries information about fuel type, feedstock used, fuel production pathway, GHG emission factors, information on fuel blends and sustainability themes/aspects.

[3] The Global Warming Potential values as given in the IPCC Fifth Assessment Report (AR5) are used in the context of these guidelines.

2.7 The figure below shows a generic WtW supply chain for a fuel. The bunkering marks the last step in the WtT phase before the TtW phase starts.

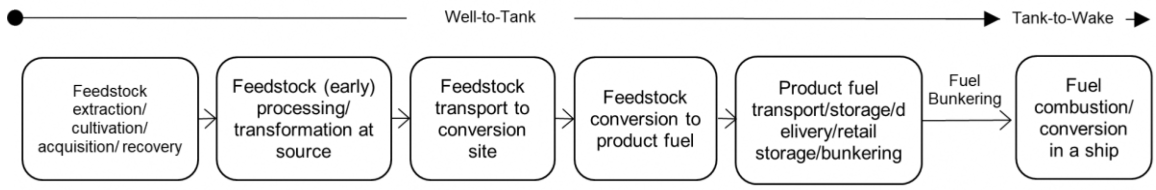

Figure 1: Generic well-to-wake supply chain

2.8 These guidelines include an initial non-exhaustive list of fuels in appendix 1 depicting the main current and expected future marine fuels.

PART II: METHODOLOGY

3 GENERAL APPROACH

3.1 A Life Cycle Assessment (LCA) based approach provides a holistic assessment of the product/service/system from well-to-wake using data specific to the activity considered. The LCA methodology follows the marine fuel from feedstock sourcing to its utilization onboard ships and assesses its life cycle GHG intensity. This approach, applied within the boundaries of the WtW GHG emissions quantification, is applicable across all geographical regions, where emissions occur and allows for quantifying the GHG intensity over the entire fuel/energy supply chain.

3.2 General principles and methodology can be found in ISO 14044:2006 *Environmental management — Lifecycle assessment — Requirements and guidelines*. ISO 14040:2006 *Environmental management — Lifecycle assessment — Principles and framework* sets the framework for the LCA, for the quantification of the environmental impact of products, processes and services in the supply chain. On this basis, a specific LCA methodology can be tailored for its application to marine fuels.

3.3 WtT emissions represent GHG emissions resulting from growing or extracting raw materials, producing and transporting the fuel up to the point of use, including bunkering.

3.4 TtW emissions represent GHG emissions resulting from fuel utilization onboard (e.g. combustion), including potential leaks (fugitive emissions and slip), when relevant for the GHG assessment.

3.5 WtW emissions are the sum of the WtT and TtW emissions and quantify the full life cycle GHG emissions for a given fuel and fuel pathway, used in a given energy converter on board.

3.6 The attributional approach considers all processes along the supply chain of fuel/energy carrier pathways, allowing the quantification of contributions per segment to the overall GHG intensity of the final fuel/energy product used on board a ship. The expansion of the system boundaries for specific pathways, in which the feedstock or intermediate products are diverted from existing use(s), may be considered on a case-by-case basis.

3.7 As regards the expansion of the system boundaries, with consequential elements such as Indirect Land Usage Change (ILUC), concerns with respect to uncertainties and the risk of arbitrariness suggest that the feedstocks with associated ILUC should only be assessed through a risk-based approach, in the framework of sustainability themes/aspects, as part of these guidelines.

3.8 When more than one product results from a conversion process, emissions related to the fuel production should be allocated between main product and co-products. Within such conversion processes, emissions are allocated using their energy content, the so-called "energy allocation" approach. Where co-products allocation cannot be performed based on their energy content (e.g. Oxygen resulting from water electrolysis for H_2 production), other methods such as mass allocation, market revenue allocation (also known as "economic allocation"), could be considered on a case-by-case basis.

3.9 A *co-product* is defined as "an outcome of a production process, which has economic value and elastic supply (intended as the existence of a clear evidence of the causal link between feedstock market value and the quantity of feedstock that can be produced)".

3.10 This definition applies also when a raw material used to produce the fuels is a waste (no economic value) or a residue (unavoidably produced and with negligible economic value, needing further processing to be used in the main conversion process). In case the feedstock is a waste, a residue or a by-product, emissions considered as WtT start at the feedstock collection point onwards until the point of use of the final fuel/energy product.

3.11 According to the *IPCC Guidelines for National Greenhouse Gas Inventories* ("the IPCC Guidelines"),[4] any carbon in the fuel derived from biomass should be reported as an information item and not included in the sectoral or national totals to avoid double counting, since the net emissions from biomass are already accounted for in the Agriculture Forestry and Other Land Use (AFOLU) sector at a national level.

3.12 The scope of the IMO LCA guidelines does not affect or change the IPCC Guidelines. According to the IPCC Guidelines, international waterborne navigation (international bunkers) is grouped under "Mobile combustion" under the Energy sector, but emissions from fuel used by ships in international transport should not be included in national totals in national GHG inventories.

3.13 A fuel batch may be a mix of fuels made from various feedstocks and sources (e.g. by blending 20% biodiesel into fossil MGO) and/or through different production pathways. The calculation should be done using the weighted averages of the energy of the various fuel components. Relevant information should accompany each component fuel in the FLL. Blended fuels should be included in the certification schemes and relevant GHG default or actual emission factors (gCO_2/MJ) determined in proportion to the energy of each fuel part of the blend.

4 WELL-TO-TANK (WtT)

4.1 The pathway of each relevant marine fuel should be clearly described and the GHG emissions during each step of the fuel pathway should be calculated. Specific GHG emissions of a specific non-conventional and non-fossil fuel's pathway may take into account different characteristics across geographic regions, where feedstock production and/or conversion occurs, as appropriate.

[4] *2006 IPCC Guidelines for National Greenhouse Gas Inventories*

4.2 Any further reference in this document to a "fuel pathway" should be understood to include the feedstock structure (the so-called nature/carbon source and feedstock type pair) and the production or conversion process (noting that the same feedstock and fuel type pair can have a different production or conversion process).

4.3 The aim of the WtT methodology is to quantify and evaluate the GHG intensity of fuel production, including all steps mentioned in figure 2. The carbon feedstock and production pathway of a fuel should be identified in order to apply the methodology and is included as part of the FLL. The production steps to be included in the WtT are presented in figure 2.

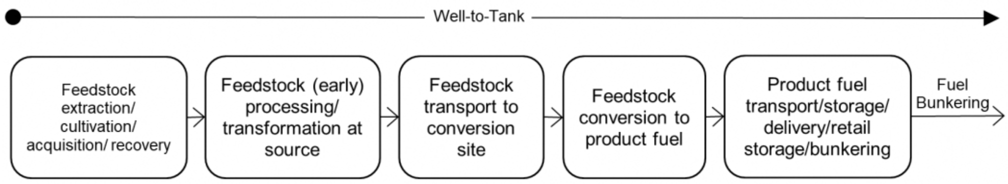

Figure 2: Generic well-to-tank supply chain

4.4 The WtT GHG emission factor ($gCO_{2eq}/MJ_{(LCV)}$ fuel or electricity) is calculated according to Equation (1).

Equation (1)

$$GHG_{WtT} = e_{fecu} + e_l + e_p + e_{td} - e_{sca} - e_{ccs}$$

Term	Units	Explanation
e_{fecu}	gCO_{2eq} / $MJ_{(LCV)}$	Emissions associated with the feedstock extraction/cultivation/acquisition/recovery
e_l	gCO_{2eq} / $MJ_{(LCV)}$	Emissions (annualized emissions (over 20 years) from carbon stock changes caused by direct land-use change)[5]
e_p	gCO_{2eq} / $MJ_{(LCV)}$	Emissions associated with the feedstock processing and/or transformation at source and emissions associated with the conversion of the feedstock to the final fuel product, including electricity generation
e_{td}	gCO_{2eq} / $MJ_{(LCV)}$	Emissions associated with the feedstock transport to conversion plant, and the emissions associated with the finished fuel transport and storage, local delivery, retail storage and bunkering
e_{sca}	gCO_{2eq} / $MJ_{(LCV)}$	Emissions (annualized emission savings (over 20 years) from soil carbon accumulation via improved agricultural management)[6]

5 Pending further methodological guidance to be developed by the Organization, the value of parameter e_l should be set to zero.

6 Pending further methodological guidance to be developed by the Organization, the value of parameter e_{sca} should be set to zero.

Term	Units	Explanation
e_{ccs}	gCO_{2eq} / $MJ_{(LCV)}$	Emissions credit from carbon capture and storage (e_{ccs}), that have not already been accounted for in e_p. This should properly account the avoided emissions through the capture and sequestration of emitted CO_2, related to the extraction, transport, processing and distribution of fuel (c_{sc}). From the above-mentioned emission credit, all the emissions resulting from the process of capturing (e_{cc}) and transporting (e_t) the CO_2 up to the final storage (including the emissions related to the injection, etc.) need to be deducted. This element should be calculated with the following formula: $$e_{CCS} = c_{SC} - e_{cc} - e_t - e_{st} - e_x$$
c_{sc}	g CO_2 stored / $MJ_{(LCV)}$	Emissions credit equivalent to the net CO_2 captured and stored (long-term: 100 years)
e_{cc}	gCO_{2eq} / $MJ_{(LCV)}$	Emissions associated with the process of capturing, compression and/or cooling and temporary storage of the CO_2
e_t	gCO_{2eq} / $MJ_{(LCV)}$	Emissions associated with transport to a long-term storage site
e_{st}	gCO_{2eq} / $MJ_{(LCV)}$	Any emissions associated with the process of storing (long-term: 100 years) the captured CO_2 (including fugitive emissions that may happen during long-term storage and/or the injection of CO_2 into the storage)
e_x	gCO_{2eq} / $MJ_{(LCV)}$	Any additional emissions related to the CCS

4.5 The WtT emissions in Equation (1) include emissions associated with raw materials extraction or cultivation, primary energy sources used for production of goods and utilities such as energy carriers (e.g. fuels and electricity), transport and distribution (including bunkering), direct land use change and changes in carbon stocks (soil carbon accumulation).

4.6 Processing incorporates all steps and operations needed for the extraction, capture or cultivation of the primary energy source. Process includes basic transformation at source and operations needed to make the resource transportable to the marketplace (e.g. drying, chemical/physical upgrade such as gas-to-liquid, etc.).

4.7 Transportation, processing and distribution include transportation of the products in the fuel pathway to the place of transformation, conditioning (such as compression, cooling), distribution to the marketplace (i.e. bunkering) and eventual leakages, as well as fugitive emissions at any of these stages.

4.8 Allocation of emissions to co-products based on their energy content should be used, as the most appropriate and reliable methodology considering the establishment of an appropriate certification method using values that are predictable, reproducible and stable.

4.9 Land use (direct and indirect) for the production of biofuels may lead to land use change (LUC). LUC can be classified as direct LUC (DLUC) and indirect LUC (ILUC).

4.10 The DLUC definition is based on ISO 14067:2018 described as a change in the use or management of land within the product system being assessed. The DLUC impacts comprises the emissions and sequestration resulting from carbon stock changes in biomass, dead organic matter and soil organic matters, evaluated in accordance with the IPCC Guidelines. When available, sector or country-specific data on carbon stocks may be used; otherwise, IPCC's Tier 1 default emission factors may be considered. Two terms in the WtT Equation (1) capture respectively emissions resulting from direct land use change, i.e. e_l, and sequestration or otherwise increase in the content of soil organic carbon: e_{sca}.

4.11 The ILUC definition is based on ISO 14067:2018, described as a change in the use or management of land, which is a consequence of direct land use change, but which occurs outside the product system being assessed. ILUC occurs as a result of the economic impacts induced by increased biofuel demand on commodity prices with resulting shifts in demand and supply across economic sectors, including primarily food and feed production. ILUC cannot be directly measured and is projected with economic models instead.

4.12 Owing to the variability of assumptions underlying the evaluation of indirect effects, quantitative assessment of GHG effects of ILUC is subject to uncertainty, high quantitative variability and to the risk of arbitrary conclusions. For these reasons, ILUC should be at this stage addressed using a risk-based approach, meaning that quantitative values will not be calculated and assigned to each fuel pathway. The ILUC emissions, as well as the spatial dimension of the ILUC effects, are dependent on a variety of factors such as local/regional conditions and practices for agriculture, current and expected food import demand, national current accounts, the type of feedstock, the alternative economic uses of the same feedstock, etc.

4.13 A qualitative risk-based approach to ILUC includes consideration on the following:

.1 *Low-ILUC risk* qualifies and characterizes biofuel production projects that supply additional feedstock without disrupting existing land uses. When productivity is increased on an area which is in agricultural production, only additional yields should be considered as low-ILUC rather than the entire production; and

.2 *High-ILUC risk* qualifies and characterizes biofuel production projects based on, or displacing, food and feed crops resulting in a significant expansion of the feedstock production area shifting into land with high-carbon stock.

4.14 WtT default emission factors are provided in appendix 2 of these guidelines.

5 TANK-TO-WAKE (TtW)

5.1 The aim of the TtW methodology is to quantify and evaluate the intensity of CO_2, CH_4 and N_2O emitted on board a ship related to the fuel usage, including combustion/conversion and all relevant fugitive emissions with a Global Warming Potential.

5.2 The TtW GHG emission factors should be calculated using Equation (2):

Equation (2)

$$GHG_{TtW} = \frac{1}{LCV}\left(\left(1 - \frac{1}{100}\left(C_{slip\_ship} + C_{fug}\right)\right) \times \left(C_{fCO_2} \times GWP_{CO_2} + C_{fCH_4} \times GWP_{CH_4} + C_{fN_2O} \times GWP_{N_2O}\right) + \left(\frac{1}{100}\left(C_{slip\_ship} + C_{fug}\right) \times C_{sfx} \times GWP_{fuelx}\right) - S_{Fc} \times e_c - S_{Fccu} \times e_{ccu} - e_{OCCS}\right)$$

Note: terms S_{Fccu}, e_{ccu} and e_{occs} are pending further methodological guidance to be developed by the Organization. For more details refer to footnotes 11 to 13.

Term	Units	Explanation
C_{slip_ship}	% of total fuel mass	Factor accounting for fuel (expressed in % of total fuel mass delivered to the ship) which escapes from the energy converter without being oxidized (including fuel that escapes from combustion chamber/oxidation process and from crankcase, as appropriate) $C_{slip\_ship} = C_{slip} * (1 - C_{fug}/100)$
C_{slip}	% of total fuel mass	Factor accounting for fuel (expressed in % of total fuel mass consumed in the energy converter) which escapes from the energy converter without being oxidized (including fuel that escapes from combustion chamber/oxidation process and from crankcase, as appropriate)
C_{fug}	% of fuel mass	Factor accounting for the fuel (expressed in % of mass of the fuel delivered to the ship) which escapes between the tanks up to the energy converter which is leaked, vented or otherwise lost in the system[7]
C_{sfx}	gGHG/g fuel	Factor accounting for the share of GHG in the components of the fuel (expressed in g GHG/g fuel) Example: for LNG this value is 1
C_{fCO2}	gCO_2/g fuel	CO_2 emission conversion factor (gCO_2/g fuel completely combusted) for emissions of the combustion and/or oxidation process of the fuel used by the ship
C_{fCH4}	gCH_4/g fuel	CH_4 emission conversion factor (gCH_4/g fuel delivered to the ship) for emissions of the combustion and/or oxidation process of the fuel used by the ship[8]
C_{fN2O}	gN_2O/g fuel	N_2O emission conversion factor (gN_2O/g fuel delivered to the ship) for emissions of the combustion and/or oxidation process of the fuel used by the ship
GWP_{CH4}	gCO_{2eq}/g CH_4	Global Warming Potential of CH_4 over 100 years (based on the fifth IPCC Assessment Report 5)[9] Definition as per https://www.ipcc.ch/assessment-report/ar5/

7 Pending further methodological guidance to be developed by the Organization to determine appropriate factor(s), the value of C_{fug} should be set to zero.

8 For LNG/CNG fuel, the C_{slip_engine} is covering the role of C_{fCH4}, so C_{fCH4} is set to zero for these fuels.

9 Set at 28 based on IPCC AR5.

Term	Units	Explanation
GWP_{N2O}	$gCO_{2eq}/g\ N_2O$	Global Warming Potential of N_2O over 100 years (based on the fifth IPCC Assessment Report 5).[10] Definition as per https://www.ipcc.ch/assessment-report/ar5/
GWP_{fuelx}	gCO_{2eq}/g GHG	Global Warming Potential of GHG in the components of the fuel over 100 years (based on the fifth IPCC scientific Assessment Report)
S_{Fc}	0 or 1	Carbon source factor to determine whether the emissions credits generated by biomass growth are accounted for in the calculation of the TtW value
e_c	gCO_{2eq}/g fuel	Emissions credits generated by biomass growth
e_{ccu}[11]	gCO_{2eq}/g fuel	Emission credits from the used captured CO_2 as carbon stock to produce synthetic fuels in the fuel production process and utilization (that was not accounted under e_{fecu} and e_p)
S_{Fccu}[12]	0 or 1	Carbon source factor to determine whether the emissions credits from the used captured CO_2 as carbon stock to produce synthetic fuels in the fuel production process are accounted for in the calculation of the TtW value
e_{occs}[13]	gCO_{2eq} / g fuel	Emission credit from carbon capture and storage (e_{occs}), where capture of CO_2 occurs onboard. This should properly account for the emissions avoided through the capture and sequestration of emitted CO_2, if CCS occurs on board. From the above-mentioned emission credit, all the emissions resulting from the process of capturing (e_{cc}), and transporting (e_t) the CO_2 up to the final storage (including the emissions related to the injection, etc.) need to be deducted. This element should be calculated with the following formula: $$e_{OCCS} = c_{SC} - e_{cc} - e_t - e_{st} - e_x$$
c_{sc}	gCO_2 / g fuel	Credit equivalent to the CO_2 captured and stored (long-term: 100 years)
e_{cc}	gCO_{2eq} / g fuel	Any emission associated with the process of capturing, compress and temporarily store on board the CO_2

10 Set at 265 based on IPCC AR5.

11 Pending further methodological guidance to be developed by the Organization, the value of the multiplication $S_{Fccu} \times e_{ccu}$ should be set to zero.

12 Pending further methodological guidance to be developed by the Organization, the value of the multiplication $S_{Fccu} \times e_{ccu}$ should be set to zero.

13 Pending further methodological guidance to be developed by the Organization, the value of e_{occs} should be set to zero.

Term	Units	Explanation
e_t	gCO_{2eq} / g fuel	Emissions associated with transport to long-term storage site
e_{st}	gCO_{2eq} / g fuel	Any emission associated with the process of storing (long-term: 100 years) the captured CO_2 (including fugitive emissions that may happen during long-term storage and/or the injection of CO_2 into the storage)
e_x	gCO_{2eq} / g fuel	Any additional emission related to the CCS
LCV	MJ/g	Lower Calorific Value is the amount of heat that would be released by the complete combustion of a specified fuel

5.3 In order to have LCA guidelines that will allow for their clear, robust and consistent application to any possible measure, the methodology allows to calculate two TtW values as follows:

.1 TtW GHG intensity value 1: calculated regardless of the carbon source, therefore the e_c and e_{ccu} parameters should not be taken into account and the S_{Fc} and S_{Fccu} value should be always 0; and

.2 TtW GHG intensity value 2: calculated taking into account the carbon source for fuels of biogenic origins or made from captured carbon, therefore the e_c and e_{ccu} parameters should be taken into account and the S_{Fc} and S_{Fccu} values should be always 1.

5.4 The actual GHG intensity depends both on the properties of the fuel and on the efficiency of the energy conversion. For CO_2, the emission factors are based on the molar ratio of carbon to oxygen multiplied with the carbon mass of the fuel, assuming that all the carbon in the fuel is oxidized (stoichiometric combustion). The CH_4 and N_2O emissions factors are dependent on the combustion and/or conversion process in the energy converter.

5.5 For future use of, for example, fuel cells with a reforming unit, also electro-chemical reactions forming GHGs can be taken into account by this TtW methodology.

5.6 TtW default emission factors are provided in appendix 2 of these guidelines.

6 WELL-TO-WAKE (WtW)

6.1 The aim of the WtW methodology is to integrate WtT and TtW parts, to quantify the full life cycle emissions related to the production and use of a fuel.

6.2 The WtW GHG emission factor (gCO_{2eq}/MJ_{LCV} fuel or electricity) is calculated as follows:

Equation (3)

$$GHG_{WtW} = GHG_{WtT} + GHG_{TtW}$$

where:

Term	Units	Explanation
GHG_{WtW}	$gCO_{2eq}/MJ_{(LCV)}$	Total well-to-wake GHG emissions per energy unit from the use of the fuel or electricity in a consumer on board the ship
GHG_{WtT}	$gCO_{2eq}/MJ_{(LCV)}$	Total well-to-tank GHG upstream emissions per energy unit of the fuel provided to the ship
GHG_{TtW}	$gCO_{2eq}/MJ_{(LCV)}$	Total tank-to-wake GHG downstream emissions per energy unit from the use of the fuel or electricity in a consumer on board the ship

Equation (4)

$$\begin{aligned} &GHG_{WtW} \\ &= e_{fecu} + e_l + e_p + e_{td} - e_{sca} - e_{ccs} \\ &+ \frac{1}{LCV}\left(\begin{array}{c}\left(1 - \frac{1}{100}\left(C_{slip\_ship} + C_{fug}\right)\right) \times \left(C_{fCO_2} \times GWP_{CO_2} + C_{fCH_4} \times GWP_{CH_4} + C_{fN_2O} \times GWP_{N_2O}\right) + \\ \left(\frac{1}{100}\left(C_{slip_{ship}} + C_{fug}\right) \times C_{sfx} \times GWP_{fuelx}\right) - S_{Fc} \times e_c - S_{Fccu} \times e_{ccu} - e_{OCCS}\end{array}\right)\end{aligned}$$

<u>Note</u>: terms S_{Fccu}, e_{ccu} and e_{occs} are pending further methodological guidance to be developed by the Organization. For more details refer to section 5.2.

6.3 For the purpose of calculating WtW, the TtW value 2 as calculated in accordance with paragraph 5.3.2 should be used.

7 SUSTAINABILITY

7.1 The sustainability of marine fuels should be assessed considering the following themes/aspects on a life cycle basis:

.1 greenhouse gases (GHG);
.2 carbon source;
.3 source of electricity/energy;
.4 carbon stock – direct land use change (DLUC);
.5 carbon stock – indirect land use change (ILUC);
.6 water;
.7 air;
.8 soil;
.9 waste and chemicals; and
.10 conservation.

Other social and economic sustainability themes/aspects may be considered at a later stage.

7.2 The principle/objective in conjunction with the associated metrics/indicators of each of the sustainability theme/aspect are specified below.

Table 1: Sustainability themes/aspects

Theme/aspect	Principle/Objective	Metric/Indicator
1. Greenhouse Gases (GHG)	Sustainable marine fuels generate lower GHG emissions than conventional marine fuels (energy-based weighted average of liquid petroleum products on 3 specific years of DCS data) on a life cycle basis.	1. GHG intensity in gCO_{2eq}/MJ (GWP100); and GHG intensity in gCO_{2eq}/MJ (GWP20) for comparative purposes.
2. Carbon source	Sustainable marine fuels do not increase GHG intensity from the use of fossil energy sources and the permanence of captured and stored carbon is ensured while also avoiding double counting across economic sectors.	1. Carbon source indicator, including its content (in %) and origin in feedstock used to produce final fuel product, i.e. Fossil, Biogenic, Captured Carbon (including direct air capture (DAC), point source fossil (PSF) and point source biogenic (PSB)), and Others (including mixture of sources).
3. Source of electricity/energy	Sustainable marine fuels requiring significant electricity input during WtT phase and electricity delivered directly to ships are produced by using electricity/energy from renewable, nuclear or biogenic sources, which are additional to current or long-standing demand levels, or by using surplus electricity during off-peak hours.	1. The GHG intensity of electricity used in the production of marine fuels or delivered directly to ships (annual average, expressed in g CO_{2eq}/kWh based on total emissions and actual hours of production.
4. Carbon stock – direct land use change (DLUC)	Sustainable marine fuels are not made from biomass obtained from land with high carbon stock; production of sustainable marine fuels minimizes emissions resulting from Direct Land Use Change.	1. Sustainable marine fuel feedstock does not include biomass obtained from land with high carbon stock (e.g. primary forests, wetlands, or peat lands referred to a specific cut-off date for conversion), or a sustainable land management plan and reporting schedule are in

Theme/aspect	Principle/Objective	Metric/Indicator
		place to ensure that the biomass is obtained from activities or ecosystem services that do not negatively impact the soil carbon stock; 2. The production of sustainable marine fuels does not occur in lands converted from primary forest, forestland, grassland or legally protected land, taking (1 January 2008)[14] as the cut-off date; and 3. Direct land-use change (DLUC) indicator, expressed in GHG (including CO_2, CH_4 and N_2O emissions) intensity, i.e. mass of CO_2 equivalent / MJ of production or yield of feedstock.
5. Carbon stock – indirect land use change (ILUC)	Cultivation of feedstock of sustainable marine fuels minimizes inducing negative changes in the use or management of land which occurs outside the product system being assessed.	1. Indirect carbon stock risk associated with cultivation of feedstock for sustainable marine fuels (see para. 4.13).
6. Water	Production of sustainable marine fuels maintain or enhance water quality and availability.	1. Operational practices are in place to (1) maintain water quality; and (2) use water efficiently and to avoid the depletion of water resources (including surface water, renewable water and fossil/underground water) beyond replenishment capacities; 2. Respect of decision-making of local population on water management; 3. Water environment impact (weighted water consumption on water scarcity);

[14] Pending further guidance to be developed by the Organization.

Theme/aspect	Principle/Objective	Metric/Indicator
		4. Water Use Indicator expressed in m^3/year per MJ or production or yield of feedstock; 5. Freshwater eutrophication indicator, e.g. expressed in kg of phosphorus equivalent (P_{eq}) and kg of nitrogen equivalent (N_{eq}) released to fresh water/kg of feedstock produced or per MJ respectively; and 6. Marine eutrophication indicator, e.g. expressed in kg of phosphorus equivalent (P_{eq}) and kg of nitrogen equivalent (N_{eq}) released to marine water/kg of feedstock produced or per MJ respectively.
7. Air	Production of sustainable marine fuels minimizes negative impacts on air quality.	1. The marine fuel is made in a facility that fully complies with all local, national and regional air pollution laws and regulations.
8. Soil	Production of sustainable marine fuels maintain or enhance soil health.	1. Agricultural and forestry best management practices for feedstock production or residue collection have been implemented to maintain or enhance soil health, such as physical, chemical and biological conditions; and 2. The marine fuel is made in a facility that fully complies with all local, national and regional laws and regulations about soil health.
9. Waste and chemicals	Production of sustainable marine fuels maintain or enhance responsible management of waste and use of chemicals.	1. Operational practices are implemented to ensure that waste arising from, and chemicals used in, production processes are minimized at storage, handling and disposal steps. Reuse or recycling of chemicals and waste is

Theme/aspect	Principle/Objective	Metric/Indicator
		encouraged. 2. Procedures are in place to minimize the use of materials that are neither recyclable nor biodegradable; 3. Average (in tonnes) of hazardous wastes generated per MJ of fuel produced; and 4. Average (in tonnes) of specified industrial chemicals consumed per MJ of fuel produced.
10. Conservation	Production of sustainable marine fuels maintain or enhance biodiversity and ecosystems, or conservation services.	1. The marine fuel is not made from feedstock obtained from areas that due to their biodiversity, conservation value, or ecosystem services, are protected by the State having jurisdiction over the area. Evidence is provided that the activity does not interfere with the protection purposes; and 2. Low invasive-risk feedstock is selected for cultivation and appropriate controls are adopted with the intention of preventing the uncontrolled spread of cultivated alien species and modified microorganisms.

8 FUEL LIFECYCLE LABEL (FLL)

8.1 The FLL is a technical tool to collect and convey the information relevant for the life cycle assessment of marine fuels and energy carriers (e.g. electricity for shore power) used for ship propulsion and power generation onboard in the context of these guidelines.

8.2 The FLL consists of five main parts, as illustrated below:

Part A-1	**Part A-2**	**Part A-3**	**Part A-4**	**Part A-5**
Fuel type (blend)	Fuel Pathway Code	Lower Calorific Value (LCV, MJ/g)	share in fuel blend (%$MJ_{(LCV)}$ / $MJ_{(LCV)}$)	WtT GHG emission factor (GWP100, $gCO_{2eq}/MJ_{(LCV)}$)

+

Part B-1	**(Part B-2)**[15]
Emissions credits related to biogenic carbon source (e_c, in gCO_2/g fuel based on GWP100)	Emissions credits related to source of captured carbon (e_{ccu}, in gCO_2/g fuel based on GWP100)

+

Part C-1	**Part C-2**	**Part C-3**
Value 1 (carbon source NOT taken into account): TtW GHG emission factor (GWP100, $gCO_{2eq}/MJ_{(LCV)}$)	Value 2 (carbon source taken into account): TtW GHG emission factor (GWP100, $gCO_{2eq}/MJ_{(LCV)}$)	Energy Converter

+

Part D	**Part E**
WtW GHG emission factor (GWP100, $gCO_{2eq}/MJ_{(LCV)}$) Note: Part D = Part A-5 + Part C-2	Sustainability (Certification)[16]

8.3 Different parties (fuel suppliers, owners/operators, Administration/RO, etc.) may use different parts of the FLL for different purposes along the fuel pathway. As such, each interested party may use those parts of the FLL as relevant to their activities and purposes rather than the complete, integrated document.

8.4 The five main parts of the FLL are explained below.

.1 **Part A** of the FLL indicates:

.1 fuel type (Part A-1);

.2 fuel pathway code (Part A-2);

.3 lower calorific value (Part A-3, in MJ/g); and

.4 WtT GHG emission factor (Part A-5, in $gCO_{2eq}/MJ_{(LCV)}$ calculated on GWP100).

Part A-4 is only applicable when a fuel batch is supplied to the ship as a blend of fuels with different fuel pathway code (hereinafter referred to as the "fuel blend") and indicates the share of each blend component in the fuel

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[15] Pending further methodological guidance to be developed by the Organization (see section 5).

[16] Pending further guidance to be developed by the Organization.

blend (in $\%MJ_{(LCV)}/MJ_{(LCV)}$). If fuel blends are denoted on volume-basis, a re-calculation on energy basis based on the LCV values of the blend components is required;

For the fuel blend supplied to a ship, the information on fuel type for the mixture is presented under Part A-1 on top of its components, named by percentual order of composition in the fuel, e.g. X (70%), Y (20%), Z (10%). Part A-5, Part C-1, Part C-2 and Part D are the average value weighted on energy share ($\% MJ_{(LCV)}) / MJ_{(LCV)})$) of each fuel component, while Part A-2 to A-4, Part B and Part E are kept blank. Each component of the fuel blend with a specific fuel pathways code is presented in a separate row below the row for the fuel blend;

.2 **Part B** of the FLL indicates the carbon credits related to the carbon source, including:

.1 e_c (Part B-1, in gCO_2 / g fuel calculated on GWP100); (and

.2 e_{ccu} (Part B-2, in gCO_2/g fuel calculated on GWP100)),[17]

as defined in section 5 of these guidelines;

.3 **Part C** of the FLL indicates the TtW GHG emission factor of the fuel type in conjunction with the energy converter(s) on board the ship (Part C-3). The TtW GHG emission factor of the fuel type is further categorized as:

.1 Value 1 where carbon source is not taken into account (Part C-1, in $gCO_{2eq}/MJ_{(LCV)}$ calculated on GWP100); and

.2 Value 2 where carbon source is taken into account (Part C-2, in $gCO_{2eq}/MJ_{(LCV)}$ calculated on GWP100),

as defined in section 5 of these guidelines;

.4 **Part D** of the FLL indicates the WtW GHG emission factor of the fuel type (in $gCO_{2eq}/MJ_{(LCV)}$ calculated on GWP100), which is always the sum of Part A-5 and Part C-2; and

.5 **Part E** of the FLL indicates the sustainability performance of the fuel as per Section 7 of these guidelines.

PART III: DEFAULT EMISSION FACTORS AND ACTUAL VALUES

9 DEFAULT EMISSION FACTORS

9.1 The principles and the procedure described for the determination of default emission factors under this section 9 have been used for the establishment of default emission factors and should remain valid for the factors that will be established.

[17] Pending further methodological guidance to be developed by the Organization. For more details on the e_{ccu} parameter and Part B-2 of the FLL, refer to sections 5.2 and 8.2, respectively.

9.2 WtT default emission factors should be calculated using representative and conservative assumptions, which encompass variable performance of feedstock-fuel pathways across world regions and States.

9.3 To establish a WtT default emission factor, at least three reference values from three different, representative, sources should be considered. Among the three (or more) values considered, the upper emission value should be selected as default, and the range of available emission factors should be provided for informative purposes. The reference values should be accompanied by the relevant technical and scientific information (see Template set out in appendix 4) and evaluated against the corresponding information as appropriate, including the agreement between the reference values.

9.4 Emissions related to carbon stock changes caused by direct land-use change (DLUC) (e_l) and emissions savings from soil carbon accumulation via improved agricultural management (e_{sca}) are considered as zero for the establishment of the initial default emission factors. Similarly, this is the case also for the parameters related to carbon capture and storage (ccs), which require further development.

9.5 TtW default emission factors, including slip factors per fuel type and per converter types, are set out in appendix 2 (for those fuels and converters for which such factors are available in resolution MEPC.364(79) on the *2022 Guidelines on the method of calculation of the attained energy efficiency design index (EEDI) for new ships* and the *Fourth IMO GHG Study 2020*). Further TtW default emission factors (with the exception of C_{fCO2} provided in resolution MEPC.364(79)) may be established by following the same rules as for the WtT default emission factors described in paragraph 9.3. No default emission factors are provided for the use of onboard CCS (e_{occs}), and the amount of captured carbon per unit of fuel mass should be specifically certified. The parameters related to emission credits from the used captured CO_2 as carbon stock to produce synthetic fuels (e_{ccu}) requires further development.

9.6 As the definition of C_{fug} factors is considered a difficult parameter to be measured, C_{fug} factors should be established by the best existing knowledge and will be dealt with at a later stage. Until C_{fug} factors are defined, C_{fug} should be set as 0.

9.7 In case additional categories of energy converters (not listed in appendix 2) are proposed, the rules to establish TtW default emission factors as described in paragraph 9.5 above may be followed to ensure that these new converters (e.g. fuel cells) may also be associated with a default emission factor.

10 ACTUAL EMISSION FACTORS

10.1 The aim of actual emission factors is to allow demonstration of superior GHG performance compared to the default emission factors, subject to verification and certification by a third party.

10.2 WtT and TtW emission factors should be based on methodologies established in these guidelines. Actual values provide the WtW (WtT and TtW) GHG intensity for the specific fuel over the life cycle (from fuel production to its use on board).

10.3 For the pathways contained in appendix 1, the description and the calculation method for providing WtT actual emission factors should be provided. In addition, for the pathways not contained in appendix 1, a detailed description of the pathway should be provided.

10.4 The use of actual WtT emission factors is not applicable to purely fossil pathways. However, for fuels which are produced from captured carbon of fossil origin and for fossil fuels where the technology of CCS/CCUS is applied, actual values are allowed. For the fossil component of a blended fuel, fossil fuel default emission factors should be used.

10.5 Actual TtW emission factors are allowed for all fuel pathways[18] and provided in these guidelines.

PART IV: VERIFICATION AND CERTIFICATION

11 ELEMENTS SUBJECT TO VERIFICATION/CERTIFICATION

11.1 When used as evidence for performances, the FLL needs to be verified and certified by a third party, taking into account further guidance to be developed by the Organization.

11.2 The verification and certification of Part A, Part B, Part C, and Part E of the FLL may be carried out separately by different verification bodies. The verification and certification of Part D of the FLL needs to be based on the verified Part A, Part B and Part C.

11.3 For fuel types with a specific fuel pathway code and which will be consumed in a specified energy converter, the default emission factors for Part A-5, Part C-1, Part C-2 and Part D of the FLL are provided in appendix 2. As long as Part A-1 to Part A-4 and Part C-3 of the FLL have been duly verified, the default emission factors contained in these guidelines can be consequently applied without further verification.

11.4 In the case where lower emission factors are claimed compared to the default emission factors for Part A-5, Part C-1, Part C-2 and/or Part D, the actual emission factors can be used only after the verification and certification by a third party, taking into account further guidance referred to in paragraph 11.1.

12 IDENTIFICATION OF CERTIFICATION SCHEMES/STANDARDS

12.1 The verification and certification of individual parts of the FLL will use relevant certification schemes/standards. Different parts of the FLL may be verified using different certification schemes/standards as applicable, while a specific part of the FLL may be addressed by multiple certification schemes/standards with similar scopes.

12.2 The certification schemes/standards used for the purposes specified in paragraph 12.1 above should be recognized by the Committee, taking into account guidance to be developed by the Organization. The list of recognized certification schemes/standards should be publicly available and kept under review.

12.3 Proposals to recognize international certification schemes/standards should be submitted to the Committee for consideration, including an assessment of a set of predetermined criteria which will be further developed for this purpose.

12.4 The framework, criteria and procedures leading to the recognition of certification schemes should be implemented uniformly to guarantee the quality, reliability and robustness of the IMO framework as a whole and to ensure a level playing field among certification schemes.

[18] Verification and certification methodologies would need further work to be established.

PART V: REVIEW

13 CONTINUOUS REVIEW PROCESS

13.1 To ensure that new technological advances and scientific knowledge are taken into account, these guidelines should be kept under continuous technical review taking into account emerging and evolving technologies.

13.2 In particular, the following elements should be kept under review:

.1 WtT, TtW and WtW default emission factors as specified in appendix 2; and

.2 new proposed fuel pathways and the corresponding default emission factors in addition to those specified in appendix 1.

APPENDIX 1

FUEL LIST WITH FUEL PATHWAY CODES

Order	Group	Fuel type	Feedstock structure		Conversion/Production process		Fuel Pathway Code
			Feedstock Type	Nature/Carbon Source	Process Type	Energy used in the process	
1	HFO (VLSFO)	Heavy Fuel Oil (ISO 8217 Grades RME, RMG and RMK, 0.10 < S ≤ 0.50%)	Crude Oil	Fossil	Standard refinery process	Grid mix electricity	HFO(VLSFO)_f_SR_gm
2	HFO (HSHFO)	Heavy Fuel Oil (ISO 8217 Grades RME, RMG and RMK exceeding 0.50% S)	Crude Oil	Fossil	Standard refinery process	Grid mix electricity	HFO(HSHFO)_f_SR_gm
3	LFO (ULSFO)	Light Fuel Oil (ISO 8217 Grades RMA, RMB and RMD maximum 0.10% S)	Crude Oil	Fossil	Standard refinery process	Grid mix electricity	LFO(ULSFO)_f_SR_gm

Order	Group	Fuel type	Feedstock structure		Conversion/Production process		Fuel Pathway Code
			Feedstock Type	Nature/Carbon Source	Process Type	Energy used in the process	
4	LFO (VLSFO)	Light Fuel Oil (ISO 8217 Grades RMA, RMB and RMD, 0.10 < S ≤ 0.50%)	Crude Oil	Fossil	Standard refinery process	Grid mix electricity	LFO(VLSFO)_f_SR_gm
5	Diesel/Gas oil (ULSFO)	Marine Diesel/Gas Oil (ISO 8217 Grades DMX, DMA, DMZ and DMB maximum 0.10 % S)	Crude Oil	Fossil	Standard refinery process	Grid mix electricity	MDO/MGO(ULSFO)_f_SR_gm
6	Diesel/Gas oil (VLSFO)	Marine Diesel/Gas Oil (ISO 8217 Grades DMX, DMA, DMZ and DMB, 0.10 < S ≤ 0.50%)	Crude Oil	Fossil	Standard refinery process	Grid mix electricity	MDO/MGO(VLSFO)_f_SR_gm

Order	Group	Fuel type	Feedstock structure		Conversion/Production process		Fuel Pathway Code
			Feedstock Type	**Nature/Carbon Source**	**Process Type**	**Energy used in the process**	
7	Diesel/Gas oil (ULSFO)	Bio co-processed marine fuel (ISO 8217 Grades DMX, DMA, DMZ and DMB maximum 0.10 % S)	Crude Oil + mixed biomass	Fossil/Biogenic	CoProcessing (CP) in refinery	Grid mix electricity	MDO/MGO(ULSFO)_f_b_CP_gm
8	Diesel/Gas oil (VLSFO)	Bio co-processed marine fuel (ISO 8217 Grades DMX, DMA, DMZ and DMB, 0.10 < S ≤ 0.50%)	Crude Oil + mixed biomass	Fossil/Biogenic	CoProcessing (CP) in refinery	Grid mix electricity	MDO/MGO(VLSFO)_f_b_CP_gm
9	Diesel/Gas oil (ULSFO)	Co-processed marine fuel (ISO 8217 Grades DMX, DMA, DMZ and DMB maximum 0.10 % S)	Crude Oil + recycled carbon	Fossil/Recycled carbon	CoProcessing (CP) in refinery	Grid mix electricity	MDO/MGO(ULSFO)_f_r_CP_gm

Order	Group	Fuel type	Feedstock structure		Conversion/Production process		Fuel Pathway Code
			Feedstock Type	Nature/Carbon Source	Process Type	Energy used in the process	
10	Diesel/Gas oil (VLSFO)	Co-processed marine fuel (ISO 8217 Grades DMX, DMA, DMZ and DMB, 0.10 < S ≤ 0.50%)	Crude Oil + recycled carbon	Fossil/Recycled carbon	CoProcessing (CP) in refinery	Grid mix electricity	MDO/MGO(VLSFO)_f_r_CP_gm
11	LPG[19]	Liquefied Petroleum Gas (Propane)	Crude Oil	Fossil	Standard refinery process and liquefaction	Grid mix electricity	LPG(Propane)_f_SR_gm
12	LPG	Liquefied Petroleum Gas (Propane)	CO_2 + H_2	CO_2: Fossil Point Source Carbon Capture H_2: Fossil Steam Methane Reformation	Fischer-Tropsch Synthesis and liquefaction	Grid mix electricity	LPG(Propane)_fCO2_fH2_FT_gm
13	LPG	Liquefied Petroleum Gas (Propane)	CO_2 + H_2	CO_2: Fossil Point Source Carbon Capture[20] H_2: from Renewable electricity	Fischer-Tropsch Synthesis and liquefaction	Grid mix electricity	LPG(Propane)_fCO2_rH2_FT_gm

[19] Regarding LPG, these guidelines consider the final product form the refineries to be always liquefied.

[20] CO_2: Fossil Point Source Carbon Capture includes captured CO_2 stemming from fuel combustion and captured CO_2 stemming from extraction of resources underground.

Order	Group	Fuel type	Feedstock structure		Conversion/Production process		Fuel Pathway Code
			Feedstock Type	Nature/Carbon Source	Process Type	Energy used in the process	
14	LPG	Liquefied Petroleum Gas (Propane)	$CO_2 + H_2$	CO_2: Fossil Point Source Carbon Capture H_2: Industrial by-product hydrogen	Fischer-Tropsch Synthesis and liquefaction	Grid mix electricity	LPG(Propane)_fCO2_ibpH2_FT_gm
15	LPG	Liquefied Petroleum Gas (Propane)	$CO_2 + H_2$	CO_2: Direct Air Capture H_2: Fossil Steam Methane Reformation	Fischer-Tropsch Synthesis and liquefaction	Grid mix electricity	LPG(Propane)_rCO2_fH2_FT_gm
16	LPG	Liquefied Petroleum Gas (Propane)	$CO_2 + H_2$	CO_2: Direct Air Capture H_2: from Renewable electricity	Fischer-Tropsch Synthesis and liquefaction	Grid mix electricity	LPG(Propane)_rCO2_rH2_FT_gm
17	LPG	Liquefied Petroleum Gas (Propane)	$CO_2 + H_2$	CO_2: Direct Air Capture H_2: Industrial by-product hydrogen	Fischer-Tropsch Synthesis and liquefaction	Grid mix electricity	LPG(Propane)_rCO2_ibpH2_FT_gm
18	LPG	Liquefied Petroleum Gas (Propane)	$CO_2 + H_2$	CO_2: Biogenic Point Source Carbon Capture H_2: Fossil Steam Methane Reformation	Fischer-Tropsch Synthesis and liquefaction	Grid mix electricity	LPG(Propane)_bCO2_fH2_FT_gm

Order	Group	Fuel type	Feedstock structure		Conversion/Production process		Fuel Pathway Code
			Feedstock Type	Nature/Carbon Source	Process Type	Energy used in the process	
19	LPG	Liquefied Petroleum Gas (Propane)	$CO_2 + H_2$	CO_2: Biogenic Point Source Carbon Capture H_2: from Renewable electricity	Fischer-Tropsch Synthesis and liquefaction	Grid mix electricity	LPG(Propane)_bCO2_rH2_FT_gm
20	LPG	Liquefied Petroleum Gas (Propane)	$CO_2 + H_2$	CO_2: Biogenic Point Source Carbon Capture H_2: Industrial by-product hydrogen	Fischer-Tropsch Synthesis and liquefaction	Grid mix electricity	LPG(Propane)_bCO2_ibpH2_FT_gm
21	LPG	Liquefied Petroleum Gas (Butane)	Crude Oil	Fossil	Standard refinery process and liquefaction	Grid mix electricity	LPG(Butane)_f_SR_gm
22	LPG	Liquefied Petroleum Gas (Butane)	$CO_2 + H_2$	CO_2: Fossil Point Source Carbon Capture H_2: Fossil Steam Methane Reformation	Fischer-Tropsch Synthesis and liquefaction	Grid mix electricity	LPG(Butane)_fCO2_fH2_FT_gm
23	LPG	Liquefied Petroleum Gas (Butane)	$CO_2 + H_2$	CO_2: Fossil Point Source Carbon Capture H_2: from	Fischer-Tropsch Synthesis and liquefaction	Grid mix electricity	LPG(Butane)_fCO2_rH2_FT_gm

Order	Group	Fuel type	Feedstock structure		Conversion/Production process		Fuel Pathway Code
			Feedstock Type	Nature/Carbon Source	Process Type	Energy used in the process	
				Renewable electricity			
24	LPG	Liquefied Petroleum Gas (Butane)	CO_2 + H_2	CO_2: Fossil Point Source Carbon Capture H_2: Industrial by-product hydrogen	Fischer-Tropsch Synthesis and liquefaction	Grid mix electricity	LPG(Butane)_fCO2_ibpH2_FT_gm
25	LPG	Liquefied Petroleum Gas (Butane)	CO_2 + H_2	CO_2: Direct Air Capture H_2: Fossil Steam Methane Reformation	Fischer-Tropsch Synthesis and liquefaction	Grid mix electricity	LPG(Butane)_rCO2_fH2_FT_gm
26	LPG	Liquefied Petroleum Gas (Butane)	CO_2 + H_2	CO_2: Direct Air Capture H_2: from Renewable electricity	Fischer-Tropsch Synthesis and liquefaction	Grid mix electricity	LPG(Butane)_rCO2_rH2_FT_gm
27	LPG	Liquefied Petroleum Gas (Butane)	CO_2 + H_2	CO_2: Direct Air Capture H_2: Industrial by-product hydrogen	Fischer-Tropsch Synthesis and liquefaction	Grid mix electricity	LPG(Butane)_rCO2_ibpH2_FT_gm

Order	Group	Fuel type	Feedstock structure		Conversion/Production process		Fuel Pathway Code
			Feedstock Type	Nature/Carbon Source	Process Type	Energy used in the process	
28	LPG	Liquefied Petroleum Gas (Butane)	$CO_2 + H_2$	CO_2: Biogenic Point Source Carbon Capture H_2: Fossil Steam Methane Reformation	Fischer-Tropsch Synthesis and liquefaction	Grid mix electricity	LPG(Butane)_bCO2_fH2_FT_gm
29	LPG	Liquefied Petroleum Gas (Butane)	$CO_2 + H_2$	CO_2: Biogenic Point Source Carbon Capture H_2: from Renewable electricity	Fischer-Tropsch Synthesis and liquefaction	Grid mix electricity	LPG(Butane)_bCO2_rH2_FT_gm
30	LPG	Liquefied Petroleum Gas (Butane)	$CO_2 + H_2$	CO_2: Biogenic Point Source Carbon Capture H_2: Industrial by-product hydrogen	Fischer-Tropsch Synthesis and liquefaction	Grid mix electricity	LPG(Butane)_bCO2_ibpH2_FT_gm
31	LNG	Liquefied Natural Gas (Methane)	Natural Gas	Fossil	Standard LNG production including liquefaction	Grid mix electricity	LNG_f_SLP_gm
32	LNG	Liquefied Natural Gas (Methane)	Mixed 1st, 2nd and 3rd Gen. feedstock	Biogenic	Thermochemical gasification followed by methanation and liquefaction	Grid mix electricity	LNG_b_G_M_gm

Order	Group	Fuel type	Feedstock structure		Conversion/Production process		Fuel Pathway Code
			Feedstock Type	Nature/Carbon Source	Process Type	Energy used in the process	
33	LNG	Liquefied Natural Gas (Methane)	Mixed 1st, 2nd and 3rd Gen. feedstock	Biogenic	Bio-derived LNG via Anaerobic Digestion, separation and liquefaction	Grid mix electricity	LNG_b_AD_gm
34	LNG	Liquefied Natural Gas (Methane)	Mixed 1st, 2nd and 3rd Gen. feedstock	Biogenic	Bio-derived LNG via Anaerobic Digestion, separation with Point Source Carbon Capture (PSCC) and long-term storage and liquefaction	Grid mix electricity	LNG_b_AD_CCS_gm
35	LNG	Liquefied Natural Gas (Methane)	$CO_2 + H_2$	CO_2: Fossil Point Source Carbon Capture H_2: Fossil Steam Methane Reformation	Methanation and liquefaction	Grid mix electricity	LNG_fCO2_fH2_M_gm
36	LNG	Liquefied Natural Gas (Methane)	$CO_2 + H_2$	CO_2: Fossil Point Source Carbon Capture H_2: from Renewable electricity	Methanation and liquefaction	Grid mix electricity	LNG_fCO2_rH2_M_gm

Order	Group	Fuel type	Feedstock structure		Conversion/Production process		Fuel Pathway Code
			Feedstock Type	Nature/Carbon Source	Process Type	Energy used in the process	
37	LNG	Liquefied Natural Gas (Methane)	$CO_2 + H_2$	CO_2: Fossil Point Source Carbon Capture H_2: Industrial by-product hydrogen	Methanation and liquefaction	Grid mix electricity	LNG_fCO2_ibpH2_M_gm
38	LNG	Liquefied Natural Gas (Methane)	$CO_2 + H_2$	CO_2: Direct Air Capture H_2: Fossil Steam Methane Reformation	Methanation and liquefaction	Grid mix electricity	LNG_rCO2_fH2_M_gm
39	LNG	Liquefied Natural Gas (Methane)	$CO_2 + H_2$	CO_2: Direct Air Capture H_2: from Renewable electricity	Methanation and liquefaction	Grid mix electricity	LNG_rCO2_rH2_M_gm
40	LNG	Liquefied Natural Gas (Methane)	$CO_2 + H_2$	CO_2: Direct Air Capture H_2: Industrial by-product hydrogen	Methanation and liquefaction	Grid mix electricity	LNG_rCO2_ibpH2_M_gm
41	LNG	Liquefied Natural Gas (Methane)	$CO_2 + H_2$	CO_2: Biogenic Point Source Carbon Capture H_2: Fossil Steam Methane Reformation	Methanation and liquefaction	Grid mix electricity	LNG_bCO2_fH2_M_gm

Order	Group	Fuel type	Feedstock structure		Conversion/Production process		Fuel Pathway Code
			Feedstock Type	Nature/Carbon Source	Process Type	Energy used in the process	
42	LNG	Liquefied Natural Gas (Methane)	CO_2 + H_2	CO_2: Biogenic Point Source Carbon Capture H_2: from Renewable electricity	Methanation and liquefaction	Grid mix electricity	LNG_bCO2_rH2_M_gm
43	LNG	Liquefied Natural Gas (Methane)	CO_2 + H_2	CO_2: Biogenic Point Source Carbon Capture H_2: Industrial by-product hydrogen	Methanation and liquefaction	Grid mix electricity	LNG_bCO2_ibpH2_M_gm
44	CNG	Compressed Natural Gas (Methane)	Natural Gas	Fossil	Standard refinery process and compression	Grid mix electricity	CNG_f_SR_gm
45	CNG	Compressed Natural Gas (Methane)	Mixed 1st, 2nd and 3rd Gen. feedstock	Biogenic	Thermochemical gasification followed by methanation and compression	Grid mix electricity	CNG_b_G_M_gm
46	CNG	Compressed Natural Gas (Methane)	Mixed 1st, 2nd and 3rd Gen. feedstock	Biogenic	Bio-derived LNG via Anaerobic Digestion and separation and compression	Grid mix electricity	CNG_b_AD_gm
47	CNG	Compressed Natural Gas (Methane)	Mixed 1st, 2nd and 3rd Gen. feedstock	Biogenic	Bio-derived LNG via Anaerobic Digestion, separation with	Grid mix electricity	CNG_b_AD_CCS_gm

Order	Group	Fuel type	Feedstock structure		Conversion/Production process		Fuel Pathway Code
			Feedstock Type	Nature/Carbon Source	Process Type	Energy used in the process	
					Point Source Carbon Capture (PSCC) and long-term storage and compression		
48	CNG	Compressed Natural Gas (Methane)	CO_2 + H_2	CO_2: Fossil Point Source Carbon Capture H_2: Fossil Steam Methane Reformation	Methanation and compression	Grid mix electricity	CNG_fCO2_fH2_M_gm
49	CNG	Compressed Natural Gas (Methane)	CO_2 + H_2	CO_2: Fossil Point Source Carbon Capture H_2: from Renewable electricity	Methanation and compression	Grid mix electricity	CNG_fCO2_rH2_M_gm
50	CNG	Compressed Natural Gas (Methane)	CO_2 + H_2	CO_2: Fossil Point Source Carbon Capture H_2: Industrial by-product hydrogen	Methanation and compression	Grid mix electricity	CNG_fCO2_ibpH2_M_gm
51	CNG	Compressed Natural Gas (Methane)	CO_2 + H_2	CO_2: Direct Air Capture H_2: Fossil Steam	Methanation and compression	Grid mix electricity	CNG_rCO2_fH2_M_gm

Order	Group	Fuel type	Feedstock structure		Conversion/Production process		Fuel Pathway Code
			Feedstock Type	Nature/Carbon Source	Process Type	Energy used in the process	
				Methane Reformation			
52	CNG	Compressed Natural Gas (Methane)	CO_2 + H_2	CO_2: Direct Air Capture H_2: from Renewable electricity	Methanation and compression	Grid mix electricity	CNG_rCO2_rH2_M_gm
53	CNG	Compressed Natural Gas (Methane)	CO_2 + H_2	CO_2: Direct Air Capture H_2: Industrial by-product hydrogen	Methanation and compression	Grid mix electricity	CNG_rCO2_ibpH2_M_gm
54	CNG	Compressed Natural Gas (Methane)	CO_2 + H_2	CO_2: Biogenic Point Source Carbon Capture H_2: Fossil Steam Methane Reformation	Methanation and compression	Grid mix electricity	CNG_bCO2_fH2_M_gm
55	CNG	Compressed Natural Gas (Methane)	CO_2 + H_2	CO_2: Biogenic Point Source Carbon Capture H_2: from Renewable electricity	Methanation and compression	Grid mix electricity	CNG_bCO2_rH2_M_gm

Order	Group	Fuel type	Feedstock structure		Conversion/Production process		Fuel Pathway Code
			Feedstock Type	Nature/Carbon Source	Process Type	Energy used in the process	
56	CNG	Compressed Natural Gas (Methane)	CO_2 + H_2	CO_2: Biogenic Point Source Carbon Capture H_2: Industrial by-product hydrogen	Methanation and compression	Grid mix electricity	CNG_bCO2_ibpH2_M_gm
57	Ethane	Ethane	Natural Gas	Fossil	Standard refinery process	Grid mix electricity	Ethane_f_SR_gm
58	Vegetable oil-based fuel	Straight Vegetable Oil	1st Gen. feedstock	Biogenic	Extraction and purification	Grid mix electricity	SVO_b_EP _1stgen_gm
59	Vegetable oil-based fuel	Used oils and fats	2nd Gen. feedstock	Biogenic	Extraction and purification	Grid mix electricity	UOF_b_EP _2ndgen_gm
60	Vegetable oil-based fuel	Algae oil	3rd Gen. feedstock	Biogenic	Extraction and purification	Grid mix electricity	AO_b_EP _3rdgen_gm
61	Diesel	Diesel (FAME)	1st Gen. feedstock	Biogenic	Transesterification	Grid mix electricity	FAME_b_TRE_1stgen_gm_
62	Diesel	Diesel (FAME)	2nd Gen. feedstock	Biogenic	Transesterification	Grid mix electricity	FAME_b_TRE_2ndgen_gm_
63	Diesel	Diesel (FAME)	3rd Gen. feedstock	Biogenic	Transesterification	Grid mix electricity	FAME_b_TRE_3rdgen_gm_
64	Diesel	Renewable Diesel (Bio FT-Diesel)	1st Gen. feedstock	Biogenic	Gasification and Fischer-Tropsch Synthesis	Grid mix electricity	FT-Diesel_b_G_FT_1stgen_gm_
65	Diesel	Renewable Diesel (Bio FT-Diesel)	Mixed 1st, 2nd and 3rd Gen. feedstock	Biogenic	Anaerobic digestion and methane separation and	Grid mix electricity	FT-Diesel_b_AD_FT_gm

Order	Group	Fuel type	Feedstock structure		Conversion/Production process		Fuel Pathway Code
			Feedstock Type	Nature/Carbon Source	Process Type	Energy used in the process	
					Fischer-Tropsch Synthesis		
66	Diesel	Renewable Diesel (Bio FT-Diesel)	Mixed 1st, 2nd and 3rd Gen. feedstock	Biogenic	Anaerobic digestion and methane separation and Fischer-Tropsch Synthesis with Point Source Carbon Capture (PSCC) and long-term storage	Grid mix electricity	FT-Diesel_b_AD_FT_CCS_gm
67	Diesel	Renewable Diesel (FT-Diesel)	CO_2 + H_2	CO_2: Fossil Point Source Carbon Capture H_2: Fossil Steam Methane Reformation	Fischer-Tropsch Synthesis	Grid mix electricity	FT-Diesel_fCO2_fH2_FT_gm
68	Diesel	Renewable Diesel (FT-Diesel)	CO_2 + H_2	CO_2: Fossil Point Source Carbon Capture H_2: from Renewable electricity	Fischer-Tropsch Synthesis	Grid mix electricity	FT-Diesel_fCO2_rH2_FT_gm
69	Diesel	Renewable Diesel (FT-Diesel)	CO_2 + H_2	CO_2: Fossil Point Source Carbon Capture	Fischer-Tropsch Synthesis	Grid mix electricity	FT-Diesel_fCO2_ibpH2_FT_gm

Order	Group	Fuel type	Feedstock structure		Conversion/Production process		Fuel Pathway Code
			Feedstock Type	Nature/Carbon Source	Process Type	Energy used in the process	
				H_2: Industrial by-product hydrogen			
70	Diesel	Renewable Diesel (FT-Diesel)	$CO_2 + H_2$	CO_2: Direct Air Capture H_2: Fossil Steam Methane Reformation	Fischer-Tropsch Synthesis	Grid mix electricity	FT-Diesel_rCO2_fH2_FT_gm
71	Diesel	Renewable Diesel (FT-Diesel)	$CO_2 + H_2$	CO_2: Direct Air Capture H_2: from Renewable electricity	Fischer-Tropsch Synthesis	Grid mix electricity	FT-Diesel_rCO2_rH2_FT_gm
72	Diesel	Renewable Diesel (FT-Diesel)	$CO_2 + H_2$	CO_2: Direct Air Capture H_2: Industrial by-product hydrogen	Fischer-Tropsch Synthesis	Grid mix electricity	FT-Diesel_rCO2_ibpH2_FT_gm
73	Diesel	Renewable Diesel (FT-Diesel)	$CO_2 + H_2$	CO_2: Biogenic Point Source Carbon Capture H_2: Fossil Steam Methane Reformation	Fischer-Tropsch Synthesis	Grid mix electricity	FT-Diesel_bCO2_fH2_FT_gm
74	Diesel	Renewable Diesel (FT-Diesel)	$CO_2 + H_2$	CO_2: Biogenic Point Source Carbon Capture	Fischer-Tropsch Synthesis	Grid mix electricity	FT-Diesel_bCO2_rH2_FT_gm

Order	Group	Fuel type	Feedstock structure		Conversion/Production process		Fuel Pathway Code
			Feedstock Type	Nature/Carbon Source	Process Type	Energy used in the process	
				H_2: from Renewable electricity			
75	Diesel	Renewable Diesel (FT-Diesel)	CO_2 + H_2	CO_2: Biogenic Point Source Carbon Capture H_2: Industrial by-product hydrogen	Fischer-Tropsch Synthesis	Grid mix electricity	FT-Diesel_bCO2_ibpH2_FT_gm
76	Diesel	Renewable Diesel (HVO)	1st Gen. feedstock	Biogenic	Hydrogenation	Grid mix electricity	HVO_b_HD_1stgen_gm_
77	Diesel	Renewable Diesel (HVO)	2nd Gen. feedstock	Biogenic	Hydrogenation	Grid mix electricity	HVO_b_HD_2ndgen_gm_
78	Diesel	Renewable Diesel (HVO)	3rd Gen. feedstock	Biogenic	Hydrogenation	Grid mix electricity	HVO_b_HD_3rdgen_gm_
79	DME	Dimethyl Ether (DME)	1st Gen. feedstock	Biogenic	Gasification and DME Synthesis	Grid mix electricity	DME_b_G_DMES_1stgen_gm_
80	DME	Dimethyl Ether (DME)	2nd Gen. feedstock	Biogenic	Gasification and DME Synthesis	Grid mix electricity	DME-b-G-DMES_2ndgen_gm_
81	DME	Dimethyl Ether (DME)	Mixed 1st, 2nd and 3rd Gen. feedstock	Biogenic	Anaerobic digestion and methane separation and DME Synthesis	Grid mix electricity	DME_b_AD_DMES_gm
82	DME	Dimethyl Ether (DME)	Mixed 1st, 2nd and 3rd Gen. feedstock	Biogenic	Anaerobic digestion and methane separation and	Grid mix electricity	DME_b_AD_DMES_CCS_gm

Order	Group	Fuel type	Feedstock structure		Conversion/Production process		Fuel Pathway Code
			Feedstock Type	Nature/Carbon Source	Process Type	Energy used in the process	
					DME Synthesis with Point Source Carbon Capture (PSCC) and long-term storage		
83	DME	Dimethyl Ether (DME)	Natural Gas	Fossil	Gasification and DME Synthesis	Grid mix electricity	DME_f_G_DMES_gm
84	Diesel	Upgraded Pyrolysis Oil	2nd Gen. feedstock	Biogenic	Pyrolysis, Fast Pyrolysis, and/or Catalytic Fast Pyrolysis and upgrading	Grid mix electricity	UPO_b_UPO_2ndgen_gm_
85	Diesel	Hydrothermal Liquefaction (HTL) Oil	2nd Gen. feedstock	Biogenic	Hydrothermal liquefaction and upgrading	Grid mix electricity	HTL_b_HTL_2ndgen_gm_
86	Methanol	Methanol	Natural Gas	Fossil	Steam Methane Reformation of Natural Gas and Methanol Synthesis	Grid mix electricity	MeOH_f_SMR_gm
87	Methanol	Methanol	Natural Gas	Fossil	Steam Methane Reformation of Natural Gas with Carbon Capture & Storage and Methanol Synthesis	Grid mix electricity	MeOH_f_SMR_CCS_gm
88	Methanol	Methanol	Coal	Fossil	Gasification of Coal and Methanol Synthesis	Grid mix electricity	MeOH_f_G_MS_gm

Order	Group	Fuel type	Feedstock structure		Conversion/Production process		Fuel Pathway Code
			Feedstock Type	Nature/Carbon Source	Process Type	Energy used in the process	
89	Methanol	Methanol	Coal	Fossil	Gasification of Coal with Carbon Capture & Storage and Methanol Synthesis	Grid mix electricity	MeOH_f_G_MS_CCS_gm
90	Methanol	Methanol	2nd and 3rd Gen. feedstock	Biogenic	Gasification of Biomass and Methanol Synthesis	Grid mix electricity	MeOH_b_G_MS_gm
91	Methanol	Methanol	Mixed 1st, 2nd and 3rd Gen. feedstock	Biogenic	Reforming of Renewable Natural Gas (biomethane from Anaerobic Digestion) and Methanol Synthesis	Grid mix electricity	MeOH_b_AD_MS_gm
92	Methanol	Methanol	CO_2 + H_2	CO_2: Fossil Point Source Carbon Capture H_2: Fossil Steam Methane Reformation	Methanol Synthesis	Grid mix electricity	MeOH_fCO2_fH2_MS_gm
93	Methanol	Methanol	CO_2 + H_2	CO_2: Fossil Point Source Carbon Capture H_2: from Renewable electricity	Methanol Synthesis	Grid mix electricity	MeOH_fCO2_rH2_MS_gm

Order	Group	Fuel type	Feedstock structure		Conversion/Production process		Fuel Pathway Code
			Feedstock Type	Nature/Carbon Source	Process Type	Energy used in the process	
94	Methanol	Methanol	$CO_2 + H_2$	CO_2: Fossil Point Source Carbon Capture H_2: Industrial by-product hydrogen	Methanol Synthesis	Grid mix electricity	MeOH_fCO2_ibpH2_MS_gm
95	Methanol	Methanol	$CO_2 + H_2$	CO_2: Direct Air Capture H_2: Fossil Steam Methane Reformation	Methanol Synthesis	Grid mix electricity	MeOH_rCO2_fH2_MS_gm
96	Methanol	Methanol	$CO_2 + H_2$	CO_2: Direct Air Capture H_2: from Renewable electricity	Methanol Synthesis	Grid mix electricity	MeOH_rCO2_rH2_MS_gm
97	Methanol	Methanol	$CO_2 + H_2$	CO_2: Direct Air Capture H_2: Industrial by-product hydrogen	Methanol Synthesis	Grid mix electricity	MeOH_rCO2_ibpH2_MS_gm

Order	Group	Fuel type	Feedstock structure		Conversion/Production process		Fuel Pathway Code
			Feedstock Type	Nature/Carbon Source	Process Type	Energy used in the process	
98	Methanol	Methanol	$CO_2 + H_2$	CO_2: Biogenic Point Source Carbon Capture H_2: Fossil Steam Methane Reformation	Methanol Synthesis	Grid mix electricity	MeOH_bCO2_fH2_MS_gm
99	Methanol	Methanol	$CO_2 + H_2$	CO_2: Biogenic Point Source Carbon Capture H_2: from Renewable electricity	Methanol Synthesis	Grid mix electricity	MeOH_bCO2_rH2_MS_gm
100	Methanol	Methanol	$CO_2 + H_2$	CO_2: Biogenic Point Source Carbon Capture H_2: Industrial by-product hydrogen	Methanol Synthesis	Grid mix electricity	MeOH_bCO2_ibpH2_MS_gm
101	Ethanol	Ethanol	1st Gen. feedstock	Biogenic	Fermentation	Grid mix electricity	EtOH_b_FR_1stgen_gm_
102	Ethanol	Ethanol	2nd Gen. feedstock	Biogenic	Pretreatment/hydrolysis step and Fermentation	Grid mix electricity	EtOH_b_FR_2ndgen_gm_
103	Ethanol	Ethanol	3rd Gen. feedstock	Biogenic	Fermentation	Grid mix electricity	EtOH_b_FR_3rdgen_gm_

Order	Group	Fuel type	Feedstock structure		Conversion/Production process		Fuel Pathway Code
			Feedstock Type	Nature/Carbon Source	Process Type	Energy used in the process	
104	Hydrogen	Hydrogen	Natural Gas	Fossil	Steam Methane Reformation of Natural Gas	Grid mix electricity	H2_f_SMR_gm
105	Hydrogen	Hydrogen	Natural Gas	Fossil	Steam Methane Reformation of Natural Gas with Carbon Capture and long-term storage	Grid mix electricity	H2_f_SMR_CCS_gm
106	Hydrogen	Hydrogen	Natural Gas	Fossil	Methane Pyrolysis into carbon and hydrogen	Grid mix electricity	H2_f_MPO_gm
107	Hydrogen	Hydrogen	Coal	Fossil	Gasification or Carbonization of Coal	Grid mix electricity	H2_f_G_gm
108	Hydrogen	Hydrogen	Coal	Fossil	Gasification or Carbonization of Coal with Carbon Capture and long-term storage	Grid mix electricity	H2_f_G_CCS _gm
109	Hydrogen	Hydrogen	2nd Gen. feedstock	Biogenic	Gasification of biomass and Syngas separation with Point Source Carbon Capture (PSCC) and long-term storage	Grid mix electricity	H2_b_G_SS_CCS_2ndgen_gm_
110	Hydrogen	Hydrogen	Water + Electricity	Renewable	Dedicated Photovoltaic and/or Wind and/or	Renewable electricity	LH2_EL_r_Liquefied

Order	Group	Fuel type	Feedstock structure		Conversion/Production process		Fuel Pathway Code
			Feedstock Type	Nature/Carbon Source	Process Type	Energy used in the process	
					other Electrolysis and liquefaction		
111	Hydrogen	Hydrogen	Water + Electricity	Fossil/Renewable	Electrolysis and liquefaction	Grid mix electricity	LH2_EL_gm_Liquefied
112	Hydrogen	Hydrogen	Water + Electricity	Nuclear	Thermochemical Cycles or Electrolysis and liquefaction	Nuclear	LH2_EL_n_Liquefied
113	Hydrogen	Hydrogen		Industrial by-product hydrogen		Grid mix electricity	LH2_ _ibp_gm _Liquefied
114	Ammonia	Ammonia	Natural Gas	Fossil	Methane Pyrolysis into pure carbon and hydrogen and Haber Bosch process	Grid mix electricity	NH3_f_MPO_HB_gm
115	Ammonia	Ammonia	Natural Gas	Fossil	Steam Methane Reformation of Natural Gas and Haber Bosch process	Grid mix electricity	NH3_f_SMR_HB_gm
116	Ammonia	Ammonia	Natural Gas	Fossil	Steam Methane Reformation of Natural Gas with Point Source Carbon Capture (PSCC) and long-term storage and	Grid mix electricity	NH3_f_SMR_HB_CCS_gm

Order	Group	Fuel type	Feedstock structure		Conversion/Production process		Fuel Pathway Code
			Feedstock Type	Nature/Carbon Source	Process Type	Energy used in the process	
					Haber Bosch process		
117	Ammonia	Ammonia	Coal	Fossil	Gasification of Coal and Haber Bosch process	Grid mix electricity	NH3_f_G_HB_gm
118	Ammonia	Ammonia	Coal	Fossil	Gasification of Coal with Carbon Capture and long-term storage and Haber Bosch process	Grid mix electricity	NH3_f_G_HB_CCS_gm
119	Ammonia	Ammonia	2nd Gen. feedstock	Biogenic	Gasification	Grid mix electricity	NH3_b_G_2ndgen_gm_
120	Ammonia	Ammonia	$N_2 + H_2$	N_2: separated with renewable electricity H_2: produced from renewable electricity	Haber Bosch process	Grid mix electricity	NH3_rN2_rH2_HB_gm
121	Ammonia	Ammonia	$N_2 + H_2$	N_2: separated with renewable electricity H_2: Fossil Steam Methane Reformation	Haber Bosch process	Grid mix electricity	NH3_rN2_fH2_HB_gm

Order	Group	Fuel type	Feedstock structure		Conversion/Production process		Fuel Pathway Code
			Feedstock Type	Nature/Carbon Source	Process Type	Energy used in the process	
122	Ammonia	Ammonia	$N_2 + H_2$	N_2: separated with renewable electricity H_2: Industrial by-product hydrogen	Haber Bosch process	Grid mix electricity	NH3_rN2_ibpH2_HB_gm
123	Ammonia	Ammonia	$N_2 + H_2$	N_2: separated with grid mix electricity H_2: Fossil Steam Methane Reformation	Thermochemical Cycles or Electrolysis	Nuclear	NH3_gmN2_fH2_EL_n
124	Ammonia	Ammonia	$N_2 + H_2$	N_2: separated with grid mix electricity H_2: produced from renewable electricity	Thermochemical Cycles or Electrolysis	Nuclear	NH3_gmN2_rH2_EL_n
125	Ammonia	Ammonia	$N_2 + H_2$	N_2: separated with grid mix electricity H_2: Industrial by-product hydrogen	Thermochemical Cycles or Electrolysis	Nuclear	NH3_gmN2_ibpH2_EL_n
126	Electricity	Electricity		Fossil/Renewable	-	Grid mix electricity	Electricity_gm
127	Electricity	Electricity		Renewable	Dedicated Photovoltaic and/or Wind and/or other	Renewable electricity	Electricity_renewable

Order	Group	Fuel type	Feedstock structure		Conversion/Production process		Fuel Pathway Code
			Feedstock Type	Nature/Carbon Source	Process Type	Energy used in the process	
128	Wind propulsion						

APPENDIX 2

INITIAL DEFAULT EMISSION FACTORS PER FUEL PATHWAY CODE

Order	Fuel type	Fuel Pathway Code	WtT GHG intensity (gCO_{2eq}/MJ)	LCV (MJ/g)	Energy Converter	C_f CO_2 (gCO_2/g fuel)	C_f CH_4 (gCH_4/g fuel)	C_f N_2O (gN_2O/g fuel)	C_{slip} /C_{fug} (mass %)	e_c gCO_{2eq} /g fuel	TtW GHG intensity (gCO2eq /MJ)	NOTE
1	Heavy Fuel Oil (ISO 8217 Grades RME, RMG and RMK, 0.10 < S ≤ 0.50%)	HFO(VLSFO)_f_SR_gm	16.8	0.0402	ALL ICEs	3.114	0.00005	0.00018				Resolution MEPC.364(79) Fourth IMO GHG study
2	Heavy Fuel Oil (ISO 8217 Grades RME, RMG and RMK exceeding 0.50% S)	HFO(HSHFO)_f_SR_gm	14.9	0.0402	ALL ICEs	3.114	0.00005	0.00018				Resolution MEPC.364(79) Fourth IMO GHG study
3	Light Fuel Oil (ISO 8217 Grades RMA, RMB and RMD maximum 0.10% S)	LFO(ULSFO)_f_SR_gm		0.0412	ALL ICEs	3.151	0.00005	0.00018				Resolution MEPC.364(79) Fourth IMO GHG study
4	Light Fuel Oil (ISO 8217 Grades RMA, RMB and RMD, 0.10 < S ≤ 0.50%)	LFO(VLSFO)_f_SR_gm		0.0412	ALL ICEs	3.151	0.00005	0.00018				Resolution MEPC.364(79) Fourth IMO GHG study

Order	Fuel type	Fuel Pathway Code	WtT GHG intensity (gCO_{2eq}/MJ)	LCV (MJ/g)	Energy Converter	C_f CO_2 (gCO_2/g fuel)	C_f CH_4 (gCH_4/g fuel)	C_f N_2O (gN_2O/g fuel)	C_{slip} /C_{fug} (mass %)	e_c gCO_{2eq} /g fuel	TtW GHG intensity (gCO2eq /MJ)	NOTE
5	Marine Diesel/Gas Oil (ISO 8217 Grades DMX, DMA, DMZ and DMB maximum 0.10 % S)	MDO/MGO(ULSFO)_f_SR_gm	17.7	0.0427	ALL ICEs	3.206	0.00005	0.00018				Resolution MEPC.364(79) Fourth IMO GHG study
6	Marine Diesel/Gas Oil (ISO 8217 Grades DMX, DMA, DMZ and DMB, 0.10 < S ≤ 0.50%)	MDO/MGO(VLSFO)_f_SR_gm		0.0427	ALL ICEs	3.206	0.00005	0.00018				Resolution MEPC.364(79) Fourth IMO GHG study
11	Liquefied Petroleum Gas (Propane)	LPG(Propane)_f_SR_gm		0.0463	ALL ICEs	3.000	0.00005	0.00018				Resolution MEPC.364(79) Fourth IMO GHG study
21	Liquefied Petroleum Gas (Butane)	LPG(Butane)_f_SR_gm		0.0457	ALL ICEs	3.030	0.00005	0.00018				Resolution MEPC.364(79) Fourth IMO GHG study

Order	Fuel type	Fuel Pathway Code	WtT GHG intensity (gCO_{2eq}/MJ)	LCV (MJ/g)	Energy Converter	C_f CO_2 (gCO_2/g fuel)	C_f CH_4 (gCH_4/g fuel)	C_f N_2O (gN_2O/g fuel)	C_{slip} /C_{fug} (mass %)	e_c gCO_{2eq}/g fuel	TtW GHG intensity (gCO2eq /MJ)	NOTE
31	Liquefied Natural Gas (Methane)	LNG_f_SLP_gm		0.0480	LNG Otto (dual fuel medium speed)	2.750	0	0.00011	3.5/-			Resolution MEPC.364(79) Fourth IMO GHG study
					LNG Otto (dual fuel slow speed)				1.7/-			
					LNG Diesel (dual fuel slow speed)				0.15/-			
					LBSI (Lean-Burn Spark-Ignited)				2.6/-			
					Steam Turbines and boilers				0.01/-			

<table>
<tr><th>Order</th><th>Fuel type</th><th>Fuel Pathway Code</th><th>WtT GHG intensity (gCO_{2eq}/ MJ)</th><th>LCV (MJ/g)</th><th>Energy Converter</th><th>C_f CO_2 (gCO_2/g fuel)</th><th>C_f CH_4 (gCH_4/g fuel)</th><th>C_f N_2O (gN_2O/g fuel)</th><th>C_{slip} /C_{fug} (mass %)</th><th>e_c gCO_{2eq}/g fuel</th><th>TtW GHG intensity (gCO2eq /MJ)</th><th>NOTE</th></tr>
<tr><td rowspan="5">33</td><td rowspan="5">Liquefied Natural Gas (Methane)</td><td rowspan="5">LNG_b_AD_gm</td><td rowspan="5"></td><td rowspan="5"></td><td>LNG Otto (dual fuel medium speed)</td><td rowspan="5">2.750</td><td rowspan="5"></td><td rowspan="5"></td><td rowspan="5"></td><td rowspan="5"></td><td rowspan="5"></td><td rowspan="5"></td></tr>
<tr><td>LNG Otto (dual fuel slow speed)</td></tr>
<tr><td>LNG Diesel (dual fuel slow speed)</td></tr>
<tr><td>LBSI (Lean-Burn Spark-Ignited)</td></tr>
<tr><td>Steam Turbines and boilers</td></tr>
<tr><td>62</td><td>Diesel (FAME)</td><td>FAME_b_TRE_gm_2ndgen</td><td>20.8</td><td>0.0372</td><td>ALL ICEs</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>77</td><td>Renewable Diesel (HVO)</td><td>HVO_b_HD_gm_1stgen</td><td>14.9</td><td>0.044</td><td>ALL ICEs</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
</table>

Order	Fuel type	Fuel Pathway Code	WtT GHG intensity (gCO_{2eq}/MJ)	LCV (MJ/g)	Energy Converter	C_f CO_2 (gCO_2/g fuel)	C_f CH_4 (gCH_4/g fuel)	C_f N_2O (gN_2O/g fuel)	C_{slip} /C_{fug} (mass %)	e_c gCO_{2eq}/g fuel	TtW GHG intensity (gCO2eq /MJ)	NOTE
105	Hydrogen	H2_f_SMR_CCS_gm		0.12	ALL ICEs	0						
					Fuel cell							
121	Ammonia	NH3_rN2_fH2_HB_gm		0.0186	ALL ICEs	0						
					Fuel cell							

APPENDIX 3

ABBREVIATIONS AND GLOSSARY

Abbreviations

AR – IPCC Assessment Report
BDN – Bunkering Delivery Note
C_f – Emission conversion factors $C_{fCO2/CH4/N2O}$ (g GHG (CO_2/CH_4/N_2O)/g fuel) for emissions of the combustion and/or oxidation process, including the fuel with relevant GWP effect resulting from the combustion energy conversion
CH_4 – Methane
CO_2 – Carbon dioxide
CO_{2eq} – Carbon dioxide equivalent
CCS – Carbon Capture and Storage
CCU – Carbon Capture and Utilization
DAC – Direct Air Capture
DCS – IMO ship fuel oil consumption Data Collection System
DLUC – Direct Land Use Change
FLL – Fuel Lifecycle Label
GHG – Greenhouse gas
GWP – Global Warming Potential
ILUC – Indirect Land Use Change
IPCC – Intergovernmental Panel on Climate Change
LCA – Life Cycle Assessment
LCV – Lower Calorific Value (MJ/g fuel)
NMVOC – Non-Methane Volatile Organic Compounds
N_2O – Nitrous oxide
NTC – NO_x Technical Code
RFNBO – Renewable Fuels of Non-Biological Origin
SLCF – Short-Lived Climate Forcers
TtW – Tank-to-Wake
WtT – Well-to-Tank
WtW – Well-to-Wake
VOC – Volatile Organic Compounds

Glossary

Co-product – an outcome of a production process, which has a relevant economic value and elastic supply (intended as the existence of a clear evidence of the causal link between feedstock market value and the quantity of feedstock that can be produced).

Biomass – Biomass is renewable organic material that comes from plants and animals.

Renewables – any form of energy from solar, geophysical or biological sources that is replenished by natural processes at a rate that equals or exceeds its rate of use. Renewables are obtained from the continuing or repetitive flows of energy occurring in the natural environment and includes low-carbon technologies such as solar energy, hydropower, wind, tide and waves and ocean thermal energy, as well as renewable fuels such as biomass.

Global Warming Potential – Global Warming Potential indicates the potential of a greenhouse gas to trap extra heat in the atmosphere over time in relation to carbon dioxide. The enhanced heat trapping in the atmosphere (i.e. the "greenhouse effect") is caused by the absorption of infrared radiation by a given gas. The GWP also depends on the atmospheric lifetime of a gas, and the time-horizon considered (for example, GWP20 is based on the energy absorbed over 20 years, whereas GWP100 is based on the energy absorbed over 100 years. Each greenhouse gas has a specific global warming potential which is used to calculate the CO_2-equivalent (CO_{2eq}).

Land Use Change - Production of bio-based fuels leads to land use change (LUC). LUC can be classified as direct LUC (DLUC) and indirect LUC (ILUC).

Life Cycle Assessment (LCA) framework – Life Cycle Assessment determines the potential environmental impacts of products, processes or services from cradle to grave, e.g. from acquisition/extraction of raw materials through to processing, transport, use and disposal.

System boundaries – The system boundary determines which entities (unit processes) are inside the system and which are outside. It essentially determines which life cycle/supply chain stages and processes are included in the assessment and need to be in accordance with the goal and scope of the study.

System expansion – ISO 14040 recommends the use of system expansion whenever possible. System expansion is part of the consequential LCA method that seeks to capture change in environmental impact as a consequence of a certain activity.

Well-to-Wake - WtW studies estimate the energy requirements and the resulting greenhouse gas (GHG) emissions in the production of a fuel and its use in a ship, based on the broader Life Cycle Assessment (LCA) methodology. The term 'Well' is used for fuels from all sources, because although the term is most applicable to conventional crude oil resources, it is widely used and understood.

APPENDIX 4

TEMPLATE FOR WELL-TO-TANK DEFAULT EMISSION FACTOR SUBMISSION

1 ***Explanatory remarks on the general scope of the template:*** *This template aims at collecting and presenting in a clear and structured manner the input data used to calculate a "default emission factor" for a specific "feedstock-to-fuel" pathway. A "default emission factor" aims as representing the quantitative results of a high-level assessment about the carbon intensity (gCO_{2eq}/MJ) of a feedstock-to-fuel value chain. The default emission factor is not meant to represent the best available way to produce a fuel, rather a value potentially describing a feedstock production then converted in a standard plant, located in a generic region. A default emission factor does not have to capture process improvement, with respect to current production, nor innovative technologies. The goal of default emission factor is, at least, twofold:*

.1 allow for a carbon intensity comparison among different technologies;

.2 allow for operators to demonstrate lower core life cycle emissions compared to the default core life cycle, thought a certification process.

2 Operators (e.g. fuel producers) can ask for being certified, in order to prove better performances than the default emission factor (that cannot therefore be the representation of the best available technology), obtain a certified "actual value". Actual values may also be used when the fuel producer has defined a new pathway that does not have a default core life cycle emission factor.

3 This template allows presenting the minimum set of data required for the calculation of default core LCA emission factors, ensuring quality in terms of data relevance, adequacy, quality, transparency and accessibility.

PATHWAY DESCRIPTION

4 This section should clearly present the pathway modelled, with the aim for providing at least information on: the type of feedstock used, a description of the technology used for converting such feedstock in the final fuel, and any other relevant information, consistently with the system boundary of the LCA guidelines.

5 ***Explanatory remarks on the pathway description:*** *The default emission factors are based on the WtT methodology, aiming at evaluating the amount of GHG emissions for the fuel production and distribution. The production steps to be included in the WtT are:*

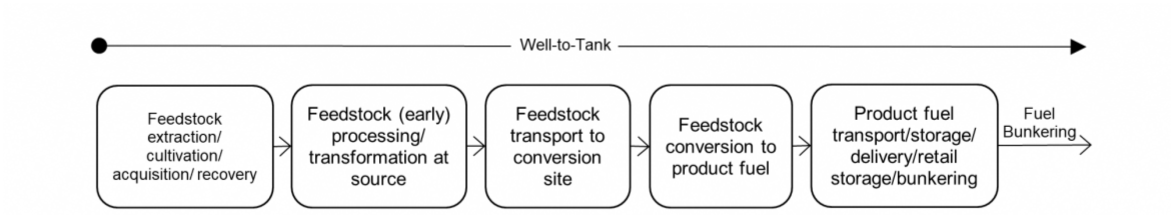

Figure 2 – Generic well-to-tank supply chain

The system boundaries defined for describing a specific feedstock-to-fuel pathway shall be in line with the definitions contained in the guidelines.

Additional details and relevant information may be added in appendices, such as location, production capacity, age of production facility or facilities.

INPUT DESCRIPTION

6 This section should clearly present the input used for the modelling exercise.

7 Source of the data and of the used model should be reported.

8 ***Explanatory remarks on the input description****: In order to provide guidance to fill the template, please see below some tables aiming at presenting the data that should be reported, per pathway (example based on a lipid feedstock production and conversion). As, in practical terms, the tables are "pathway specific", please adapt when needed.*

Table 1: e_{fecu} inputs and outputs for XXX feedstock

				XXXX, per dry kg	**Data source/Model used**
	XXX feedstock	Agricultural Inputs	Total N (g)	…	zzz et al. 2010
e_{fecu}			P_2O_5 (g)	…	ecoinvent
			K_2O (g)	…	GREET
			Diesel (MJ)	…	…
			…	…	…
		per kg XXXX oil			
		Oil Extraction Inputs		Values	Data source/ Model used
			Feedstock (g, dry)	…	zzz et al. 2010
			NG (MJ)	…	ecoinvent
			N-Hexane (MJ)	…	GREET
			Electricity (MJ)	…	…
			Electricity (MJ)	…	…
			…	…	…
			Co-product, zzz(g)	…	…
			Co-product, zzz (g)	…	…
		Oil Extraction Outputs	Co-product, zzz (g)	…	…
			…	…	…

Table 2: e_p Inputs and outputs for XXXX conversion process *Explanatory remark: including all the needed steps to pre-treat the feedstock in order to be able to convert it into the fuel, via the selected conversion process.*

	per MJ fuel		
		Values	**Data source/model used**
Inputs	Feedstock (g oil)	…	zzz et al. 2010
	NG (MJ)	…	ecoinvent
	H_2 (MJ)	*	GREET
	Electricity (MJ)	…	…
	Explanatory remark: *placeholder for key material inputs (e.g. chemicals, etc.)*	…	…
Outputs	Co-product, propane mix (MJ)	**	…
	Co-product, naphtha (MJ)	**	…
	Co-product, xxxx (MJ)	…	…
	…	…	…

*H_2 derived from NG steam reforming, included in NG input; ** Inputs after allocation

Table 3: Inputs for regional electricity generation mixes

	US (%)[1]	EU (%)[2]	India[3] (%)	Xxx (%)
Residual oil	…	…	…	…
Natural gas	…	…	…	…
Coal	…	…	…	…
Nuclear power	…	…	…	…
Biomass	…	…	…	…
Hydroelectric	…	…	…	…
Geothermal	…	…	…	…
Wind	…	…	…	…
Solar PV	…	…	…	…
Others	…	…	…	…

[1] GREET 20xx, [2] EEA, 20xx (EU electricity mix 20xx), [3]International Energy Agency 20xx.

Table 4: e_{td} Inputs for transportation of feedstock and fuels *Explanatory remark: in filling the table, please add the fuel used - In the "Data source/model used" please specify the type of fuel, the specific efficiency and energy converter, if available*.

	Feedstock Transportation		**Data source/model used**
e_{td} Inputs for Transport and Distribution	Distance (km)	xxx; xxx	
	Mode	Heavy-duty truck; Train; Ship	
	Share (%)	yy; yy; yyy	
	Fuel Transportation		
	Distance (km)	xxx; xxxx; xx	
	Mode	Barge; Rail; Heavy-duty truck	
	Share (%)	y; yy; yy	
	Fuel Distribution		
	Distance (km)	xx	
	Mode	Heavy-duty truck	
	Share (%)		
	…	…	
	Any other Transportation and Distribution		

MAIN RESULTS

9 This section should present the results of the modelled pathway.

Table 5: Fuel identification

Fuel Pathway Code	LCV (MJ/g)	Density (kg/m^3)	$CfCO_2$

Table 6: Proposed default emission factors for XXX-converted in a YYYY pathway

Region	efecu Feedstock cultivation/extraction	etd Feedstock transportation	ep Fuel production	(Sum of the terms) Proposed WtT GHG intensity (gCO_{2eq}/MJ) emission factors
ZZZZ				
AAAA				
BBBB				
…				

APPENDIX

10 Brief description of the pathway

11 Brief description of the technology

….

REFERENCES

12 REF (APA format)

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ANNEX 15

RESOLUTION MEPC.377(80)
(adopted on 7 July 2023)

2023 IMO STRATEGY ON REDUCTION OF GHG EMISSIONS FROM SHIPS

THE MARINE ENVIRONMENT PROTECTION COMMITTEE,

RECALLING Article 38(e) of the Convention on the International Maritime Organization concerning the functions of the Marine Environment Protection Committee (the Committee) to consider and take appropriate action with respect to any other matters falling within the scope of the Organization which would contribute to the prevention and control of marine pollution from ships,

ACKNOWLEDGING that work to address greenhouse gas (GHG) emissions from ships has been undertaken by the Organization continuously since the adoption of Conference resolution 8 on *CO_2 emissions from ships* in September 1997, in particular, through the adoption of global mandatory technical and operational energy efficiency measures for ships under MARPOL Annex VI,

ACKNOWLEDGING ALSO the decisions of the Assembly at its thirtieth and thirty-second sessions in December 2017 and December 2021, respectively, that approved for the Organization a strategic direction to "Respond to climate change",

RECALLING that the Committee at its seventy-second session (MEPC 72) in April 2018 adopted, by resolution MEPC.304(72), the *Initial IMO Strategy on Reduction of GHG Emissions from Ships* (Initial IMO GHG Strategy),

NOTING that the Initial IMO GHG Strategy foresees that a revised IMO GHG Strategy should be adopted in 2023,

RECALLING the United Nations 2030 Agenda for Sustainable Development,

RECALLING ALSO the Paris Agreement adopted at the UN Climate Change Conference (COP 21), which identifies the long-term goal to hold the increase in the global average temperature to well below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5°C above pre-industrial levels, recognizing that this would significantly reduce the risks and impacts of climate change, as was also reaffirmed in the Glasgow Climate Pact at COP 26 and in the Sharm el-Sheikh Implementation Plan at COP 27,

RECALLING FURTHER IMO Assembly resolution A.998(25) on the need to develop capacity-building for the development and implementation of new instruments and amendments to existing instruments,

RECALLING that the Maritime Safety Committee at its 107th session decided to initiate work on the "Development of a safety regulatory framework to support the reduction of GHG emissions from ships using new technologies and alternative fuels",

HAVING CONSIDERED, at its eightieth session, the draft 2023 IMO strategy on reduction of GHG emissions from ships, 1 ADOPTS the *2023 IMO Strategy on Reduction of GHG Emissions from Ships* (2023 IMO GHG Strategy) as set out in the annex to the present resolution;

2 ACKNOWLEDGES the challenges that developing countries, in particular least developed countries (LDCs) and small island developing States (SIDS), may face in the implementation of the 2023 IMO GHG Strategy;

3 ALSO ACKNOWLEDGES the importance of addressing the human element, including the impact on seafarers and other maritime professionals, in the safe implementation of the 2023 IMO GHG Strategy;

4 INVITES the Secretary-General to make adequate provisions in the Integrated Technical Cooperation Programme (ITCP), the IMO GHG TC-Trust Fund and any other means of support related to follow-up actions to the 2023 IMO GHG Strategy that may be further decided by the Committee and undertaken by developing countries, in particular LDCs and SIDS;

5 AGREES to keep the 2023 IMO GHG Strategy under review with a view to the adoption of a revised IMO GHG Strategy in 2028;

6 ALSO AGREES that the 2023 IMO GHG Strategy revokes the 2018 Initial IMO GHG Strategy, as from this date.

ANNEX

2023 IMO STRATEGY ON REDUCTION OF GHG EMISSIONS FROM SHIPS

Contents

1 INTRODUCTION

1.1 The International Maritime Organization (IMO or the Organization) is the United Nations specialized agency responsible for safe, secure and efficient shipping and the prevention of pollution from ships.

1.2 The *2023 IMO Strategy on Reduction of GHG Emissions from Ships* (the 2023 IMO GHG Strategy) represents the continuation of work by IMO as the appropriate international body to address greenhouse gas (GHG) emissions from international shipping. This work includes Assembly resolution A.963(23) on *IMO policies and practices related to the reduction of greenhouse gas emissions from ships*, adopted on 5 December 2003, urging the Marine Environment Protection Committee (MEPC or the Committee) to identify and develop the mechanisms needed to achieve the limitation or reduction of GHG emissions from international shipping.

1.3 In response to the Assembly's request, work to address GHG emissions from ships has been undertaken by the Organization, as summarized in appendix 1.

1.4 The *Initial IMO Strategy on Reduction of GHG Emissions from Ships* (resolution MEPC.304(72)) was the first milestone set out in the *Road map for developing a comprehensive IMO strategy on reduction of GHG emissions from ships* (the Road Map) approved at MEPC 70. The Road Map identified that a revised strategy was to be adopted in 2023.

1.5 The adoption of the 2023 IMO GHG Strategy is the latest milestone set out in the Road Map. The 2023 IMO GHG Strategy also sustains the momentum and represents the continuation of work by IMO as the appropriate international body to address GHG emissions from international shipping.

Context

1.6 The 2023 IMO GHG Strategy falls within a broader context that includes:

.1 other existing instruments related to the law of the sea, including UNCLOS, and to climate change, including the UNFCCC and its related legal instruments, including the Paris Agreement;

2 the leading role of the Organization in the development, adoption and assistance in implementation of environmental regulations applicable to international shipping;

.3 the decision of the thirty-second session of the Assembly (A 32) in December 2021 that adopted for the Organization a strategic direction entitled "Respond to climate change"; and

.4 the United Nations 2030 Agenda for Sustainable Development.

Emissions and emission scenarios

1.7 The Third IMO GHG Study 2014 estimated that GHG emissions from international shipping in 2012 accounted for some 2.2% of anthropogenic CO_2 emissions and that such emissions could grow by between 50% and 250% by 2050.

1.8 The Fourth IMO GHG Study 2020 estimated that GHG emissions from shipping in 2018 accounted for some 2.89% of global anthropogenic GHG emissions and that such emissions could represent between 90% and 130% of 2008 emissions by 2050.

1.9 Future annual IMO emission and carbon intensity estimates using the available data from the IMO Ship Fuel Oil Consumption Database (IMO DCS) and other relevant sources would help reduce the uncertainties associated with these emission estimates and scenarios.

Objectives of the 2023 IMO GHG Strategy

1.10 The 2023 IMO GHG Strategy is aimed at:

.1 enhancing IMO's contribution to global efforts by addressing GHG emissions from international shipping. International efforts in addressing GHG emissions include the Paris Agreement and its goals and the United Nations 2030 Agenda for Sustainable Development and its SDG 13: *"Take urgent action to combat climate change and its impacts"*;

.2 identifying actions to be implemented by the international shipping sector, as appropriate, while addressing impacts on States and recognizing the critical role of international shipping in supporting the continued development of global trade and maritime transport services; and

.3 identifying actions and measures, as appropriate, to help achieve the above objectives, including incentives for research and development and monitoring of GHG emissions from international shipping.

2 VISION

IMO remains committed to reducing GHG emissions from international shipping and, as a matter of urgency, aims to phase them out as soon as possible, while promoting, in the context of this Strategy, a just and equitable transition.

3 LEVELS OF AMBITION, INDICATIVE CHECKPOINTS, AND GUIDING PRINCIPLES

Levels of ambition

3.1 Subject to amendment depending on reviews to be conducted by the Organization in accordance with section 7, the 2023 IMO GHG Strategy identifies levels of ambition for the international shipping sector noting that technological innovation and the global introduction and availability of zero or near-zero GHG emission technologies, fuels and/or energy sources for international shipping will be integral to achieving the overall level of ambition.

3.2 The levels of ambition and indicative checkpoints should take into account the well-to-wake GHG emissions of marine fuels as addressed in the *Guidelines on life cycle GHG intensity of marine fuels* (LCA guidelines) developed by the Organization[1] with the overall objective of reducing GHG emissions within the boundaries of the energy system of international shipping and preventing a shift of emissions to other sectors.

1 Resolution MEPC.376(80)

3.3 Levels of ambition directing the 2023 IMO GHG Strategy are as follows:

.1 carbon intensity of the ship to decline through further improvement of the energy efficiency for new ships

to review with the aim of strengthening the energy efficiency design requirements for ships;

.2 carbon intensity of international shipping to decline

to reduce CO_2 emissions per transport work, as an average across international shipping, by at least 40% by 2030, compared to 2008;

.3 uptake of zero or near-zero GHG emission technologies, fuels and/or energy sources to increase

uptake of zero or near-zero GHG emission technologies, fuels and/or energy sources to represent at least 5%, striving for 10%, of the energy used by international shipping by 2030; and

.4 GHG emissions from international shipping to reach net zero

to peak GHG emissions from international shipping as soon as possible and to reach net-zero GHG emissions by or around, i.e. close to, 2050, taking into account different national circumstances, whilst pursuing efforts towards phasing them out as called for in the Vision consistent with the long-term temperature goal set out in Article 2 of the Paris Agreement.

Indicative checkpoints

3.4 Indicative checkpoints to reach net-zero GHG emissions from international shipping:

.1 to reduce the total annual GHG emissions from international shipping by at least 20%, striving for 30%, by 2030, compared to 2008; and

.2 to reduce the total annual GHG emissions from international shipping by at least 70%, striving for 80%, by 2040, compared to 2008.

Guiding principles

3.5 The principles guiding the 2023 IMO GHG Strategy include:

.1 the need to be cognizant of the principles enshrined in instruments already developed, such as:

.1 the principle of non-discrimination and the principle of no more favourable treatment, enshrined in MARPOL and other IMO conventions; and

.2 the principle of common but differentiated responsibilities and respective capabilities, in the light of different national circumstances, enshrined in UNFCCC, its Kyoto Protocol and the Paris Agreement;

.2 the requirement for all ships to give full and complete effect, regardless of flag, to implementing mandatory measures to ensure the effective implementation of this Strategy;

.3 the need to consider the impacts of measures on States, including developing countries, in particular on LDCs and SIDS, and their specific emerging needs, as recognized in the Revised Strategic Plan for the Organization (resolution A.1149(32)); and

.4 the need for evidence-based decision-making balanced with the precautionary approach as set out in resolution MEPC.67(37).

4 CANDIDATE SHORT-, MID- AND LONG-TERM GHG REDUCTION MEASURES WITH POSSIBLE TIMELINES AND THEIR IMPACTS ON STATES

Timelines

4.1 Candidate measures set out in this 2023 IMO GHG Strategy should be consistent with the following timelines:

.1 short-term GHG reduction measures are the measures finalized and agreed by the Committee between 2018 and 2023, as included in appendix 1;

.2 the basket of mid-term GHG reduction measures should be finalized and agreed by the Committee by 2025. Dates of entry into force and when the measure(s) can effectively start to reduce GHG emissions could be defined for the basket or for each measure individually;

.3 other candidate mid-term GHG reduction measures could be finalized and agreed by the Committee between 2023 and 2030. Dates of entry into force and when the measure can effectively start to reduce GHG emissions would be defined for each measure individually; and

.4 possible long-term measures could be measures finalized and agreed by the Committee beyond 2030, to be developed as part of the 2028 review of the IMO GHG Strategy.

4.2 The list of candidate measures is non-exhaustive and is without prejudice to measures the Organization may further consider and adopt.

Short-term GHG reduction measures

4.3 In accordance with regulations 25.3 and 28.11 of MARPOL Annex VI, a review of the mandatory goal-based technical and operational measures to reduce carbon intensity of international shipping (the "short-term GHG reduction measures") shall be completed by 1 January 2026.

4.4 The Committee may decide to initiate a review of the other short-term measure(s) as included in appendix 1.

Basket of candidate mid-term GHG reduction measures

4.5 In accordance with the timelines set out in this Strategy and the Work Plan, a basket of candidate measure(s), delivering on the reduction targets, should be developed and finalized comprised of both:

.1 a technical element, namely a goal-based marine fuel standard regulating the phased reduction of the marine fuel's GHG intensity; and

.2 an economic element, on the basis of a maritime GHG emissions pricing mechanism.

The candidate economic elements will be assessed observing specific criteria to be considered in the comprehensive impact assessment, with a view to facilitating the finalization of the basket of measures.

The mid-term GHG reduction measures should effectively promote the energy transition of shipping and provide the world fleet with a needed incentive while contributing to a level playing field and a just and equitable transition.

4.6 In accordance with Phase III of the Work Plan, the measure(s) in the basket should be developed and adopted, along with the assessments of impacts on States.

4.7 The development of the basket of candidate mid-term GHG reduction measures should take into account the well-to-wake GHG emissions of marine fuels as addressed in the LCA guidelines developed by the Organization with the overall objective of reducing GHG emissions within the boundaries of the energy system of international shipping and preventing a shift of emissions to other sectors.

Synergies with existing measures

4.8 In addition, the potential synergies with other existing measures such as the Carbon Intensity Indicator (CII) will be considered, in particular regarding incentives for energy efficiency and for the adoption of better operational practices in the shipping value chain or other technologies to reduce emissions from ships.

Other candidate mid-term GHG reduction measures

4.9 In addition to the basket of candidate mid-term GHG reduction measures, the Organization should continue to develop other mid-term GHG reduction measures to reduce GHG emissions from ships. All the following candidate mid-term measures represent possible mid-term further action by the Organization on matters related to the reduction of GHG emissions from ships:

Informed policymaking:

.1 the Secretariat to undertake annual IMO GHG emission and carbon intensity estimates using the available data from the IMO DCS and other relevant sources; and other studies to inform policy decisions;

.2 development of a feedback mechanism to enable lessons learned on implementation of measures to be collated and shared through a possible information exchange on best practice;

Supporting global availability and uptake of zero or near-zero GHG emission technologies, fuels and/or energy sources:

.3 further development of the LCA guidelines;

.4 undertake a regulatory assessment of safety aspects associated with reducing GHG emissions in accordance with this Strategy and develop a road map to support the safe delivery of the Strategy;

.5 consider and analyse measures to address emissions of methane and nitrous oxide and further enhance measures to address emissions of volatile organic compounds;

.6 incentives for first movers to develop and take up new technologies; and

.7 consider and analyse measures to both encourage port developments and activities globally to facilitate reduction of GHG emissions from shipping, including provision of ship and shoreside/onshore power supply from renewable sources, and infrastructure to support supply of zero or near-zero GHG emission fuels and/or energy sources, and to further optimize the logistic chain and its planning, including ports.

Impacts on States

4.10 The impacts on States of a measure/combination of measures should be assessed and taken into account as appropriate before adoption of the measure(s) in accordance with the *Revised procedure for assessing impacts on States of candidate measures.*[2] Particular attention should be paid to the needs of developing countries, in particular LDCs and SIDS.

4.11 The Committee should consider the comprehensive impact assessment in order to inform further consideration of the proposed measure(s), and take action as appropriate.

4.12 When assessing impacts on States, the impact of (a) measure(s) should be considered, as appropriate, inter alia, in the following terms:

.1 geographic remoteness of and connectivity to main markets;
.2 cargo value and type;
.3 transport dependency;
.4 transport costs;
.5 food security;
.6 disaster response;
.7 cost-effectiveness; and
.8 socio-economic progress and development.

4.13 Once the comprehensive impact assessment is completed, and disproportionately negative impacts assessed and addressed, as appropriate, the measure(s) may be considered for adoption.

4.14 Once a measure is adopted and enacted, the Committee should keep its implementation and impacts under review, upon request by Member States, so that any necessary adjustments may be made.

5 BARRIERS AND SUPPORTIVE ACTIONS, CAPACITY-BUILDING AND TECHNICAL COOPERATION, AND R&D

5.1 The Committee recognizes that developing countries, in particular LDCs and SIDS, have special needs with regard to capacity-building and technical cooperation.

[2] MEPC.1/Circ.885/Rev.1

5.2 The Committee recognizes the challenges that some delegations of developing countries, in particular LDCs and SIDS, may face in participating in the work of the Organization, in particular on GHG-related matters. In this regard, the Organization should periodically assess the provision of financial resources through the Voluntary Multi-Donor Trust Fund established by the Organization for the purpose of assisting developing countries, in particular LDCs and SIDS, in attending the meetings of MEPC and the Intersessional Working Group on Reduction of GHG Emissions (ISWG-GHG).

5.3 When developing candidate mid- and long-term GHG reduction measures, due account should be taken to ensure a just and equitable transition that leaves no country behind, including supportive measures.

5.4 The Committee acknowledges that developing and making globally available zero and near-zero GHG emission technologies, fuels and/or energy sources, and developing the necessary associated port infrastructure could be specific barriers to the implementation of possible measures.

5.5 The Committee recognizes the need for a broad approach to regulating safety of ships using zero or near-zero GHG emission technologies, fuels and/or energy sources, including addressing the human element, to ensure the safe implementation of this Strategy.

5.6 Recognizing the impact this Strategy will have on seafarers and other maritime professionals, the Organization is further requested to assess its instruments, guidance and training standards to help ensure a just transition for seafarers and other maritime workforce that leaves no one behind.

Continue and enhance partnerships, technical cooperation, capacity-building activities and technology cooperation

5.7 The Committee could assist the efforts to promote zero and near-zero GHG emission technologies, fuels and/or energy sources by facilitating public-private partnerships and information exchange.

5.8 The Committee should continue to provide mechanisms for facilitating information sharing, technology transfer, capacity-building and technical cooperation, taking into account resolution MEPC.229(65) on *Promotion of technical co-operation and transfer of technology relating to the improvement of energy efficiency of ships*.

5.9 The Committee recognizes that the decarbonization of shipping should be possible for all IMO Member States and may create new opportunities also for developing countries, including LDCs and SIDS, to take part in the value chain of the production and distribution of zero and near-zero GHG emission technologies, fuels and/or energy sources for international shipping.

5.10 The Organization should assess periodically the provision of financial and technological resources and capacity-building to implement the Revised Strategy through the Integrated Technical Cooperation Programme (ITCP), the IMO GHG TC-Trust Fund and other initiatives, including both IMO and Member States-sponsored programmes, as listed in appendix 2.

5.11 In addition, the Organization may:

.1 develop a seafarers' training and skills programme to support the reduction of GHG emissions from ships;

.2 initiate R&D activities and pilots addressing marine propulsion, zero or near-zero GHG emission technologies, fuels and/or energy sources to further enhance the energy efficiency of ships and supporting the global availability and uptake of low-carbon and zero-carbon fuels and technologies;

.3 support, including through partnerships and provision of financial and technological resources, enhanced technical cooperation, capacity-building activities and technology cooperation, the implementation of the existing short-term GHG reduction measures; and

.4 initiate efforts to explore renewable fuel production opportunities to be made available to international shipping, notably in developing countries, including LDCs and SIDS.

6 FOLLOW-UP ACTIONS

6.1 A programme of follow-up actions for the 2023 IMO GHG Strategy should be developed.

6.2 The key stages towards the adoption of a 2028 IMO GHG Strategy are as follows:

Target dates	**Milestones**		
	Comprehensive impact assessment of the basket of candidate mid-term measures	**Development of candidate mid-term measures**	**Other milestones**
MEPC 80 (Summer 2023)	Initiation of CIA	Initiate Phase III of the Work Plan on the development of mid-term measures	
MEPC 81 (Spring 2024)	Interim report	Finalization of basket of measures	
MEPC 82 (Autumn 2024)	Finalized report		
MEPC 83 (Spring 2025)		Approval of measures	Review of the short-term measure to be completed by 1 January 2026
Extraordinary one or two-day MEPC (six months after MEPC 83 in Autumn 2025)		Adoption of measures	
MEPC 84 (Spring 2026)			
MEPC 85 (Autumn 2026)			
16 months after adoption (2027)		Entry into force of measures	

Target dates	**Milestones**		
	Comprehensive impact assessment of the basket of candidate mid-term measures	**Development of candidate mid-term measures**	**Other milestones**
MEPC 86 (Summer 2027)			Initiate the review of the 2023 IMO GHG Strategy
MEPC 87 (Spring 2028)			
MEPC 88 (Autumn 2028)			Finalization of the review of the 2023 IMO GHG Strategy with a view to adoption of the 2028 IMO GHG Strategy

6.3 The Marginal Abatement Cost Curve (MACC) for each measure, as appropriate, should be ascertained and updated, and then evaluated on a regular basis.

7 PERIODIC REVIEW OF THE STRATEGY

7.1 The IMO GHG Strategy should be subject to a five-yearly review with the first review due in 2028.

7.2 The Committee should undertake the review including defining the scope of the review and its terms of reference.

7.3 The reviews of the levels of ambition should take into account updated emission estimates, emission reduction options and availability for international shipping, and the reports of the Intergovernmental Panel on Climate Change (IPCC), and future IMO GHG inventories and studies, as relevant, to assess progress towards reaching net-zero GHG emissions of international shipping. The reviews should also take into account available data on the impact on States of any measure(s) applied, including information provided by the States or by international organizations or institutions, so that any necessary adjustments may be made as provided for in the *Revised procedure for assessing impacts on States of candidate measures* (MEPC.1/Circ.885/Rev.1).

APPENDIX 1

OVERVIEW OF PREVIOUS WORK UNDERTAKEN BY THE ORGANIZATION TO ADDRESS GHG EMISSIONS FROM SHIPS

An overview of IMO work undertaken to address GHG emissions from ships is provided below:

.1 MEPC 62 (July 2011) adopted resolution MEPC.203(62) on *Inclusion of regulations on energy efficiency for ships in MARPOL Annex VI* introducing mandatory technical (EEDI) and operational (SEEMP) measures for the energy efficiency of ships;

.2 MEPC 65 (May 2013) adopted resolution MEPC.229(65) on *Promotion of technical co-operation and transfer of technology relating to the improvement of energy efficiency of ships*, to provide technical assistance to Member States to enable cooperation in the transfer of energy efficient technologies, in particular to developing countries;

.3 MEPC 67 (October 2014) approved the Third IMO GHG Study 2014, estimating that GHG emissions from international shipping in 2012 accounted for some 2.2% of anthropogenic CO_2 emissions and that such emissions could grow by between 50% and 250% by 2050;

.4 MEPC 70 (October 2016) adopted, by resolution MEPC.278(70), amendments to MARPOL Annex VI to introduce the data collection system for fuel oil consumption of ships, containing mandatory requirements for ships to record and report their fuel oil consumption, and also adopted the *Road map for developing a comprehensive IMO strategy on reduction of GHG emissions from ships* (the Road Map). Ships of 5,000 gross tonnage and above (representing approximately 85% of the total GHG emissions from international shipping) are required to collect consumption data for each type of fuel oil they use, as well as other, additional, specified data including proxies for "transport work";

.5 MEPC 72 (April 2018) adopted, by resolution MEPC.304(72), the *Initial IMO Strategy on Reduction of GHG Emissions from Ships*, setting out a vision which confirmed IMO's commitment to reducing GHG emissions from international shipping and to phasing them out as soon as possible, and agreed to keep the Initial Strategy under review, with a view to adoption of a Revised Strategy in 2023;

.6 MEPC 73 (October 2018) approved the *Programme of follow-up actions of the Initial IMO Strategy*, intended to be used as a planning tool in meeting the timelines identified in the Initial IMO Strategy;

.7 MEPC 74 (May 2019) approved MEPC.1/Circ.885 on *Procedure for assessing the impacts on States of candidate measures*; adopted resolution MEPC.323(74) on *Inviting Member States to encourage voluntary cooperation between the port and shipping sectors to contribute to reducing GHG emissions from ships,* as revised by MEPC 79 by resolution MEPC.366(79); and agreed to establish a voluntary multi-donor trust fund ("GHG TC-Trust Fund"), to provide a dedicated source of financial support for technical cooperation and capacity development activities to support the implementation of the Initial IMO Strategy on Reduction of GHG Emissions from Ships;

.8 MEPC 75 (November 2020) adopted resolution MEPC.327(75) on *Encouraging Member States to develop and submit voluntary National Action Plans to address GHG emissions from ships,* as revised by MEPC 79 by resolution MEPC.367(79); approved the Fourth IMO GHG Study 2020; and adopted, by resolution MEPC.324(75), amendments to MARPOL Annex VI advancing and strengthening EEDI Phase 3 requirements for several ship types;

.9 MEPC 76 (June 2021) adopted, by resolution MEPC. 328(76), amendments to MARPOL Annex VI introducing the short-term GHG reduction measure containing a technical Energy Efficiency Existing Ship Index (EEXI), an operational Carbon Intensity Indicator (CII) and an enhanced Ship Energy Efficiency Management Plan (SEEMP); adopted a series of seven technical guidelines supporting the EEXI and CII frameworks; approved a *Work plan to progress development of mid- and long-term GHG reduction measures in line with the Initial IMO Strategy on Reduction of GHG Emissions from Ships and its Programme of follow-up actions*;

.10 MEPC 77 (November 2021) agreed to initiate the revision of the *Initial IMO Strategy on Reduction of GHG Emissions from Ships*, recognizing the need to strengthen the ambition during the revision process; and adopted resolution MEPC.342(77) on *Protecting the Arctic from shipping Black Carbon emissions* recognizing that Black Carbon was a potent short-lived contributor to climate warming; and

.11 MEPC 78 (June 2022) adopted a series of 10 technical guidelines to support the implementation of the short-term GHG reduction measure;

.12 Council 128 (November 2022) endorsed the finalized terms of reference of a Voluntary Multi-Donor Trust Fund to Facilitate the Participation of Developing Countries, Especially Small Island Developing States (SIDS) and Least Developed Countries (LDCs) in IMO GHG Meetings, and agreed to review the terms of reference, based on the experience of the first full year of operations of the Fund, no later than at the 130th session of the Council;

.13 MEPC 79 (December 2022) adopted amendments to MARPOL Annex VI to revise the data collection system for fuel oil consumption for the implementation of the EEXI and the CII framework, approved a *Revised procedure for assessing the impacts on States of candidate measures* (MEPC.1/Circ.885/Rev.1) and adopted resolutions MEPC.366(79) and MEPC.367(79) on *Invitation to Member States to encourage voluntary cooperation between the port and the shipping sectors to contribute to reducing GHG emissions from ships* and *Encouragement of Member States to develop and submit voluntary National Action Plans (NAPs) to address GHG emissions from ships*, respectively; and

.14 MEPC 80 (July 2023) adopted resolution MEPC.376(80) on *Guidelines on life cycle GHG intensity of marine fuels* (LCA guidelines); initiated the comprehensive impact assessment of the basket of candidate mid-term measures; and adopted resolution MEPC.377(80) on *2023 IMO Strategy on Reduction of GHG Emissions from Ships* (2023 IMO GHG Strategy).

APPENDIX 2

OVERVIEW OF RELEVANT INITIATIVES BY THE ORGANIZATION SUPPORTING THE REDUCTION OF GHG EMISSIONS FROM SHIPS

An overview of relevant IMO initiatives supporting the reduction of GHG emissions from ships is provided below:

.1 The **Integrated Technical Cooperation Programme (ITCP)** is designed to assist Governments which lack the technical knowledge and resources that are needed to operate a shipping industry safely and efficiently. Support for IMO's GHG-related activities under the ITCP is a clear priority for the Organization. For 2022-2023, a dedicated global programme "Reducing atmospheric emissions from ships and in ports and effective implementation of MARPOL Annex VI and the Initial IMO GHG Strategy" was designed to assist Member States with the implementation of the Initial IMO Strategy, thereby increasing energy efficiency measures for ships, as well as reducing atmospheric pollution from ships, including when in ports.

.2 MEPC 74 (May 2019) agreed to establish a **voluntary multi-donor trust fund ("GHG TC-Trust Fund")**, to provide a dedicated source of financial support for technical cooperation and capacity development activities to support the implementation of the *Initial IMO Strategy on Reduction of GHG Emissions from Ships* (MEPC 74/18/Add.1, annex 17). The resources of the Trust Fund include voluntary contributions from IMO Member States, UN agencies, international organizations and other entities who have expressed support for the Initial IMO Strategy.

.3 With support from the European Union, the **Global Maritime Technologies Cooperation Centres (MTCC) Network (GMN)** project (approximately $11 million, 2016-2022) established five MTCCs in China (MTCC Asia), Fiji (MTCC Pacific), Kenya (MTCC Africa), Panama (MTCC Latin America) and Trinidad and Tobago (MTCC Caribbean). Plans are now being finalized for a GMN Phase II project for the five MTCCs to continue their work to support maritime decarbonization in the respective regions and to be linked to other IMO projects and initiatives. Phase II is to pay particular attention to the delivery of smaller scale (for example, ships retrofitting) pilot demonstration projects, with a focus on the needs of developing countries, in particular LDCs and SIDS.

.4 With support from Norway, the **Green Voyage 2050** project (approximately $7.1 million, 2019-2023) is currently supporting countries to undertake assessments of maritime emissions in the national context, develop policy frameworks and National Action Plans (NAPs) to address GHG emissions from ships, and draft legislation to implement MARPOL Annex VI into national law. Partnering countries are also supported in identifying and implementing of low- and zero-carbon pilot projects on board ships and in ports. Phase 1 of the project is expected to terminate in December 2023 and a new phase envisioned to ensure that efforts can be further continued both in relation to scaled-up pilot projects and NAP development.

.5 The **GHG-SMART Programme** (Sustainable Maritime Transport Training Programme to Support the Implementation of the GHG Strategy) project ($2.5 million, 2020-2025), funded by the Republic of Korea, is a training programme to support the implementation of the *Initial IMO Strategy on Reduction of GHG Emissions from Ships* by developing capacity in LDCs and SIDS. This is a series of annual training programmes consisting of comprehensive training online, followed by individual training plans, and a practical training and study visit, combined with an opportunity for two trainees (one female and one male) to further benefit from a World Maritime University (WMU) scholarship.

.6 The **GloFouling Partnerships** project (approximately $7 million, 2018-2025) is part of the wider efforts by IMO, in collaboration with UNDP and GEF, to improve biofouling management and protect marine ecosystems from the negative effects of invasive aquatic species . By supporting the implementation of the IMO *2011 Guidelines for the control and management of ships' biofouling to minimize the transfer of invasive aquatic species*, this project also contributes to the reduction of GHG emissions from ships. The project has developed and published in 2022 a study entitled *Analysing the Impact of Marine Biofouling on the Energy Efficiency of Ships and the GHG Abatement Potential of Biofouling Management Measures*.

.7 The **TEST Biofouling** (Transfer of Environmentally Sound Technologies) project ($4 million, 2022-2025), funded by Norway, aims to assist developing countries to build their knowledge on control and management of biofouling and showcase effective approaches to biofouling management and the mitigation of environmental risks associated with the transfer of invasive aquatic species through biofouling by means of demonstration projects at both regional and country levels. The project focuses on testing novel technologies and new sustainable methods of biofouling management, which, in line with the above study, indirectly contributes to reducing GHG emissions.

.8 The **IMO CARES** (Coordinated Actions to Reduce Emissions from Shipping) Foundation Project, project (approximately $1.5 million, 2022-2024), funded by Saudi Arabia, started its implementation phase in early 2023, with the ultimate objective to help link the global North and global South for the identification and trial of ready for market technology solutions, technology transfer, technology diffusion and uptake activities, pilot demonstration projects and green financing initiatives. This project will assist the maritime sector in developing countries in their transition towards a low-carbon future with key involvement of the MTCCs at a regional level.

.9 The Future Fuels and Technology for Low- and Zero-carbon Shipping Project (**FFT project**) (approximately $1.2 million, 2022-2024) is a partnership project between the Republic of Korea and IMO, designed to support GHG reduction from international shipping by providing technical analysis to the Organization in support of policy discussions held in the Marine Environment Protection Committee (MEPC).

.10 The **IMO-UNEP-Norway Innovation Forum** (approximately $650,000, 2020-2023) identified as championing innovation to accelerate the transition of the marine sector towards a zero- and low-emission future. Its aim is to promote innovation by providing a global platform to exchange best practices and fill necessary gaps by gathering ideas and latest developments from all competent international policy makers.

The second Innovation Forum was held in a hybrid format on 28 and 29 September 2022 and was linked to the IMO World Maritime Day (WMD) theme 2022 "New Technologies for Greener Shipping". It was attended by a total of 1,900 in-person and virtual participants.

The 2023 session will be held in conjunction with WMD, under the theme "MARPOL at 50 — Our commitment goes on", celebrating the fiftieth anniversary of the MARPOL Convention, continuing to support the global South and the green transition of the maritime sector into a sustainable future.

.11 The IMO-EBRD-World Bank co-led **Financing Sustainable Maritime Transport (FIN-SMART) Roundtable** initiative has been providing a platform among Member State representatives, international financial institutions, representatives of private banks and other key maritime stakeholders to identify maritime decarbonization investment risks, opportunities and potential financial solutions and innovative financial instruments to address financing needs and investment opportunities in developing countries, in particular LDCs and SIDS.

The third FIN-SMART roundtable in June 2023, through concrete examples of maritime decarbonization projects resulting in investment or having the potential to become bankable projects in developing countries, aims to highlight concrete success factors and the role of the various actors in achieving investment in maritime decarbonization. It also showcases to the financial community the investment opportunity in more concrete terms, as developing countries may have large unused sustainable resources (for example, wind or solar energy) that could be used for the production of green fuels that the maritime industry requires to accelerate decarbonization.

.12 The **NextGEN** (Green and Efficient Navigation) portal, which was launched by IMO and the Maritime and Port Authority of Singapore (MPA) in September 2021, is an online platform to support information sharing and collaboration on decarbonization initiatives and projects in the field of maritime, presenting an opportunity to provide an online platform of collaboration across the maritime value chain. The next phase of the NextGEN initiative was launched in 2022 as the NextGEN Connect Project, the new phase of which supports a pilot route-based action in the Asia-Pacific region to reduce emissions from international shipping.

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ANNEX 16

TERMS OF REFERENCE OF THE COMPREHENSIVE IMPACT ASSESSMENT OF THE BASKET OF CANDIDATE MID-TERM MEASURES

Background

1 The 2023 IMO GHG Strategy foresees that in accordance with the timelines in the Strategy and the Work Plan, a basket of candidate measure(s), delivering on the reduction targets, should be developed and finalized comprised of both:

.1 a technical element, namely a goal-based marine fuel standard regulating the phased reduction of the marine fuel's GHG intensity; and

.2 an economic element, on the basis of a maritime GHG emissions pricing mechanism.

The candidate economic elements will be assessed observing specific criteria to be considered in the comprehensive impact assessment, with a view to facilitating the finalization of the basket of measures.

The mid-term GHG reduction measures should effectively promote the energy transition of shipping and provide the world fleet a needed incentive while contributing to a level playing field and a just and equitable transition.

2 In accordance with the 2023 IMO GHG Strategy, the impacts on States of a measure/combination of measures should be assessed and taken into account as appropriate before adoption of the measure(s) in accordance with the *Revised procedure for assessing impacts on States of candidate measures* (MEPC.1/Circ.885/Rev.1). A comprehensive impact assessment of the measure(s) should be conducted as set out in the MEPC.1/Circ.885/Rev.1.

3 The comprehensive impact assessment should assess the impacts on States of the mid-term measure/combination of measures, including on developing States, in particular on least developed countries (LDCs) and small island developing States (SIDS).

4 In accordance with paragraph 18 of MEPC.1/Circ.885/Rev.1, once the impact assessment is completed, and disproportionately negative impacts assessed and addressed, as appropriate, the measure(s) may be considered for adoption.

5 The comprehensive impact assessment should be policy neutral.

Various technically possible combinations

6 In order to initiate the comprehensive impact assessment as soon as possible, and to inform the Committee for its selection of the combination of elements for a basket of measures, the Committee considered that it would be good to have an overview of the impacts of various technically possible combinations, without prejudging which measure(s) will be adopted.

7 Therefore, the Committee identified (a) the various forms of a goal-based marine fuel standard regulating the phased reduction of the marine fuels' GHG intensity; and (b) the various forms of maritime GHG emissions pricing mechanism, in line with the 2023 IMO GHG Strategy, set out in appendix 1, the 'Measures Matrix'.

8 The Committee identified a number of technically possible combinations of a goal-based marine fuel standard and forms of maritime GHG pricing mechanisms, as set out in appendix 2, to be assessed.

9 On the basis of these technically possible combinations, the Committee identified the parameters to set up various scenarios for the comprehensive impact assessment illustrating how different designs of the combinations, as set out in appendix 3, including changes in stringency and use of potential revenue, could influence the impacts.

10 The comprehensive impact assessment should assess the impacts on States of all combinations and scenarios. It should ensure consistency with regard to the maritime activity and BAU emissions scenarios and take care that emission reduction scenarios are consistent across scenarios, and in line with the 2023 IMO GHG Strategy, to form the information basis for the Committee in its final selection of the combination of measures. The comprehensive impact assessment could also assess the impacts of other scenarios, if so decided by the Steering Committee.

Additional guidance on specific elements to be assessed

11 For the purpose of conducting the modelling for the comprehensive impact assessment, the assumption should be that net-zero GHG emissions will be reached by 2050.

12 In accordance with paragraph 16 of the appendix to MEPC.1/Circ.885/Rev.1, the comprehensive impact assessment will include quantifying the impacts of the measure(s) in terms of countries' trade and Gross Domestic Product (GDP) change, using the output of the assessment of impacts on the fleet as its main input at the global level.

13 For the purposes of paragraph 8, the assessment of impacts on States should consider, as appropriate, inter alia, the following terms:

.1 geographic remoteness of and connectivity to main markets;
.2 cargo value and type;
.3 transport dependency;
.4 transport costs;
.5 food security;
.6 disaster response;
.7 cost-effectiveness; and
.8 socio-economic progress and development.

14 The assessment should also consider the parameters referred to in paragraph 19 of the appendix to MEPC.1/Circ.885/rev.1.

15 Information from the comprehensive impact assessment will also be taken into account for the finalization of the measure(s).

Establishment of the Steering Committee to initiate the conduct of the comprehensive impact assessment

16 The Committee requests the Secretary-General to establish the Steering Committee on the comprehensive impact assessment of the basket of candidate mid-term measures, and the Steering Committee to conduct the comprehensive impact assessment in accordance with MEPC.1/Circ.885/Rev.1 and the paragraphs set out above, and to submit its interim report to MEPC 81 for consideration.

17 Member States and international organizations are invited to financially contribute to the comprehensive impact assessment by means of a donation to the GHG TC-Trust Fund.

APPENDIX 1

MEASURES MATRIX

				Economic measure / element on the basis of maritime GHG pricing mechanism										
				a	**b**	**c**	**d**	**e**	**f**	**g**	**h**	**i**	**j**	**k**
				SRUs*	Sustainable Shipping Fund through RUs* for in-sector purposes			GHG pricing on all GHG emissions / Levy						Feebate
Disbursement of any revenues				No revenues generated, but addresses/ reduces price gap and incentivize first movers	Capacity-building and negative impact mitigation	RD&D	Admin	RD&D	Reward for eligible fuels	General GHG mitigation and adaptation	Address DNI as appropriate	Equitable transition	Admin	Reward for eligible fuel
Technical measure / element	I	Goal-based fuel Standard	Sustainability (criteria) framework											
	II	Goal-based fuel standard	FCUs and GRUs*											
	III	Goal-based fuel standard												
		[placeholder for another option]												

* Some consider the flexibility element of the goal-based fuel standard to be a part of the technical element, others consider it an economic element

List of abbreviations:

DNI: Disproportionately Negative Impacts.
FCUs: Flexible Compliance Units.
GRUs: GHG Remedial Unit.
RD&D: Research Development and Deployment.
RUs: Remedial Units.
SRUs: Surplus Reward Units.

APPENDIX 2

COMBINATIONS

Combination number	Technical element	Economic elements
1	I	a,b,c,d
2	III	e,f,g,h,i,j
3	II	h,i,j,k
4	II	b,c,d
5	II	e,f,h,i,j
6	II	e,f,g,h,i,j
7	I	a,b,c,d,k

APPENDIX 3

PARAMETERS FOR COMBINATIONS

Parameters for combination 1

TtW GHG intensity pathway of fuel/energy
Sustainability (criteria) framework to identify sustainable fuels/energy
SRUs price: to be determined by market (assumptions could be made)
RUs price, two options: Option 1: Given price before compliance period; or Option 2: 95th percentile of actual SRUs price
Distribution of revenue for b,c,d

Parameters for combination 2

GFI pathway
Level of the levy
Distribution of revenue for e,f,g,h,i,j
Prioritization of revenue use

Parameters for combination 3

Amount of revenue for h,i,j
Feebate method

Parameters for combination 4

GFI pathway
RU price
Distribution of SSF over causes

Parameters for combination 5

GFI pathway
GRU price
Level of the levy
Distribution of revenue for e,f,h,i,j
Prioritization of revenue use

Parameters for combination 6

GFI pathway
GRU price
Level of the levy
Distribution of revenue for e,f,g,h,i,j
Prioritization of revenue use

Parameters for combination 7

TtW GHG intensity pathway of fuel/energy
Sustainability (criteria) framework to identify sustainable fuels/energy
SRUs price: to be determined by market (assumptions could be made)
RUs price, two options: Option 1: Given price before compliance period; or Option 2: 95th percentile of actual SRUs price
Feebate method
Distribution of revenue for b,c,d

Parameters for combination X (not yet defined)

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ANNEX 17

RESOLUTION MEPC.378(80)
(adopted on 7 July 2023)

2023 GUIDELINES FOR THE CONTROL AND MANAGEMENT OF SHIPS' BIOFOULING TO MINIMIZE THE TRANSFER OF INVASIVE AQUATIC SPECIES

THE MARINE ENVIRONMENT PROTECTION COMMITTEE,

RECALLING Article 38 of the Convention on the International Maritime Organization concerning the functions of the Marine Environment Protection Committee relating to any matter within the scope of the Organization concerned with the prevention and control of marine pollution from ships,

RECALLING ALSO that Member States of the International Maritime Organization made a clear commitment to minimizing the transfer of invasive aquatic species by shipping in adopting the International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004,

RECALLING FURTHER that studies have shown biofouling on ships to be an important means of transferring invasive aquatic species which, if established in new ecosystems, may pose threats to the environment, human health, property and resources,

NOTING the objectives of the Convention on Biological Diversity, 1992, and that the Kunming-Montreal Global Biodiversity Framework includes a target to eliminate, minimize, reduce and/or mitigate the impacts of invasive alien species on biodiversity and ecosystem services by identifying and managing pathways of the introduction of alien species,

NOTING ALSO that the transfer and introduction of invasive aquatic species through ships' biofouling threatens the conservation and sustainable use of biological diversity, and implementing practices to control and manage ships' biofouling can greatly assist in reducing the risk of the transfer of invasive aquatic species,

NOTING FURTHER that this issue, being of worldwide concern, demands a globally consistent approach to the management of biofouling,

RECALLING that, at its sixty-second session, it had adopted, by resolution MEPC.207(62), the *2011 Guidelines for the control and management of ships' biofouling to minimize the transfer of invasive aquatic species* (Biofouling Guidelines), developed by the Sub-Committee on Bulk Liquids and Gases,

RECALLING ALSO that, at its seventy-second session, it had agreed to review the Biofouling Guidelines, with a view to amending the Guidelines, if required,

HAVING CONSIDERED, at its eightieth session, the draft revised *Guidelines for the control and management of ships' biofouling to minimize the transfer of invasive aquatic species*, developed by the Sub-Committee on Pollution Prevention and Response,

1 ADOPTS the *2023 Guidelines for the control and management of ships' biofouling to minimize the transfer of invasive aquatic species*, as set out in the annex to the present resolution;

2 REQUESTS Member States to take urgent action in applying these Guidelines, including the dissemination thereof to the shipping industry and other interested parties, taking these Guidelines into account when adopting measures to minimize the risk of introducing invasive aquatic species via biofouling, and reporting to MEPC on any experience gained in their implementation;

3 AGREES to keep these Guidelines under review in light of the experience gained;

4 REVOKES resolution MEPC.207(62).

2023 GUIDELINES FOR THE CONTROL AND MANAGEMENT OF SHIPS' BIOFOULING TO MINIMIZE THE TRANSFER OF INVASIVE AQUATIC SPECIES

TABLE OF CONTENTS

1 INTRODUCTION

1.1 MEPC 62 adopted the 2011 *Guidelines for the control and management of ships' biofouling to minimize the transfer of invasive aquatic species* (the Guidelines) through resolution MEPC.207(62). The aim of the Guidelines was to provide a globally consistent approach to managing biofouling by providing useful recommendations of general measures to reduce the risk associated with biofouling for all types of ships.

1.2 Member States of the International Maritime Organization (IMO) decided at MEPC 72 to review the Guidelines in order to assess the uptake and effectiveness of the Guidelines and identify any required action.

1.3 Studies have shown that biofouling can be a significant vector for the transfer of invasive aquatic species. Biofouling on ships entering the waters of States may result in the establishment of invasive aquatic species, which may pose threats to human, animal and plant life, economic and cultural activities, and the aquatic environment.

1.4 Invasive aquatic species have been recognized as one of the major threats for the well-being of the oceans by, inter alia, the Convention on Biological Diversity, several UNEP Regional Seas Conventions, the Asia Pacific Economic Cooperation forum and the Secretariat of the Pacific Region Environmental Programme.

1.5 Prediction of risk of introducing invasive species is complex, hence these Guidelines have the intention to minimize the accumulation of biofouling on ships. Biofouling may include invasive species while a clean hull and niche areas significantly reduce this risk. Studies have shown that the biofouling process begins within the first few hours of a ship's immersion in water. The biofouling pressure on a specific ship is influenced by a range of factors, starting with design and construction of the ship hull and niche areas, followed by operating profile of the ship and maintenance history.

1.6 These Guidelines describe recommended biofouling management practices, as illustrated in figure 1. Attention during initial ship design and construction may provide effective and sustainable means to reduce ship biofouling risks, supplemented by anti-fouling systems (AFS) for all types of ships' submerged or otherwise wetted surface areas, including hull and niche areas. Although these Guidelines focus on ships using AFS, these biofouling management practices are equally recommended for ships using coatings or surfaces that are not used to control or prevent attachment of organisms, as may be applicable.

1.7 The need for inspection and biofouling management may depend on the use of AFS, cleaning regime, and the overall risk of biofouling on the hull and in niche areas. By conducting ship-specific monitoring of risk parameters, identifying potential higher risk for biofouling, an optimized regime for biofouling management can be determined. Cleaning is an important measure to remove biofouling from the hull and niche areas but, when conducted in-water, it poses a risk of releasing invasive aquatic species into the water. Waste substances which are dislodged from the ship during the cleaning operation should therefore be collected. The Guidelines provide guidance for cleaning actions based on a fouling rating number with an overall aim to minimize the risk of transfer of invasive aquatic species. Maintenance and ship recycling should also be conducted with sufficient preventative measures to avoid release of any invasive aquatic species into the water. When conducting biofouling management, potential release of harmful waste substances should also be considered.

1.8 In addition to the Biofouling Guidelines, the following frameworks are relevant for minimizing the transfer of invasive aquatic species:

.1 the International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004 (BWM Convention), which aims to minimize the transfer of invasive aquatic species through ships' ballast water and sediments; and

.2 the International Convention on the Control of Harmful Anti-fouling Systems on Ships, 2001 (AFS Convention), which addresses anti-fouling systems on ships and focuses on the prevention of adverse impacts from the use of anti-fouling systems and the biocides they may contain.

1.9 Biofouling management practices may also improve a ship's hydrodynamic performance and can be effective at enhancing energy efficiency and reducing air emissions from ships. This concept has been identified by IMO in the 2022 *Guidelines for the development of a ship energy efficiency management* plan *(SEEMP)* (resolution MEPC.346(78)). These Guidelines further support the *2023 IMO Strategy for the reduction of green house gases from ships* (resolution MEPC.377(80)).

1.10 A GEF-UNDP-IMO GloFouling Partnerships Project was conducted as part of wider efforts by IMO, in collaboration with the United Nations Development Programme (UNDP) and the Global Environment Facility (GEF), to protect marine ecosystems from the negative effects of invasive aquatic species. The aim of the GloFouling Partnerships Project was to build capacity in developing countries for implementing the IMO Biofouling Guidelines and other relevant guidelines to minimize the transboundary introduction of invasive aquatic species, with additional benefits in the reduction of greenhouse gas emissions from global shipping.

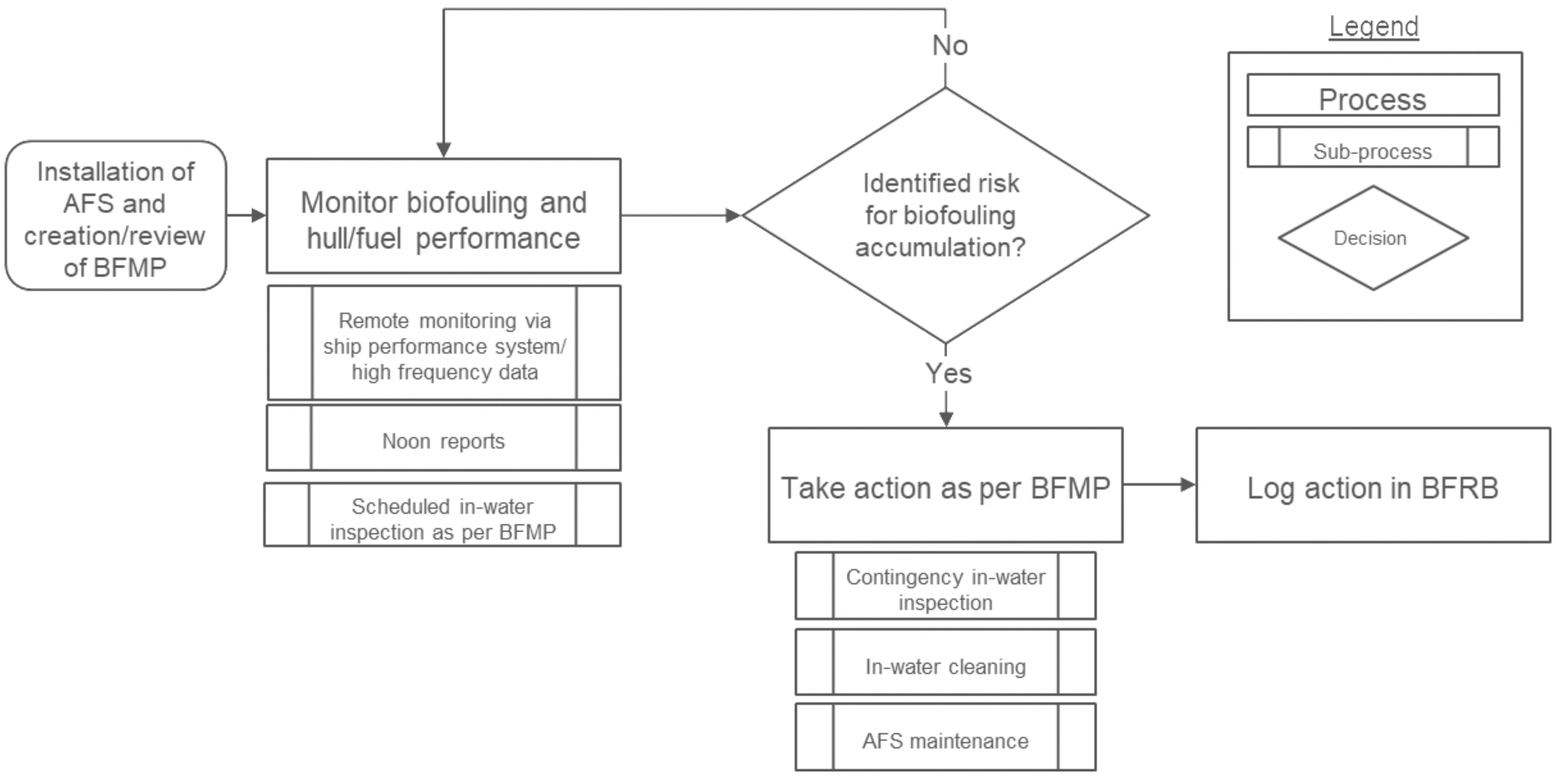


Figure 1: Simplified flow chart visualizing the biofouling management activities of a ship

2 DEFINITIONS

2.1 For the purposes of these Guidelines, the following definitions apply:

Anti-fouling system (AFS) means a coating, paint, surface treatment, surface or device that is used on a ship to control or prevent attachment of organisms.

Anti-fouling coating (AFC) means a surface coating or paint designed to prevent, repel or facilitate the detachment of biofouling from hull and niche areas that are typically or occasionally submerged.

Biofouling is the accumulation of aquatic organisms such as microorganisms, plants and animals on surfaces and structures immersed in or exposed to the aquatic environment. Biofouling can include pathogens. For microfouling and macrofouling, see definitions below.

Biofouling pressure means the biofouling accumulation rate, which differs regionally and seasonally. High biofouling pressure means the development of dense biofouling within a short period of time.

Capture is the process of containment, collection and removal of biofouling material and waste substances detached from submerged surfaces during cleaning in water or in dry dock.

Cleaning system is the equipment used for, or the process of, removal of biofouling from the ship surface, with or without capture.

Dry-dock cleaning refers to the cleaning of the submerged areas when the ship is out of water.

Fouling rating is the allocation of a number for a defined inspection area of the ship surface based on a visual assessment, including description of biofouling present and percentage of macrofouling coverage.

In-water cleaning is the removal of biofouling from a ship's hull and niche areas while in the water.

Invasive aquatic species are non-native species to a particular ecosystem which may pose threats to human, animal and plant life, economic and cultural activities and the aquatic environment.

Macrofouling is biofouling caused by the attachment and subsequent growth of visible plants and animals on structures and ships exposed to water. Macrofouling is large, distinct multicellular individual or colonial organisms visible to the human eye such as barnacles, tubeworms, mussels, fronds/filaments of algae, bryozoans, sea squirts and other large attached, encrusting or mobile organisms.

Marine growth prevention system (MGPS) is an AFS used for the prevention of biofouling accumulation in niche areas or other surface areas but may also include methods which apply surface treatments.

Member States means States that are Members of the International Maritime Organization.

Microfouling is biofouling caused by bacteria, fungi, microalgae, protozoans and other microscopic organisms that creates a biofilm also called a slime layer.

Niche areas are a subset of the submerged surface areas on a ship that may be more susceptible to biofouling than the main hull owing to structural complexity, different or variable hydrodynamic forces, susceptibility to AFC wear or damage, or inadequate or no protection by AFS.

Organization means the International Maritime Organization.

Port State authority means any official or organization authorized by the Government of a port State to verify the compliance and enforcement of standards and regulations relevant to the implementation of national and international shipping control measures.

Proactive cleaning is the periodic removal of microfouling on ships' hulls to prevent or minimize attachment of macrofouling.

Reactive cleaning is a corrective action during which biofouling is removed from a ship's hull and niche areas either in water with capture or in dry dock.

Ship means a vessel of any type whatsoever operating in the aquatic environment and includes hydrofoil boats, air-cushion vehicles, submersibles, floating craft, fixed or floating platforms, floating storage units and floating production storage and off-loading units.

States means coastal, port, flag or Member States, as appropriate.

Waste substances are dissolved and particulate materials that may be released or produced during cleaning or maintenance, and may include biocides, metals, organic substances, removed biofouling, pigments, microplastics or other contaminants that could have a negative impact on the environment.

3 APPLICATION

3.1 The Guidelines are intended to provide useful recommendations for measures to minimize biofouling for all types of ships. The Guidelines are directed at various stakeholders, such as ship designers, shipbuilders, anti-fouling paint manufacturers and suppliers, States, including environmental and regulatory agencies, classification societies, shipowners, ship operators, charterers, shipmasters, port authorities, ship cleaning and maintenance operators, inspection organizations, ship repair, dry-docking and recycling facilities, and any other interested parties.

3.2 Alternative procedures, methods or actions taken to meet the objectives of these Guidelines which are not described should be reported to the Organization by Members of the Organization and their representatives and be taken into account in future reviews of the Guidelines as appropriate.

3.3 A separate guidance document, based on these Guidelines, provides advice relevant to owners and/or operators of recreational craft less than 24 metres in length, using terminology appropriate for that sector (*Guidance for minimizing the transfer of invasive aquatic species as biofouling (hull fouling) for recreational craft* (MEPC.1/Circ.792)).

3.4 The Guidelines may not be relevant to ships which operate only in the same waters in which the biofouling was accumulated. Although operation in the same waters leads to no risk of introducing invasive aquatic species, measures to avoid discharge of harmful waste substances during cleaning may still be relevant.

3.5 An inspection regime as defined in paragraphs 8.4 to 8.6 may not be relevant to a ship when idle for a longer period. To maintain the anti-fouling effect of an AFS, inspection and reactive cleaning may be needed before the ship is reactivated to reduce the risk of biofouling.

4 OBJECTIVES

4.1 The objective of these Guidelines is to minimize the transfer of invasive aquatic species through biofouling on ships.

4.2 Procedures, methods and actions taken in line with these Guidelines should safeguard the obligation under the United Nations Convention on the Law of the Sea (UNCLOS), article 194, to prevent, reduce and control pollution of the marine environment. This includes ensuring not to transfer, directly or indirectly, damage or hazards from one area to another, or transform one type of pollution into another (ref. UNCLOS article 195), as well as preventing the intentional or accidental introduction of species, alien or new, to a particular part of the marine environment (ref. UNCLOS article 196).

4.3 The objective of these Guidelines is pursued by providing a globally consistent approach to stakeholders on the control and management of biofouling, which will contribute to minimizing the risk of transferring invasive aquatic species from biofouling on ships. An additional effect of good biofouling management can be a reduction in emissions to air from ships, due to lower fuel demand in operation as a result of a clean hull.

5 DESIGN AND CONSTRUCTION

5.1 Initial ship design and construction offers the most comprehensive, effective and long-lasting means to minimize ship biofouling risks. In the design and construction of a ship, or when a ship is being significantly modified, the following items, not exhaustive, should be taken into consideration:

.1 small niches and sheltered areas should be avoided as far as practical, e.g. flush mounting pipes in sea chests (where not practical, these should be designed so that they may be easily accessed for inspection, cleaning and application of AFS like marine growth prevention systems (MGPS));

.2 rounding and/or bevelling of corners, gratings and protrusions to promote more effective coverage of AFC and hinging of gratings to enable diver access;

.3 providing the capacity to block off the sea chest and other areas, such as moon pools, floodable docks and other free-flood spaces, for cleaning and treatment, if applicable and appropriate; and

.4 internal seawater cooling systems should be designed with a minimum number of bends and flanges. The design should be made of appropriate material to minimize biofouling, and be compatible with MGPS, if any. Dead ends, as can be found between different systems like cross-over piping between cooling and general service systems, should be avoided. Standby pumps and piping should be fully integrated into the systems to avoid stagnant water.

6 ANTI-FOULING SYSTEM INSTALLATION AND MAINTENANCE

6.1 AFS are effective means to minimize biofouling on ships' submerged surfaces, including the hull and niche areas.

6.2 Restrictions on the use of certain substances in the AFC are regulated by the AFS Convention.

Choosing an AFS

6.3 It is recommended to install AFS in all submerged surfaces on a ship where biofouling may attach. Various AFS are designed for different ship operating profiles, some suitable for hull and some for niche areas and therefore will require different maintenance activities. Thus, it is essential that shipowners, ship operators and shipbuilders obtain appropriate technical advice. AFS manufacturers are best suited to provide advice to ensure a suitable system is applied, reapplied, installed or renewed. As biofouling may typically be found at higher abundance in niche areas, where flow characteristics change as the ship moves through the water, it is recommended to choose a combination of AFC and MGPS, suitable for different submerged areas. If an appropriate AFS is not applied, biofouling accumulation may increase, and more frequent inspections may be necessary. Some factors to consider when choosing an AFS include the following:

.1 **Ship design and construction:** Where possible and appropriate upon the recommendation of AFS manufacturers, targeted installation of AFS may be employed for different areas of the ship. AFS for the hull may include specific AFC, paint and/or surface treatment. Installation of any proactive cleaning measures should be in accordance with the recommendations from the AFC provider and should not damage the AFC. Different AFS are designed to optimize their performance for specific ship speeds. For niche areas, the selected AFS should be optimized for conditions of the niche area, e.g. an AFC may be recommended for use in combination with effective MGPS to minimize biofouling. AFC selection should be based on expected wear, abrasion and water flow rates.

.2 **Active ingredients of AFC:** Environmental impact assessment of the selected AFC with respect to the release of harmful substances should be considered. The limitations of an AFC to minimize biofouling should be known and may include operating profile, aquatic environment, ship design and life cycle of AFC. Decision makers should be aware of the limitations of each AFC and the recommended in-water cleaning methods in order to minimize potential environmental impacts and damage to the system. Depending on the type of AFC, various types of waste substances may be released when cleaning. Some waste substances may easily be captured but others are fine particles or dissolved substances that may be released into the water. Therefore, not all AFC types are designed for frequent cleaning. The AFC manufacturers should provide key information on any biocides used and coating types on publicly available safety and technical datasheets. Frequent cleaning may impact the effectiveness of a specific AFC, and it is therefore recommended that the AFC manufacturers provide relevant guidance. In-water cleaning service providers and manufacturers of cleaning methods/equipment should provide guidance considering compatibility with AFC type.

.3 **Operating profile:** Patterns of use, operating routes, ship activity levels and periods of inactivity may influence the rate of biofouling accumulation and thus the effectiveness of the AFS. Inactivity may cause higher accumulation of biofouling. Biofouling may attach more easily on slow-moving ships.

.4 **Aquatic environment:** Biofouling pressure differs between areas, depending on temperature, salinity and nutrient conditions. Biofouling grows more slowly, but is not prevented, in low temperature waters. Ships operating in ice conditions should consider special AFC. Different organisms grow in different salinity waters and, if a ship operates in all salinity ranges, the anti-fouling system should target a wide range of organisms causing fouling. The benthic (seabed) environment should also be considered. Increasing depth of water and distance from shore may decrease susceptibility for biofouling. Additionally, higher content of nutrients in the water may increase algal blooms and susceptibility to biofouling.

.5 **Cleaning method:** Although cleaning system manufacturers are encouraged to find technological solutions that allow them to clean a wide variety of AFC, not all AFC can be cleaned by every cleaning system. When selecting the AFC, the available cleaning technologies and techniques and their suitability for the specific AFC should be considered. Therefore, AFC manufacturers should provide key information on any biocides used and coating types. The choice of AFC should be compatible with the cleaning technologies available to ensure both minimum biofouling growth as well as reducing the risk of damage to the AFC and the potential release of harmful waste substances to the environment.

.6 **Maintenance:** The lifespan of an AFS should be considered in combination with dry-docking schedules. AFC lifespan and lifetime of MGPS (e.g. anodes) should exceed the period between dry-dockings.

.7 **Legal requirements:** In addition to the AFS Convention, any national or regional regulatory requirements, if relevant, should be considered in the selection of AFS. This may apply to release of chemicals from MGPS and the AFS.

Installing the AFS

6.4 Installing an AFS in hull and niche areas should be in accordance with the manufacturer's guidance.

6.5 Niche areas are particularly susceptible to biofouling growth. Care should be taken in surface preparation and application of any AFC to ensure adequate adhesion and coating thickness. Particular attention should be paid to corners, edges, pipes, holding brackets and bars of gratings. Corners, edges and welded joints should be smooth and coated with adequate coating thickness to optimize system effectiveness. Additionally, for such areas, it is recommended to apply a touch up to ensure film thickness or a higher-grade AFC.

6.6 A non-exhaustive list of recommended measures for installation of an AFS in niche areas is as follows:

.1 **Sea chest:** Internal surfaces and inlet gratings of sea chests should be protected by an AFS that is suitable for the flow conditions of the area over the gratings and through the sea chest.

.2 **Bow and stern thrusters:** Free-flooding spaces which may exist around the thruster tunnel require special attention. The housings/recesses and retractable fittings such as stabilizers and thruster bodies should have an AFC of adequate thickness for optimal effectiveness.

.3 **Rudder hinges and stabilizer fin apertures:** Rudders and stabilizer fins should be moved through their full range of motion during the coating process to ensure that all surfaces are correctly coated to the specification of the AFC. Rudders, rudder fittings and the hull areas around them should also be adequately coated to withstand the increased wear rates experienced in these areas.

.4 **Propeller and shaft:** Propellers and immersed propeller shafts are generally not coated but polished. Fouling release coatings or other suitable coatings may be applied where possible and appropriate to maintain efficiency.

.5 **Stern tube seal assemblies and the internal surfaces of rope guards:** Exposed sections of stern tube seal assemblies and the internal surfaces of rope guards should be carefully painted with AFC appropriate to the degree of water movement over and around these surfaces.

.6 **Cathodic protection anodes:** Biofouling can be minimized in niche areas if anodes are flush-fitted to the hull, a rubber backing pad is inserted between the anode and the hull or the gap is caulked. Caulking the gap will make the seam or joint watertight. If not flush-fitted, the hull surface under the anode and the anode strap should be coated with an AFC suitable for low water flow to prevent biofouling accumulation. If anodes are attached by bolts recessed into the anode surface, the recess should be caulked to remove a potential niche.

.7 **Pitot tubes:** Where retractable pitot tubes are fitted, the housing should be internally coated with an AFC suitable for static conditions.

.8 **Sea inlet pipes and overboard discharges:** Pipe openings and accessible internal areas should be protected by an AFS as far as practicable. Any anti-corrosive or primer coating used should be appropriate for the specific pipe material and area requirements. Care should be taken in surface preparation and coating application to ensure good adhesion and coating thickness.

6.7 Details for performance monitoring of the AFS should be included in the ship-specific Biofouling Management Plan (BFMP) and be based on recommendations from the manufacturer of the AFS. Necessary measures to ensure that the AFS remains effective over the specified docking interval, plus any recommendations on how to return the AFS to optimal performance, should be included.

6.8 Manufacturers of AFS are also encouraged to provide information on appropriate cleaning methods, details of maintenance or upgrade protocols specific to the AFS and details on inspection and repair to ensure the effectiveness of their products. Such details are encouraged to be included in the ship-specific BFMP.

Reinstalling, reapplying or repairing the AFS

6.9 Reinstalling, reapplying or repairing the AFS should be in accordance with manufacturer's guidance that includes measures for surface preparation to facilitate good adhesion and durability.

6.10 Positions of dry-docking blocks and supports should be varied at each dry-docking, or alternative arrangements made to ensure that areas under blocks are painted with an AFC, at least at alternate dry-dockings. Where it is not possible to alternate the position of dry-docking support strips, these areas should be specially considered and managed by other means, e.g. the application of specialized coatings or procedures or measures for such areas based on the past arrangement of dry-docking support strips to shift their position step by step for each docking.

6.11 Reinstalling or repairing the MGPS in niche areas should be in accordance with manufacturer's guidance.

6.12 When reinstalling, reapplying or repairing AFS in niche areas, the list of recommended items in paragraph 6.6 should be considered. A non-exhaustive list of some additional recommended measures for reinstallation or reapplication of an AFS in niche areas is as follows:

.1 bow and stern thrusters – the body and area around bow, stern and any other thrusters prone to coating damage should be routinely maintained during dry-dockings;

.2 recesses within rudder hinges and behind stabilizer fins need to be carefully and effectively cleaned and recoated during maintenance dry-dockings; and

.3 gratings located in sea chests may require a major-refurbishment type of surface preparation at each dry-docking to ensure coating durability.

7 CONTINGENCY ACTION PLANS

7.1 A ship-specific contingency action plan based on specific triggers from monitoring of biofouling parameters should be described in the BFMP.

7.2 As presented in figure 1, monitoring of hull/fuel performance during ship operation should identify whether there may be an increased risk of biofouling accumulation. When monitoring identifies a possible increase in biofouling accumulation, the ship is at a higher risk level which should lead to contingency actions. A contingency action plan may involve inspection of submerged surfaces in line with chapter 8.

7.3 A contingency action plan may include measures which are ship-specific and relevant for the monitoring parameters. In general, a contingency action plan could include the following aspects:

.1 proactive actions can be implemented to lower the risk of biofouling accumulation if a higher biofouling risk may be predicted owing to planned operational changes;

.2 corrective actions to operating profile, maintenance or other repair plans, if the monitoring identifies an early indication of elevated risk; and

.3 inspection may be necessary to determine biofouling accumulation if the monitoring of biofouling parameters identifies an indication of prolonged elevated risk. The inspection should be in line with chapter 8.

7.4 Depending on the relevant biofouling risk parameters, the contingency action plan should trigger a reaction to be conducted in line with the BFMP.

7.5 If an inspection is conducted and biofouling is identified, cleaning actions should be conducted as described in table 1.

7.6 Monitoring of risk parameters may also identify and trigger a need for maintenance of MGPS or AFC.

8 INSPECTION

8.1 Inspections should be carried out:

.1 by organizations, crew or personnel competent to undertake inspections following these guidelines and competent to use relevant inspection methods or equipment to determine the level of biofouling and the condition of the AFS;

.2 for the purpose of fixed schedule inspections, by inspection organizations or personnel able to provide impartial inspection; and

.3 for the purpose of inspections as part of contingency actions, by organizations, crew or personnel competent for such inspections.

8.2 The fixed schedule of inspections should be carried out in line with the minimum frequencies as described in paragraphs 8.4 to 8.6.

8.3 Inspection frequency or inspection dates (or date ranges) for in-water inspections during the in-service period of the ship should be based on the ship-specific biofouling risk profile (see appendix 1), including inspection as a contingency action, and specified in the BFMP. The BFMP should also specify management actions to be taken when biofouling is identified during inspections (e.g. cleaning), including changes to inspection frequency.

8.4 For ships not undertaking performance monitoring, the first inspection date should be within 12 months of application, reapplication, installation or renewal of AFS to confirm their effective operation.

8.5 Where monitoring indicates that the AFS is not performing effectively soon after application, reapplication, installation or renewal (e.g. increased fuel consumption), an inspection should be carried out to confirm the condition of the AFS and level of biofouling as soon as practical or possible, in line with the BFMP and contingency action plan. If adequate performance of the AFS is observed through monitoring, the inspection could be conducted up to 18 months after application, reapplication, installation or renewal, noting that such monitoring may not reflect the level of biofouling in all niche areas.

8.6 Subsequent inspections should occur at least every 12 to 18 months and may need to increase to confirm the continued effectiveness of ageing or damaged AFS. In-water inspections should seek to coincide with existing subsea operations (e.g. underwater inspections in lieu of dry-dock or any other in-water inspections), including any unscheduled subsea operations. If no AFS are installed in areas of a ship and no other measures are undertaken such as in-water cleaning or propeller polishing, then inspections should occur more frequently (<12 months) to manage the risk of biofouling accumulation.

8.7 In-water inspections should assess biofouling across the entirety of a ship's hull and niche areas. If high levels of biofouling are identified during an inspection and there are reasons to suspect issues with the AFS's effectiveness, actions should be taken to manage the biofouling and subsequent inspections should occur more frequently, for example biannually until dry-docking and recoating of AFC.

8.8 In-water inspections should determine the level of biofouling of the hull and niche areas and the condition of the AFS. The inspection areas should be subdivided into appropriate sections as listed in tables 4 and 5 of appendix 2. The fouling rating for each area on the ship should be the highest rating identified in the inspected areas.

8.9 The following should be investigated during the inspection:

.1 rating of the type and approximate extent of biofouling in line with the definitions in table 1 below;

.2 condition of the AFC on the hull and in niche areas as described in paragraph 8.7 using definitions in table 4; and

.3 functionality of the MGPS in niche areas.

Extent of biofouling and recommended actions

8.10 During an inspection, niche areas in the ship-specific BFMP should be inspected as a priority. All inspected areas should be allocated a fouling rating number in line with the extent of fouling as defined in table 1 below.

Table 1: Rating scale to assess the extent of fouling on inspection areas

Rating	Description	Macrofouling cover of area inspected (visual estimate)	Recommended cleaning
0	**No fouling** Surface entirely clean. No visible biofouling on surfaces.	-	-
1	**Microfouling** Submerged areas partially or entirely covered in microfouling. Metal and painted surface may be visible beneath the fouling.	-	Proactive cleaning may be recommended as further specified in paragraph 9.4.
2	**Light macrofouling** Presence of microfouling and multiple macrofouling patches. Fouling species cannot be easily wiped off by hand.	1-15% of surface	Cleaning with capture is recommended as further specified in paragraph 9.9. It is recommended to shorten the interval until the next inspection. If the AFS is significantly deteriorated, dry-docking with maintenance and reapplication of the AFS is recommended.
3	**Medium macrofouling** Presence of microfouling and multiple macrofouling patches.	16-40% of surface	
4	**Heavy macrofouling** Large patches or submerged areas entirely covered in macrofouling.	41-100% of surface	

Condition of the AFS

8.11 The condition of the AFS on the hull and in niche areas should be observed during the inspection and reported. Recommended action and relevant procedures for inspection of the AFS are described in tables 4 and 5.

Inspection report

8.12 An inspection report should be prepared and a copy should be available on board and listed/linked in the Biofouling Record Book (BFRB). For details on reporting on biofouling levels and AFS condition inspections, see appendix 2, tables 4 to 6.

9 CLEANING AND MAINTENANCE

9.1 Cleaning is an important measure to remove biofouling from the hull and niche areas, but may physically damage the AFC, shorten coating service lifetime and release harmful waste substances and invasive aquatic species into the environment.

9.2 Comprehensive testing of cleaning systems or processes is necessary to understand the cleaning performance, capture efficiency or any release of harmful waste substances as well as improve knowledge concerning the prevention of release of viable fragments, spores and other parts of biofouling organisms that have the potential to be invasive.

9.3 In-water cleaning is a complex activity to manage appropriately and international standards for the management of in-water cleaning may continue to be developed and published in a stand-alone document to the Guidelines.

Procedures for proactive cleaning

9.4 Proactive cleaning is the periodic removal of microfouling on ships' hull and niche areas or other submerged surfaces as relevant prior to macrofouling growth and can be conducted with or without capture. Proactive cleaning without capture should:

.1 not be conducted on biofouling with rating ≥2 in line with table 1; and
.2 be performed in an area accepted by the relevant authority for this activity.

9.5 Operators undertaking proactive cleaning should be aware of any local regulations or requirements. Regulations regarding the discharge of biofouling and waste substances into the marine environment and the location of sensitive areas (such as Marine Protected Areas) may be relevant.

9.6 Procedures for proactive cleaning and frequency should be described in the BFMP. All proactive cleaning, and any determination of biofouling level prior to the cleaning, should be entered in the BFRB.

Procedures for reactive cleaning

9.7 Reactive cleaning systems physically remove micro- and macrofouling from the hull and niche areas. There are various reactive cleaning methods available and more under development.

9.8 Reactive cleaning should be conducted based on the inspection results and contingency actions as outlined in table 1, though cleaning with capture may be used to manage any rating level.

9.9 The reactive cleaning should:

.1 use a reactive cleaning system that is compatible with the AFC in order to minimize damage of the AFC;

.2 be conducted with the aim of achieving a fouling rating ≤1 for the cleaned area in line with table 1;

.3 strive for effective collection and safe disposal of all biofouling material and waste substances when reactive cleaning is performed in water or at dry dock; and

.4 be performed in an area accepted by the relevant authority for this activity.

9.10 Biofouling management in niche areas should include the following or similar adequate measures:

.1 maintenance of any MGPS installed to ensure they operate effectively to prevent accumulation of biofouling in relevant niche areas;

.2 regular polishing (with capture of debris) of uncoated propellers to maintain operational efficiency and minimize macrofouling accumulation;

.3 appropriate treatment of internal seawater cooling systems and discharge of any treated water in accordance with applicable regulations; and

.4 minimizing the use of any soap, cleaner or detergent used on surfaces and ensuring they are toxic- and phosphate-free, biodegradable and non-hazardous to the marine environment.

9.11 Operators undertaking in-water reactive cleaning should be aware of any regulations or requirements. Regulations regarding the discharge of biofouling and waste substances into the marine environment and the location of sensitive areas (such as Marine Protected Areas) may be relevant.

9.12 Captured biological waste and waste substances should be disposed of and treated in a safe and environmentally sound manner, in accordance with local requirements.

9.13 A report on the cleaning should be prepared by the operators undertaking reactive cleaning. The report should have the content as described in appendix 2 and describe the cleaning outcome.

9.14 A copy of the cleaning report or similar outcome in a digital tool should be available on board and the activity entered in the BFRB.

Procedures for recycling facilities

9.15 Ship recycling facilities should adopt measures (consistent with applicable national and local laws and regulations) to ensure that biofouling organisms or waste substances are not released into the local aquatic environment.

9.16 Ship recycling facilities should develop a plan to minimize release of biofouling organisms and/or waste substances. If relevant, it is recommended that hull and niche areas be cleaned prior to recycling to avoid release of viable biofouling organisms or waste substances.

10 BIOFOULING MANAGEMENT PLAN

10.1 It is recommended that every ship have a ship-specific BFMP under the responsibility of shipowners, ship operators and shipmasters. A BFMP may require information from ship designers, shipbuilders, shipowners, AFC and MGPS manufacturers, recognized organizations and suppliers.

10.2 An effective BFMP should contribute to the aim of maintaining a recommended fouling rating ≤1, as described in chapter 8.

10.3 The ship-specific BFMP should include, but not necessarily be limited to, the following:

.1 identification of the officer, or the position (e.g. chief engineer), responsible for the BFMP, ensuring that the plan is properly implemented;

.2 details of the AFS installed and where it is installed;

.3 details of the recommended operating conditions which are suitable for the selected AFS to avoid deterioration of AFC, including recommended conditions such as temperature, salinity, speed;

.4 details of expected AFC efficacy throughout AFC lifetime including the need for inspection or maintenance, if relevant;

.5 description of monitoring on biofouling risk parameters;

.6 regime for cleaning, if any;

.7 details of hull and niche areas where biofouling may accumulate;

.8 schedule for fixed inspections of areas;

.9 procedures for reactive cleaning actions that should be performed if triggered by inspection results;

.10 contingency action plan based on specific triggers from monitoring of biofouling risk parameters;

.11 regime for repairs, maintenance and renewal of AFS, when relevant, in accordance with the manufacturer's instructions;

.12 process for monitoring and maintenance of MGPS as per the manufacturer's instructions to ensure their effectiveness in minimizing biofouling; and

.13 details of the documentation/reports required to document biofouling activities.

Continuous improvements

10.4 Information should be gathered to plan and facilitate efficient and sustainable biofouling management, allowing the evaluation and comparison of the cost-effectiveness of alternative strategies. The optimal solution is case-specific and should be considered in the light of several aspects.

10.5 Monitoring of the hull and the biofouling risk parameters may determine a risk of biofouling to be higher than predicted in the BFMP and therefore trigger more frequent inspections.

10.6 Inspection results may be shared in agreement with stakeholders involved if they are relevant for improvement purposes. To increase the efficiency of biofouling management and inspections, inspection organizations are encouraged to share inspection results with AFS manufacturers.

10.7 The effectiveness of the management actions in place should be reviewed following inspections and cleaning. The BFMP should be updated if the management actions in place are ineffective or deficient. Efficacy of the following items should be evaluated:

.1 ability to minimize biofouling by use of proactive cleaning methods;
.2 biofouling inspections schedule;
.3 ability to minimize biofouling by MGPS;
.4 AFS performance; and
.5 outcome of reactive biofouling management procedures:

    .1 efficacy of the biofouling removal (i.e. no areas are missed); and
    .2 accessibility for reactive cleaning in niche areas.

10.8 A form of a BFMP is set out in appendix 3 to these Guidelines.

11 BIOFOULING RECORD BOOK

11.1 The overall record-keeping of ship-specific biofouling management activities in a BFRB is the responsibility of shipowners, ship operators and/or shipmasters. The ship-specific BFRB should include information on biofouling management actions with input from AFS manufacturers and suppliers, ship cleaning and maintenance operators, inspection organizations, and ship repair and dry-docking facilities when relevant.

11.2 It is recommended that the BFRB be retained on board for the life of the ship. The book should record details and reports of all inspection and maintenance activities to be undertaken for all hull and niche areas. The BFRB may be maintained physically or electronically, and could be a stand-alone document, or integrated in part or fully into the existing ships' operational and procedural manuals and/or planned maintenance systems.

11.3 The BFRB should assist the shipowner and operator to evaluate the efficacy of the specific AFS and biofouling management measures on the ship.

11.4 All biofouling management activities should be recorded in a BFRB, including the following:

.1 details of repair and maintenance to the AFS including date, location and areas of the ship affected, including the percentage of the ship that was recoated with AFC – this is in addition to recordings in the International Anti-fouling System Certificate;

.2 details of repair and maintenance to the MGPS, including date, location and areas of the ship affected;

.3 the initial date, final date, duration in hours/days and location of in-water inspections, including the inspection report;

.4 the initial date, final date, duration in hours/days and location of cleaning (in water or in dry dock), including a cleaning report;

.5 details of when the ship has been operating outside its normal operating profile including any details of when the ship was laid up or inactive for extended periods of time;

.6 details of relevant performance monitoring parameters used to determine inspection intervals;

.7 a copy of the cleaning report including the information set out in appendix 2, if applicable; and

.8 description of contingency actions taken, including date, time and location.

11.5 A form of a BFRB is set out in appendix 4 to these Guidelines.

12 DOCUMENTATION AND DISSEMINATION OF INFORMATION

12.1 Documentation which is recommended in these Guidelines, such as relevant plans and reports, can be developed, maintained and kept in an electronic format.

12.2 States are encouraged to provide information on the location and the terms of use of proactive cleaning, inspection, reactive cleaning services and facilities to comply with these Guidelines. States requiring inspection or cleaning prior to arrival in their territory should inform the Organization. Member States or other relevant stakeholders are encouraged to communicate the outcome of testing of cleaning systems and applicable test standards to relevant stakeholders via https://bwema.org.

12.3 States are also encouraged to provide technical and research information to the Organization, including any studies on the impact and control of invasive aquatic species in ships' biofouling, information on local biofouling pressure, databases on regional biofouling management options, tools for the choice of AFS, and on the efficacy and practicality of in-water cleaning technologies, risk assessment tools and inspection reporting tools.

12.4 State authorities should provide ships with timely, clear and concise information on biofouling management measures and cleaning requirements that are being applied to shipping and ensure these are widely distributed. Shipowners and operators should endeavour to become familiar with all requirements related to biofouling by requesting such information from their port or shipping agents or competent authorities (i.e. State authorities).

12.5 Organizations or shipping agents representing shipowners and operators should be familiar with the requirements of State authorities with respect to biofouling cleaning and management procedures, including information that will be needed to obtain entry clearance. Verification and detailed information concerning State requirements should be obtained by the ship prior to arrival.

12.6 To monitor the effectiveness of these Guidelines as part of the evaluation process, States are encouraged to provide the Organization with records describing reasons why ships could not apply these Guidelines, e.g. design, construction or operation of a ship, particularly from the viewpoint of ships' safety, or lack of information concerning the Guidelines.

13 TRAINING AND EDUCATION

13.1 Training for ships' masters and crew, in-water cleaning or maintenance facility operators and those surveying or inspecting ships as appropriate should include instructions on the application of biofouling cleaning and management procedures, based upon the information contained in these Guidelines. Instruction should also be provided on the following:

.1 maintenance of appropriate records and logs;

.2 impacts of invasive aquatic species from ships' biofouling;

.3 benefits to the ship of managing biofouling and the threats posed by not applying management procedures;

.4 biofouling management measures and associated safety procedures; and

.5 relevant health and safety issues.

13.2 States and industry organizations should ensure that relevant marine training organizations are aware of these Guidelines and include them in their syllabuses as appropriate.

14 OTHER MEASURES

14.1 To the extent practical, States and port authorities should aim to ensure a smooth flow of ships going in and out of their ports to avoid ships waiting offshore, so that AFS can operate as effectively as possible.

14.2 States may apply other measures to ships within their jurisdiction for the purpose of providing additional protection for their marine environment, or in emergency situations. When managing emergency situations for biofouling, States may find the guidance document for ballast water emergency situations (BWM.2/Circ.17, as may be amended) also relevant to biofouling management.

14.3 States should consider these Guidelines when developing other measures and/or restrictions for managing ships' biofouling.

14.4 Where other measures are being applied, States should notify the Organization of the specific requirements, with supporting documentation, for dissemination to other States and non-governmental agencies where appropriate.

14.5 The application of other measures by States should not place the safety of the ship and crew at risk.

LIST OF APPENDICES

ABBREVIATIONS

AFS	Anti-fouling system
AFC	Anti-fouling coating
BFMP	Biofouling Management Plan
BFRB	Biofouling Record Book
IMO	International Maritime Organization
MGPS	Marine growth prevention system

APPENDIX 1

ASSESSMENT OF BIOFOULING RISK

1 Introduction

The Guidelines recommend taking a proactive approach to biofouling through assessment of biofouling risk profiles for hull and niche areas and by monitoring various risk parameters during operation. An assigned risk profile is dependent on AFS type and protection and should be ship-specific. Definition of risk monitoring parameters and trigger points for actions should also be ship-specific.

Monitoring various risk parameters during operation will lead to a holistic approach to biofouling management in line with a risk-based approach.

2 Identification of risk areas

Typical niche areas and other areas susceptible to biofouling on the hull are indicated in figure 2, but other niche areas may be relevant.

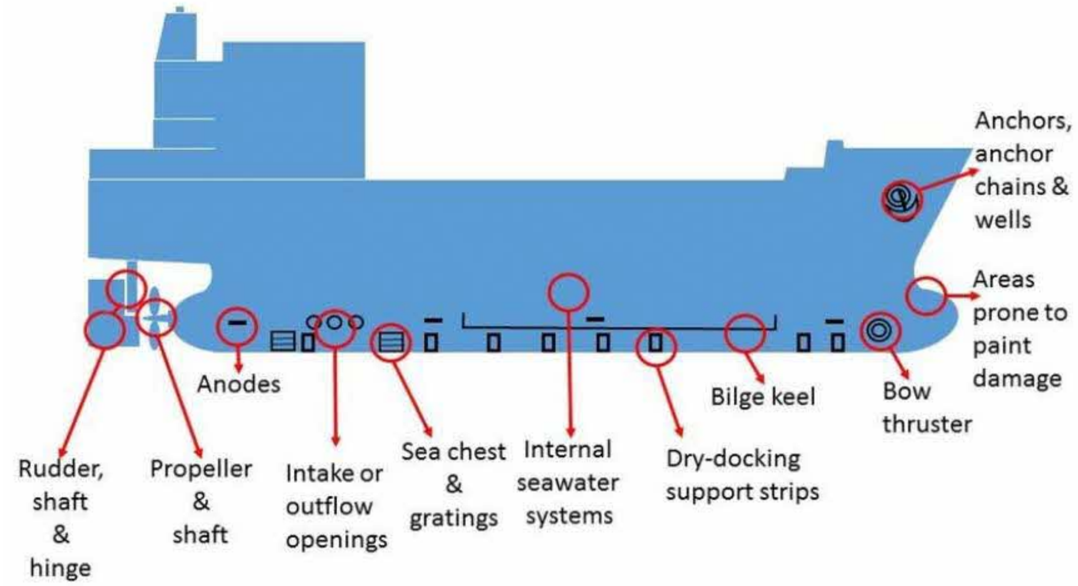


Figure 2: Hull with typical niche areas susceptible to biofouling (source: *Eugene, Conduct of land-based biofouling surveys for domestic vessels)*

3 Relevant parameters to be considered in the risk assessment

A ship-specific assessment should be established based on the possibility for biofouling accumulation. If any ship areas have no AFS installed, there is typically a higher risk of biofouling accumulation. If all ship areas have an AFS installed which is compatible with the ship's operating profile, the ship has an overall lower risk profile.

Based on the risk profile, an inspection regime should be determined and described in the BFMP. If the assessment determines that an area has a high risk for biofouling accumulation, an inspection regime with short intervals between inspections is recommended. Further, the areas with a low risk profile may follow the inspection regime with longer fixed intervals as specified in chapter 8 of the Guidelines.

The risk profile indicates the possibility of accumulating biofouling and increases as a function of biofouling pressure versus biofouling protection over time. The biofouling risk parameters given in table 2 should be monitored as the risk of biofouling accumulation may increase over time. When higher risk is identified, recommended actions in the form of inspection, reactive cleaning and/or maintenance of AFS should be performed as described in the BFMP. Inspection as a contingency action, if completed by an inspection organization in line with chapter 8, can be treated as a starting point to define the interval for the next inspection.

A hull performance monitoring system can be used to assess the changes in the propulsion power and fuel consumption of the ship. Such changes may indicate a degradation of hull or propeller condition due to biofouling.

The results from the hull performance monitoring may indicate biofouling growth on the hull and propeller; however, growth in niche areas will not necessarily be detected with this monitoring method.

Digital tools may be applied for monitoring of biofouling risk parameters. Monitoring of parameters should be as thorough as practicable.

In table 2 below, various biofouling risk parameters are presented with a description of possible risk impact.

Table 2: Biofouling risk parameters

	Examples of biofouling risk parameters	Description and evaluation guidance
1	**Deviation from AFS specifications (e.g. speed, salinity, temperature)**	An AFS/AFC can typically work well within a specific range of operating parameters. The relevant parameters and acceptable ranges for each parameter should be described in the manufacturer's specification and included in the BFMP. Specifications typically include operation routes, ship activity level, speed, water salinity and temperature and cleaning requirements. Specifications may vary depending on the technology of the AFS used. Ship operations should be in accordance with the recommendations from the AFC manufacturer. Deviation from the specification of the ship's AFC may increase the deterioration of the AFC or reduce its efficacy and change the biofouling risk. Incidental deviations should be evaluated for potential biofouling impact. Continuous or regular deviations, or deviations not rectified, would lead to an elevated risk profile and more frequent inspection should be part of the contingency plan.
2	**Deviation from AFS maintenance/service regime**	Regular maintenance and service (e.g. calibration or adjustment of treatment dosages for an MGPS) may be necessary actions for proper protection by the AFS. If the maintenance and service time is exceeded, as specified by the manufacturer, the risk profile is elevated. For maintenance of AFC, see item 7. Missing maintenance and/or service should be evaluated as part of the contingency plan for potential biofouling impact.
3	**Deviation from regular proactive cleaning or necessary reactive cleaning**	When proactive cleaning is part of the ship-specific BFMP, deviation from regular use as specified in the BFMP may lead to increased risk of biofouling growth onto relevant areas. The impact should be evaluated as part of the contingency action plan for potential biofouling impact until the missing proactive cleaning is back in regular operation. Ships should be aware of possible macrofouling accumulation and, if fouling rating is >1, cleaning with capture is the recommended cleaning action. If reactive cleaning is not conducted when inspection has determined cleaning is necessary, it will increase the risk of spreading organisms to new locations. This risk should be evaluated as part of the contingency plan until the next cleaning event is undertaken.
4	**Extended ship idle time**	Biofouling accumulation starts immediately when a ship is idle, but the rate depends on AFS type and biofouling pressure (temperature, distance to coast). To avoid risk of biofouling, the operating profile should only allow short periods in port or at anchorage or at least not exceed the recommendation by the AFS manufacturer. Acceptable idle time should be specified in the ship's BFMP. Idle time is often defined in charter party contracts and typically ranges between 18 to 30 days. If the idle time is longer than specified in the BFMP, the risk profile changes. If the number of consecutive idle days is still within what is specified as acceptable as per AFS supplier's guarantee and/or idling takes place in an area far from shore (>200 nm and >200 m depth), the risk may still be considered low. If the number of consecutive idle days is beyond what is specified as acceptable as per AFS supplier's guarantee, the risk may be considered very high if the ship is subject to biofouling pressure. For these cases, the contingency action plan should include immediate actions before the next voyage.

	Examples of biofouling risk parameters	Description and evaluation guidance
5	**Performance loss as per PMS**	Performance monitoring of fuel consumption may give indication on possible biofouling accumulation on the hull. Performance monitoring is mainly for hull monitoring (not niche areas) and may include the following methods: .1 Sensors and collecting high frequency data. .2 Semi-automatic or manual calculations using data collected by ship's crew (e.g. noon reports). .3 Speed trials and comparing the performance data with previous speed trial reports. Note that PMS is often a lagging indicator and may depend on many factors, therefore additional measures may be necessary before it can be used to determine biofouling accumulation. For some ships, a speed loss between 1% and 3% or increased fuel consumption of 3-9% may indicate light biofouling while a speed loss >3% or fuel consumption increase by >9% may indicate higher biofouling risk (examples taken from ISO 19030-2:2016).
6	**AFS damage**	Failure caused by mechanical damage to the AFS may result in higher risk of biofouling in the areas affected, if not rectified within reasonable time. Failures and damage should be recorded in the BFRB. As part of the contingency action plan, the impact from the damage should be evaluated for potential biofouling accumulation and relevant actions should be implemented until a repair is undertaken.
7	**Downtime/malfunction of MGPS, proactive cleaning or other AFS**	Observed downtime of an MGPS, proactive cleaning or other AFS has a direct impact on risk of biofouling accumulation. The impact on the area impacted will be affected depending on the duration of malfunction. The impact should be evaluated as part of the contingency action plan for potential biofouling impact until the missing MGPS/proactive cleaning/other AFS is back in operation. Reduced operation time of proactive cleaning, i.e. longer intervals between cleaning than specified in the BFMP, is defined as downtime and may increase biofouling accumulation particularly in those areas where it is not applied as specified in the BFMP. The impact on the area affected depends on the duration of malfunction and the trading conditions during that time. The evaluation of impact and potential reactions should be part of the contingency action plan. If proactive cleaning without capture is irregular, ships should be aware of possible macrofouling accumulation and take actions to avoid spread of macrofouling. If fouling growth exceeds fouling rating 1, cleaning with capture is recommended.
8	**Exceeding expected lifetime of AFS**	Once an AFS has exceeded its lifetime, as specified by the manufacturer, the biofouling risk profile is elevated. Inspection and cleaning should be performed more often and 1-2 months interval between inspections is recommended. Additionally, the efficacy of the AFS may be reduced as it approaches the end of its lifetime. If macrofouling has been removed in a previous cleaning event, the strong forces needed for removing the fouling can have compromised the lifetime of the AFC. The performance of the AFS, and any necessary change in maintenance or inspection schedule, as given by the AFS manufacturer, should be part of the contingency action plan specified in the BFMP.

4 Flow chart visualizing biofouling management

An example of a flow chart for visualizing biofouling management risk profile and monitoring of parameters is shown in figure 3.

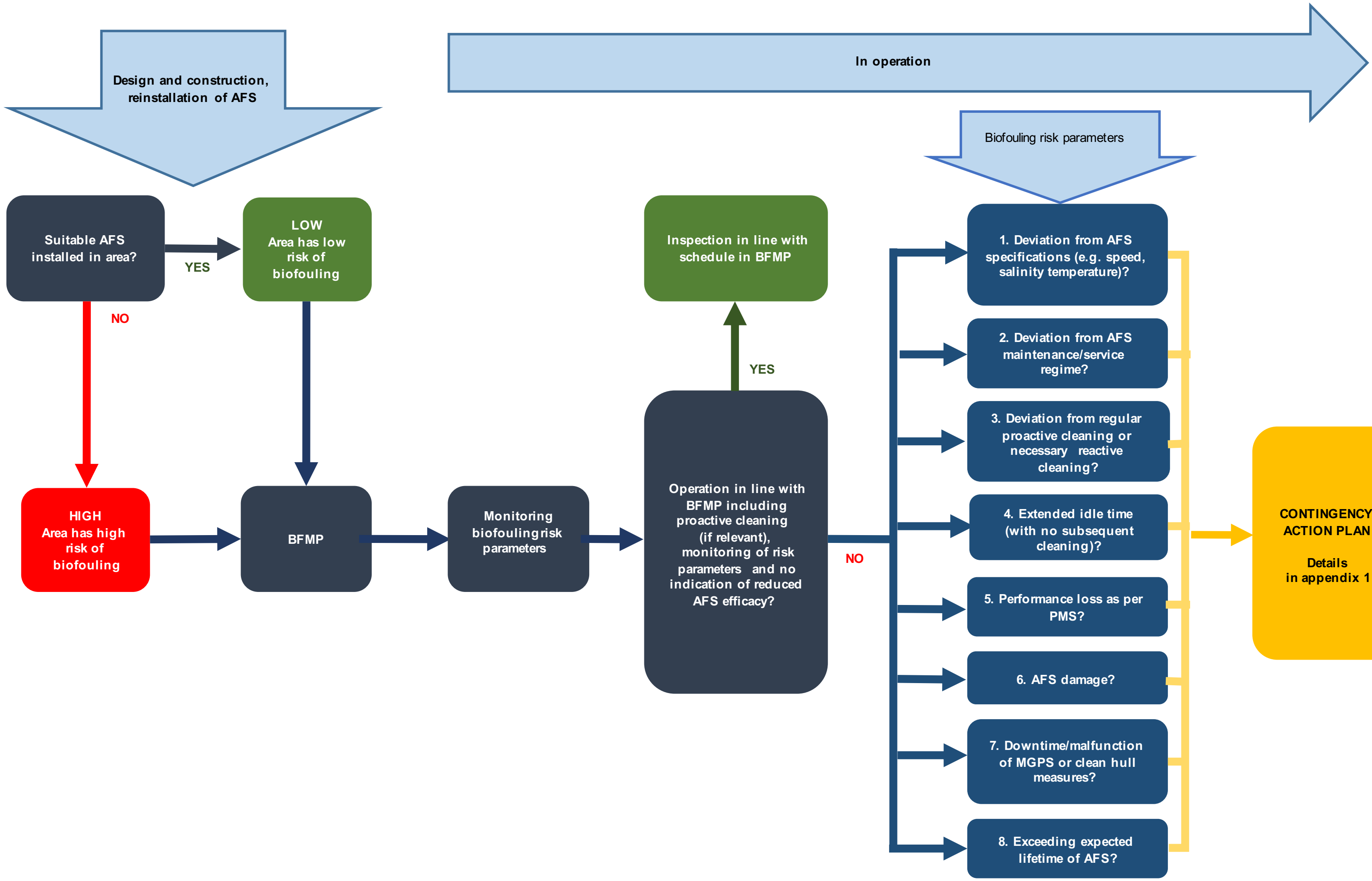


Figure 3: **Flow chart visualizing the biofouling management risk profile and monitoring parameters**

APPENDIX 2 INSPECTION AND CLEANING REPORTS

1 Introduction

The Guidelines recommend that a report should be prepared after an inspection and/or cleaning operation. The report should record the details of the biofouling management actions undertaken on the ship. The inspection report should be prepared by the inspection provider. It may also be relevant to prepare a report after an inspection carried out by ship's crew as part of contingency actions.

The cleaning report should be prepared by either the cleaning operators or the inspection provider as part of a combined cleaning and inspection report.

Digital tools may be applied for the reporting and/or assessment of results. The conclusions from the reports should be recorded in the BFRB including reference to the detailed report/assessment.

2 Entries in the report after a biofouling inspection

The following information should be recorded in the inspection report:

- Ship particulars:
  - Ship name
  - IMO number
- Date and place of inspection
- Name of inspection/cleaning company
- List of all inspected hull and niche areas
- Inspection equipment used (including list of divers/ROV operators participating in the operation)
- Inspection conditions (i.e. duration, estimated visibility underwater)
- Signature of authorized person of the inspection/cleaning company
- Inspection start and end times
- Results:
  - Type of biofouling as per the rating in table 1
  - Quantitative assessments of biofouling cover of area inspected (i.e. estimates of per cent cover) as per table 1
- AFC condition
  - The condition of the AFC should be observed during the inspection and reported. The condition is recommended to be categorized in line with table 4
- MGPS condition
  - The condition of the MGPS should be observed during the inspection and reported. The condition is recommended to be categorized in line with table 5
- Photos/videos
  - Photos and videos submitted or used in a digital assessment tool as evidence of hull fouling

SAMPLE OF INSPECTION REPORT

Name of ship: ....

IMO number: ....

Date: ....

Location/port: ………………………………………………………………

Inspection organization/responsible officer: ………………………………………………

Inspection conditions: ……………………………………………………………………..

Inspection equipment used: …………………………………………..………………

Divers/ROV operators participating: ……………………………………………………….

Quantitative assessment of biofouling cover is summarized in table 3 (in line with the ratings in table 1)

Table 3: Quantitative assessment of biofouling cover

For each transect and niche area surveyed, the mode of the fouling rating (most frequent rating) and the range (lowest and highest rating) should be recorded. An average should not be used. If more than one of the same type of area is assessed, these should be recorded separately and each be given their own fouling rating.

Areas	**Fouling rating** (0-4)			**Macrofouling cover** (%)
	Lowest rating	Highest rating	Most frequent rating	
Hull below the waterline				
Port vertical side				
1 m wide belt				
1 m wide belt of subsection X				
1 m wide belt of subsection X				
Starboard vertical side				
1 m wide belt				
1 m wide belt of subsection X				
1 m wide belt of subsection X				
Flat bottom front				
1 m wide belt				
1 m wide belt of subsection X				
Flat bottom mid				
1 m wide belt				
1 m wide belt of subsection X				
Flat bottom aft				

Areas	**Fouling rating** (0-4)			**Macrofouling cover** (%)
	Lowest rating	Highest rating	Most frequent rating	
Hull below the waterline				
1 m wide belt				
1 m wide belt of subsection X				
Niche areas				
Bow subsection X				
Bow subsection X				
Bow thruster				
Bilge keels				
Sea chest gratings				
Location 1				
Location 2				
Stern				
Propeller and its shaft				
Rudder and rudder shaft				
Discharge pipes				
Rope guards				
Sounders/instruments				
Sacrificial anodes				
Internal seawater systems				
…..				
…..				

An area should be assigned a fouling rating equal to the highest rated 1 m^2 identified along the subdivided areas.

The inspection should be as comprehensive as practicable. The more subdivided areas that are inspected, the greater the certainty that the biofouling for the area is realistic. It is recommended that the identified niche areas should be in line with the BFMP.

The condition of the AFC and MGPS should be observed during the inspection and reported. The condition is recommended to be categorized in line with tables 4 and 5, respectively. If the condition of the AFC could only be thoroughly assessed after reactive cleaning, table 4 should be part of the cleaning report.

Table 4: The condition of the AFC

	AFC condition							
Areas	**Intact and effective in preventing biofouling**	**Failure of adhesion between a coating and a metallic surface**	**Blistering in coating**	**Cracks in the coatings**	**Cold flow resulting in irregular coating thickness**	**Delamination / peeling / detachment between coatings**	**Polishing off coating during the ship's operation (beyond specifications)**	**Grounding / general damage to coating**
Hull below the waterline								
Port vertical side								
subsection X								
Starboard vertical side								
subsection X								
Flat bottom front								
subsection X								
Flat bottom mid								
subsection X								
Flat bottom aft								
subsection X								
Bow								
Bow thruster								
Bilge keels								
Sea chest gratings								
Location X								
Location X								
Stern								
Propeller and its shaft								
Rudder and rudder shaft								
Discharge pipes								
Rope guards								
Sounders/instruments								
Sacrificial anodes								
…								
…								

Table 5: The condition of the MGPS

Areas examples (typical niche areas)	**Condition of MGPS**		
	Intact and effective in preventing biofouling	Calibration/maintenance required	Non-effective to prevent biofouling
Bow			
Bow thruster			
Bilge keels			
Sea chest gratings			
Location 1			
Location 2			
Stern			
Propeller and its shaft			
Rudder and rudder shaft			
Discharge pipes			
Rope guards			
Sounders/instruments			

Comments: ……………………………...…………………………………………………………………………………………………

Reference to supporting photos/videos for fouling inspection and assessment of AFC/MGPS: …………………………………

Signature of inspection organization or competent ship crew: …………………….…………………………...……………………

3 Entries in the report after biofouling management (reactive cleaning)

The following information should be recorded in the cleaning report:

- Ship particulars:
  - Ship name
  - IMO number
- Date and place of inspection
- Name of cleaning company
- All hull and niche areas cleaned/treated specified and documented in the report, including also areas not cleaned/treated
- Cleaning equipment used for hull
- Cleaning equipment used for niche areas
- Inspection equipment used (including list of divers/ROV operators participating in the operation)
- Conditions during cleaning inspection (i.e. duration, estimated visibility underwater)
- Signature of authorized person of the cleaning company
- Cleaning start and end times
- Results:
  - Type of biofouling after reactive cleaning (as per the ratings in table 1)
  - Quantitative assessments of biofouling cover after cleaning (as per table 1)
- AFC condition (unless assessed during inspection)
  - The condition of the AFC should be observed during the cleaning activity and reported using the conditions as categorized in table 4
- Photos/videos
  - Photos and videos submitted or used in a digital assessment tool as evidence of hull cleaning
- Capture
  - Description of capture method
  - Supporting evidence that dislodged material (by mass) has been captured as described in chapter 9

  (Reference to equipment specification and validation test report may be sufficient)
- Treatment* and/or disposal of waste material captured during cleaning should be described in the report. Evidence of delivery to waste management facility or facilities should be attached to the cleaning report. The biofouling waste should be disposed of and/or treated in a safe and environmentally sound manner, in accordance with local regulations, and ensure that the main objective of the Guidelines, to minimize the spread of invasive aquatic species, is safeguarded.

* Treatment is any process designed to remove or deactivate any biofouling material and particulate or dissolved waste substances captured or produced during any stages of cleaning.

SAMPLE OF A BIOFOULING CLEANING REPORT

Name of ship: ....

IMO number: ....

Date: ....

Location/port: …………………………………………………………………

Cleaning company: ………………………………………………………...

In-water conditions: ……………………………………………………..

Technologies used for reactive cleaning of hull and niche areas:
………
……………………………………………………………………………………………

Table 6: Summary of the operations

Areas examples	**New fouling rating after performed cleaning**		
	Lowest rating	Highest rating	Most frequent rating
Hull below the waterline			
Port vertical side			
subsection X			
subsection X			
subsection X			
Starboard vertical side			
subsection X			
subsection X			
subsection X			
Flat bottom front			
subsection X			
subsection X			
Flat bottom mid			
subsection X			
subsection X			
Flat bottom aft			
subsection X			
subsection X			
Niche areas			
Bow			
Bow thruster			
Bilge keels			
Sea chest gratings			
Location 1			
Location 2			
Stern			
Propeller and its shaft			
Rudder and rudder shaft			
Discharge pipes			
Rope guards			
Sounders/instruments			
Sacrificial anodes			
Internal seawater systems			
….			
….			

Description of activity and reference to supporting evidence (photos/videos):

Description of capture and reference to supporting evidence:

Description of treatment and/or biofouling waste disposal with supporting evidence (e.g. receipts):

Description of any problems encountered during cleaning including details of any damage to the AFS that may have occurred:

Comments:

Signature of cleaning organization: ……………………..…………………………...……

APPENDIX 3

EXAMPLE FORM OF BIOFOULING MANAGEMENT PLAN

INTRODUCTION

Biofouling on ships can be a significant vector for the transfer of invasive aquatic species. Biofouling management practices may also improve a ship's hydrodynamic performance and can be effective at enhancing energy efficiency, hence reducing air emissions from ships as well as fuel costs.

This Biofouling Management Plan (BFMP) should assist the ship crew in conducting biofouling management and is specific to this ship.

SHIP PARTICULARS

Name of ship	
IMO number	
Date of construction	
Ship type	
Gross tonnage	
Beam or ship's breadth	
Length overall	
Maximum and minimum draughts	

RECORD OF REVISION OF THE BFMP

This plan describes the biofouling management for the period between two scheduled dry-dockings which include application, reapplication, installation or renewal of the AFS. The plan should be re-evaluated and, if necessary, updated after a dry-docking and/or if any changes are made that have an impact on the anticipated biofouling.

	Date:
Most recent scheduled dry-docking	
The next scheduled dry-docking	

The following revisions have been made:

Date/timeline	**Developed by**	**Implemented by/ responsible person**	**Updated parts**

INDEX

<A table of contents should be included.>

PURPOSE

The purpose of the BFMP is to outline measures for the control and management of the ship's biofouling to minimize the spread of invasive aquatic species.

DESCRIPTION OF OPERATING PROFILE

The ship's operating profile is described below and is the basis for the selection of the ship's anti-fouling systems (AFS) and operational practices.

Typical operating speed	
Typical trading areas	<EXAMPLE> <Domestic, great coasting, North Sea and Baltic trade, European trade, short international voyage, international voyage, overseas voyage or unrestricted voyages>
Typical operating areas, including climate zones in which the ship will operate	<EXAMPLE> <Temperate, semi-temperate, tropical and/or arctic>
Typical salinities of operating areas in which the ship will operate	<EXAMPLE> <Fresh water, brackish water and/or marine water>
AFS installed are suitable for typical operating profile (Y/N)	

DESCRIPTION OF HULL AND NICHE AREAS WHERE BIOFOULING MAY ACCUMULATE

The hull and niche areas where biofouling may accumulate are described below.

Areas on hull	<EXAMPLE> <flat-bottom- front flat-bottom- mid flat-bottom- aft bow dome boot top vertical sides – port side vertical sides – starboard side vertical side – aft transom or others>
Niche areas (including quantity where relevant)	<EXAMPLE> <Sea chests bow dome bow thruster tunnel tunnel grates cathodic protection anodes bilge keels anchor chain chain locker stabilizer fins rudder dock block positions A-brackets/stern tube cathodic protection anodes and systems draft internal pipework ballast uptake system inlet gratings sea inlet pipes stern thruster thruster body velocity probes propeller propeller shaft stern tube seal echo sounders rope guards box coolers moon pools free-flood spaces/voids engine cooling system fire-fighting system auxiliary service system or others>

LOCATION OF AREAS WHERE BIOFOULING MAY ACCUMULATE ON THE SHIP

<A diagram of both side and bottom of the ship identifying the location of each area that may accumulate biofouling should be included.>

DESCRIPTION OF APPLIED ANTI-FOULING SYSTEM

The selected AFS that are applied, reapplied, installed or renewed on the ship are described below. When more than one type of anti-fouling coating (AFC) or marine growth prevention system (MGPS) are applied, reapplied, installed or renewed, each AFS should be described individually and in accordance with each manufacturer's instructions.

Prior to a scheduled dry-docking, an evaluation of qualitative observations regarding the ship's biofouling should be made with the purpose of a potential improvement of the AFS selection. Previous reports on the performance of the ship's AFS should be part of the evaluation.

Manufacturer(s) and type(s) of AFC	<EXAMPLE> <Hard coating, self-polishing or fouling release, etc.>
Biocides in AFC	<EXAMPLE> <Copper oxide, zineb, etc.>
Dry film thickness	
Expected lifetime and, if any, expected reduction of efficiency of AFC	
Operating profiles which are suitable for the AFC including temperature, salinity, speed, periods of inactivity	
Recommended regime for repairs, maintenance and/or renewal to receive the AFC optimal performance	<EXAMPLE> <Regime for repairs> <Regime for maintenance> <Regime for renewal> <N/A>
Cleaning methods recommended for AFC	
Cleaning methods not appropriate for AFC, if any	
IAFS Certificate	

Manufacturer(s), models and type(s) of MGPS	<EXAMPLE> <Anode, ultrasound, electrode, electrolysis, ultraviolet radiation or other>

Type(s) of harmful discharge from MGPS	<EXAMPLE> <Chlorine, noise or other>
Operating conditions/frequency of use	<EXAMPLE> <dosing frequency temperature, salinity, speed>
Required maintenance and frequency	
Service life of MGPS	

Manufacturer(s), models and type(s) of other AFS	
Type(s) of harmful discharge from other AFS	
Operating conditions/frequency	
Required maintenance and frequency	
Service life and expiry date of AFS	

INSTALLATION OF ANTI-FOULING SYSTEM

The areas on the ship which are protected with the selected AFS are described below. If necessary, the individual AFS could be identified as A and B, respectively. Areas with no protection are also described.

AFS applied	Areas on ship where AFS is applied	Date of application	Recommended cleaning technique
<EXAMPLE> <AFC (A)>	<EXAMPLE> <flat-bottom- front, flat-bottom- mid, flat-bottom- aft, bow dome, boot top, vertical sides – port side, vertical sides – starboard side, vertical side – aft, transom, or others>		<EXAMPLE> <soft brush, blades, metal brushes or water jet>
<EXAMPLE> <MGPS (A)>	<EXAMPLE> <Sea chests, internal pipework, ballast uptake system, inlet gratings>		<EXAMPLE> <Steaming>
<EXAMPLE> <Other AFS>			

<EXAMPLE> <No AFS>			

INSPECTION SCHEDULE OF HULL AND NICHE AREAS

An inspection will be carried out by organizations or personnel competent to undertake inspections in line with the fixed intervals described below:

Inspection areas	Initial inspection	Subsequent inspections
<EXAMPLE> <Areas installed with AFS and operating within the profile>	<EXAMPLE> <Inspection within 12 months> <When utilizing a performance monitoring system that indicates adequate performance of the AFS, an inspection will be conducted within 18 months. If the monitoring indicates that the AFS is not performing effectively, an inspection should be carried out as soon as possible.>	<EXAMPLE> <If rating 0-1 in previous inspection, then inspection every 12-18 months If rating 2, 3 or 4 in previous inspection, then more frequent inspections>
<EXAMPLE> <Areas with no AFS and no other measures>	<EXAMPLE> <Inspection within 12 months>	<EXAMPLE> <Inspection more frequent>

CLEANING

Reactive cleaning should be performed as a result of any inspection with a fouling rating ≥2. It should be performed in line with procedures of the ship cleaning operator or the dry-dock facilities used, and the cleaning practices should be conducted in accordance with the jurisdiction's policies or regulations of the relevant authority. Preferred cleaning methods and procedures that can be used are described below. The methods and cleaning operator used in each cleaning occasion should be recorded in the BFRB.

Reactive cleaning method(s)	**Areas where cleaning method will be applied**	**Operating condition when cleaning method will be applied**	**Cleaning schedule**
<EXAMPLE> <Water jet and suction with capture in line with <name of the standard>>	<EXAMPLE> <flat-bottom-front, flat-bottom-mid, flat-bottom-aft, bow dome, boot top, vertical sides – port side, vertical sides – starboard side, vertical side – aft, transom, or others>	<EXAMPLE> <moored in harbour, drifting in open sea, on anchorage in coastal waters, on voyage>	<EXAMPLE> <When recommended based on monitoring of biofouling parameters and/or in case unforeseen biofouling levels are detected on hull or in niche areas>
<EXAMPLE> <Steaming with capture performed in line with <name of the standard>>	<EXAMPLE> <Sea chests, internal pipework, ballast uptake system, inlet gratings>	<EXAMPLE> <in dry dock>	<EXAMPLE> <When recommended based on monitoring of biofouling parameters and/or in case unforeseen biofouling levels are detected in niche areas>
Possible harmful discharge from cleaning with reactive cleaning method			
Manufacturer and model of ship-specific reactive cleaning device, if applicable			
Reactive cleaning method suitable for AFC			

Reactive cleaning method(s)	Areas where cleaning method will be applied	Operating condition when cleaning method will be applied	Cleaning schedule
Required maintenance and frequency, as applicable			
Reactive cleaning suitable for typical operating profile, i.e. is the ship expected to stay enough time in locations where reactive cleaning can be carried out			
Reactive cleaning device tested in line with <name of the standard> (Y/N), if applicable			

Proactive cleaning should take into account recommendations from the AFS manufacturer listed in this BFMP. Description of proactive cleaning activities which are planned on a regular basis, if any, are listed below.

Proactive cleaning method(s)	Areas where cleaning method will be applied	Operating condition when cleaning method will be applied	Cleaning schedule
<EXAMPLE> <ROV with water jet, ROV with soft brush,	<EXAMPLE> <flat-bottom-front, flat-bottom-mid, flat-bottom-	<EXAMPLE> <moored in harbour, drifting in open	<EXAMPLE> <every <XX> days when operating in temperate waters;

<table>
<tr><th>Proactive cleaning method(s)</th><th>Areas where cleaning method will be applied</th><th>Operating condition when cleaning method will be applied</th><th>Cleaning schedule</th></tr>
<tr><td>manual device with soft brush or other></td><td>aft, bow dome, boot top, vertical sides – port side, vertical sides – starboard side, vertical side – aft, transom, or others></td><td>sea, on anchorage in coastal waters, on voyage></td><td>every <XX> days when operating in tropical/semi-tropical waters;
when recommended based on monitoring of biofouling parameters; and
in case of unforeseen biofouling levels defined as rating 1 are detected on hull or in niche areas></td></tr>
<tr><td colspan="2">Possible harmful discharge from cleaning with proactive cleaning method</td><td colspan="2"><EXAMPLE>
<AFC biocides, biofouling, particles or other></td></tr>
<tr><td colspan="2">Manufacturer and model of ship-specific proactive cleaning device, if applicable</td><td colspan="2"></td></tr>
<tr><td colspan="2">Proactive cleaning method suitable for AFC</td><td colspan="2"></td></tr>
<tr><td colspan="2">Required maintenance and frequency, as applicable</td><td colspan="2"></td></tr>
<tr><td colspan="2">Proactive cleaning suitable for typical operating profile, i.e. is the ship expected to stay enough time in locations where proactive cleaning can be carried out</td><td colspan="2"></td></tr>
<tr><td colspan="2">Description of how to avoid biofouling cleaning and discharge of macrofouling, if possible</td><td colspan="2"></td></tr>
<tr><td colspan="2">Proactive cleaning device tested in line with <name of the standard> (Y/N), if applicable</td><td colspan="2"></td></tr>
</table>

MONITORING OF BIOFOULING RISK PARAMETERS AND CONTINGENCY ACTIONS

Relevant digital tools applied for monitoring of biofouling risk parameters and/or digitalized real-data input are <describe the tools and data used for this ship>.

The biofouling risk parameters given below should be monitored when the ship is in operation. When a parameter goes beyond the deviation limit, the risk of biofouling is increased, and the recommended contingency actions should be used as described.

Biofouling risk parameters to monitor	**Evaluation of a deviation including deviation limit of the risk parameter**	**Contingency actions**	**Long-term actions**
<EXAMPLE> <Deviation from speed specifications acceptable for the AFS>	<EXAMPLE> <Incidental deviations should be evaluated for potential biofouling impact. Continuous or regular deviations, or deviations not rectified, should lead to contingency actions>.	<EXAMPLE> <Shorter inspection interval with inspection every 4 months. When recommended by the AFS manufacturer, more frequent proactive cleaning activities could be implemented between inspections.>	<EXAMPLE> <Evaluate the need for a potential improvement of the AFS selection prior to the next dry-docking.>
<EXAMPLE> <Deviation from salinity specifications acceptable for the AFS>	<EXAMPLE> <Incidental deviations should be evaluated for potential biofouling impact. Continuous or regular deviations, or deviations not rectified, should lead to contingency actions.>	<EXAMPLE> <Shorter inspection interval with inspection every 4 months. When recommended by the AFS manufacturer, more frequent proactive cleaning activities could be implemented between inspections.>	<EXAMPLE> <Evaluate the need for a potential improvement of the AFS selection prior to the next dry-docking.>
<EXAMPLE> <Deviation from temperature range specifications acceptable for the AFS>	<EXAMPLE> <Incidental deviations should be evaluated for potential biofouling impact. Continuous or regular deviations, or deviations not rectified, should lead to contingency actions.>	<EXAMPLE> <Shorter inspection interval with inspection every 4 months. When recommended by the AFS manufacturer, more frequent proactive cleaning activities could be implemented between inspections.>	<EXAMPLE> <Evaluate the need for a potential improvement of the AFS selection prior to the next dry-docking.>

Biofouling risk parameters to monitor	**Evaluation of a deviation including deviation limit of the risk parameter**	**Contingency actions**	**Long-term actions**
<EXAMPLE> <Deviation from the maintenance/service regime of the AFC>	<EXAMPLE> <If the maintenance and service time, specified by the manufacturer, is exceeded, the risk of biofouling is elevated, and contingency actions should be implemented>.	<EXAMPLE> <An inspection should be carried out for the relevant area. Maintenance or repair should be performed at earliest possible opportunity.>	<EXAMPLE> <Regular maintenance and repair (e.g.) may be necessary actions for proper protection by the AFC. Evaluate the need to update maintenance programme.>
<EXAMPLE> <AFC damage>	<EXAMPLE> <Failure caused by mechanical damage to the AFC may result in higher risk of biofouling in the areas affected, if not rectified within reasonable time. The damage should be evaluated for potential biofouling accumulation.>	<EXAMPLE> <An inspection should be carried out for the relevant area. Repair should be performed at earliest opportunity. More frequent inspections of damaged area should be implemented until a repair is undertaken.>	
<EXAMPLE> <Deviation from the maintenance/service regime of the MGPS>	<EXAMPLE> <If the maintenance and service time, specified by the manufacturer, is exceeded, the risk of biofouling is elevated, and contingency actions should be implemented.>	<EXAMPLE> <An inspection should be carried out for the relevant niche area where MGPS is installed. Maintenance, calibration, or adjustment of treatment dosages for a MGPS should be performed at earliest possible opportunity.>	<EXAMPLE> <Regular maintenance and service (e.g.) may be necessary actions for proper protection by the AFS. Evaluate the need to update maintenance programme>

Biofouling risk parameters to monitor	Evaluation of a deviation including deviation limit of the risk parameter	Contingency actions	Long-term actions
<EXAMPLE> <Downtime/malfunction of MGPS>	<EXAMPLE> <Observed downtime of an MGPS could have a direct impact on risk of biofouling accumulation. The impact will depend on the duration of malfunction and operating areas (coastal area).>	<EXAMPLE> <More frequent inspections of relevant area should be implemented until the MGPS is back in operation.>	
<EXAMPLE> <Downtime/malfunction of other AFS>	<EXAMPLE> <Reduced operation time of other AFS may increase biofouling accumulation in areas where it is usually applied.>	<EXAMPLE> <More frequent inspections of relevant area should be implemented until the AFS is back in operation.>	
<EXAMPLE> <Exceeding expected lifetime of AFS>	<EXAMPLE> <Once an AFS has exceeded its lifetime, as specified by the manufacturer, the biofouling risk is increased.>	<EXAMPLE> <More frequent inspections should be implemented until the AFS is back in operation.>	<EXAMPLE> <The performance of the AFS, and any necessary change in maintenance or inspection schedule, based on experience, should be included in the next update of this BWMP.>
<EXAMPLE> <Deviation from regular proactive cleaning>	<EXAMPLE> <When proactive cleaning is implemented as part of the AFS, deviation from regular use could lead to increased risk of biofouling growth onto relevant submerged areas.>	<EXAMPLE> <An inspection should be carried out. If there is macrofouling (fouling rating ≥2) in the relevant area, reactive cleaning with capture should be performed before	<EXAMPLE> <Regular maintenance and repair (e.g.) may be necessary actions for proper protection by the proactive cleaning.

Biofouling risk parameters to monitor	**Evaluation of a deviation including deviation limit of the risk parameter**	**Contingency actions**	**Long-term actions**
		proactive cleaning is used again. Maintenance or repair should be performed at earliest possible opportunity. More frequent inspections should be implemented until the missing proactive cleaning is in regular use.>	Evaluate the need to update maintenance programme.>
<EXAMPLE> <Deviation from necessary reactive cleaning>	<EXAMPLE> <If reactive cleaning is not conducted as scheduled or after an inspection has determined that reactive cleaning is necessary, it will increase the risk of spreading organisms to new locations.>	<EXAMPLE> <Prior to departure reactive cleaning should be performed, to avoid risk of spreading invasive aquatic species. If no reactive cleaning is performed prior to departure, a reactive cleaning activity should be scheduled at earliest possible opportunity. If no reactive cleaning is performed, an acceptance could be required to arrive in the next port. Contact next port for further advice.>	<EXAMPLE> <More frequent reactive cleaning may be necessary actions for proper biofouling management. Evaluate the need to update the cleaning schedule.>
<EXAMPLE> <Extended ship idle time (berthed, anchored, moored)>	<EXAMPLE> <If the idle time is longer than estimated in the ship's operating profile, it could lead to	<EXAMPLE> <If the idle time is within the guarantee of the AFS supplier, a short voyage with speed as specified for the AFS could be	EXAMPLE> <Evaluate the need for a potential improvement of the AFS selection prior

Biofouling risk parameters to monitor	**Evaluation of a deviation including deviation limit of the risk parameter**	**Contingency actions**	**Long-term actions**
	an elevated risk of biofouling. If the idle time is beyond the guarantee of the AFS supplier, the risk of biofouling accumulation increases. The risk also depends on biofouling pressure, e.g. temperature and distance to the coastline. If the ship is idle in an area far from shore (>200 nm and >200 m depth) and far from other installations, the risk may still be considered low.>	conducted, sea chests could be blanked off or, when recommended by the AFS manufacturer, more frequent proactive cleaning activities could be implemented. If the idle time is beyond the guarantee of the AFS supplier, an inspection should be carried out.>	to the next dry-docking.>
<EXAMPLE> <Performance loss as per Performance Monitoring System>	<EXAMPLE> <Performance monitoring may detect biofouling growth on the hull, but not necessarily in niche areas. Performance monitoring of fuel consumption may give indication on possible biofouling accumulation on the hull and may include the following methods: .1 Sensors and collecting high-frequency data. .2 Semi-automatic or manual	<EXAMPLE> <When the data show a trend in performance loss over time, the time since last cleaning activity in combination with operating profile should be evaluated to determine if an inspection should be carried out.>	<EXAMPLE> <Experience from fuel consumption and cleaning activity over time may lead to optimization and changes to the cleaning schedule.>

Biofouling risk parameters to monitor	**Evaluation of a deviation including deviation limit of the risk parameter**	**Contingency actions**	**Long-term actions**
	calculations using data collected from ship's crew (e.g. noon reports). .3 Speed trials and comparing the performance data with previous speed trial reports. <Percentage of the speed loss and percentage of increased fuel consumption, that may indicate light biofouling on the ship>.>		
<EXAMPLE> <Downtime/malfunction of proactive cleaning >	<EXAMPLE> <When proactive cleaning is implemented as part of the AFS, long periods of downtime could lead to increased risk of biofouling growth.>	<EXAMPLE> <More frequent inspections of relevant areas should be implemented until the proactive cleaning is back in operation. Maintenance or repair should be performed at earliest possible opportunity. If macrofouling accumulation is found (fouling rating ≥2), reactive cleaning with capture should be conducted before the proactive cleaning is put into service again.>	<EXAMPLE> <Regular maintenance and repair (e.g.) may be necessary actions for proper protection by the proactive cleaning. Evaluate the need to update maintenance programme.>

CAPTURE AND DISPOSAL OF WASTE

In-water reactive cleaning companies should arrange for capture of debris during cleaning. The biofouling waste should be disposed of and/or treated in a safe and environmentally sound manner, in accordance with local regulations, to ensure that the main objective of the Guidelines, to minimize the transfer of invasive aquatic species, is safeguarded.

Documenting evidence of collection/delivery of the wastes (a receipt) will be appended to the BFRB.

SAFETY PROCEDURES FOR THE SHIP AND THE CREW

<Details of specific operational or safety restrictions associated with the AFC or MGPS systems that affect the ship and/or the crew.

Details of specific safety procedures to be followed during ship inspections and cleaning operations.>

CREW TRAINING AND FAMILIARIZATION

<Information on the provision of crew training and familiarization on biofouling management.

Detailed description of how inspections are to be carried out by ship crew as part of contingency actions.>

APPENDIX 4

EXAMPLE FORM OF BIOFOULING RECORD BOOK

PART I – Biofouling management activities

Name of ship: ....

IMO number, distinctive numbers or letters:..

Gross tonnage: ....

Period from:...................... to: ....

Note:

Biofouling Record Book Part I should be provided to every ship with a Biofouling Management Plan (BFMP), to record relevant biofouling activities such as inspections, maintenance and cleaning activities. Biofouling Record Book Part II should also be provided to record when the ship has a higher risk of biofouling accumulation and related contingency actions.

1 Introduction

The following pages of this section show a comprehensive list of items of biofouling management activities which are, when appropriate, to be recorded in Biofouling Record Book Part I. Management of biofouling should be in line with an approved Biofouling Management Plan (BFMP) and take into account guidelines developed by the Organization. The items have been grouped into operational sections, each of which is denoted by a letter code.

When making entries in Biofouling Record Book Part I, the date, operational code and item number should be inserted in the appropriate columns and the required particulars should be recorded chronologically in the blank spaces. Each completed operation should be signed for and dated by the officer or officers in charge. The master of the ship should sign each completed page.

The use of an electronic record book to record activities is an alternative method to a hard copy record book. Electronic recording and reporting should be encouraged as it may have many benefits and may allow ships to utilize their technology to reduce administrative burdens and contribute to onboard environmental initiatives, e.g. reduction of paper use. In case electronic recording is to be used, resolution MEPC.312(74) may be used for guidance.

Biofouling Record Book Part I contains many references to observations regarding fouling rating. These observations may be included in separate reports including observations of subsections and corresponding photos/video. The entries in Biofouling Record Book Part I may be a summary only including a conclusion on whether the activity is in line with the BFMP. Biofouling Record Book Part I should be kept on board the ship in a place where it is readily available for inspection at all reasonable times and for the life of the ship. Any inspection of Biofouling Record Book Part I should be performed as expeditiously as possible without causing the ship to be unduly delayed.

LIST OF ITEMS TO BE RECORDED

(A) Proactive cleaning

1 Date and location of ship when proactive cleaning occurred.

2 General observations with regard to biofouling prior to cleaning, if any (i.e. extent of microfouling and macrofouling in line with the defined ratings).

3 Records of permits required to undertake in-water proactive cleaning, if applicable.

4 Details of hull and niche areas cleaned.

5 General observations with regard to biofouling after the cleaning, if any (i.e. extent of microfouling and macrofouling in line with the defined ratings).

6 Reference to any supporting evidence/reports of the cleaning (e.g. report from supplier, photographs/videos and/or receipts), if any.

7 Method, manufacturer and model of proactive cleaning method used, if not given in BFMP.

8 Reference to test standard for which the method has been tested, if not given in BFMP.

9 Name, position and signature of the person in charge of the activity.

(B) Inspection

1 Date and location of inspection.

2 Methods used for inspection (including inspection tools/devices).

3 Areas inspected of the ship.

4 Observations with regard to biofouling (extent of microfouling and macrofouling in line with the defined fouling rates).

5 Observations with regard to anti-fouling system (AFS) condition.

6 Reference to any supporting evidence/reports of the inspection.

7 Name, position and signature of the person in charge of the activity.

(C) Reactive cleaning

1 Date and location of ship when cleaning occurred.

2 Records of permits required to undertake in-water cleaning, if applicable.

3 Description of hull and niche areas cleaned.

4 Methods of reactive cleaning used.

5 Estimation of overall biofouling after cleaning in line with the defined fouling rates.

6 Reference to any supporting evidence/reports of the activity.

7 Receipt or other documenting evidence of collection/delivery of the wastes.

8 Name, position and signature of the person in charge of the activity.

9 Manufacturer and model of cleaning and capture device as well as cleaning company executing the cleaning.

10 Reference to test standard for which the method has been tested, if relevant.

(D) Additional operational procedures and general remarks

Name of ship ....

IMO number, distinctive numbers or letters ....

BIOFOULING MANAGEMENT ACTIVITIES

Date	Code (letter)	Item (number)	Record of activity / signature of officer in charge

Signature of master ....

PART II – Monitoring of biofouling risk parameters

Name of ship: ....

IMO number, distinctive numbers or letters:...

Gross tonnage: ....

Period from:.................. to: ....

Note:

Biofouling Record Book Part II should be provided to every ship with a Biofouling Management Plan, to record when the ship is at higher risk of biofouling accumulation given by monitoring of biofouling risk parameters. Relevant contingency actions should also be recorded.

1 Introduction

The following pages of this section show a comprehensive list of risk parameters to be monitored and recorded in Biofouling Record Book Part II whenever the risk is increased according to the BFMP. The items have been grouped into sections, each of which is denoted by a letter code.

When making entries in Biofouling Record Book Part II, the date, code and item number should be inserted in the appropriate columns and the required particulars should be recorded chronologically in the blank spaces. Each completed operation should be signed for and dated by the officer or officers in charge. The master of the ship should sign each completed page.

The use of an electronic record book to record when the ship is subject to higher risk of biofouling accumulation is an alternative method to a hard copy record book. Electronic recording and reporting should be encouraged as it may have many benefits and may allow ships to utilize technology to monitor the risk parameters as defined in the BFMP. This may reduce administrative burdens and contribute to better surveillance of potential risk. In case electronic recording is to be used whenever the ship has higher risk, resolution MEPC.312(74) may be used for guidance.

Biofouling Record Book Part II may contain many references to contingency actions. When actions include inspection, maintenance and/or cleaning, these may be recorded in Biofouling Record Book Part I.

Biofouling Record Book Part II should be kept on board the ship in a place where it is readily available for inspection at all reasonable times and for the life of the ship.

Any inspection of Biofouling Record Book Part II should be performed as expeditiously as possible without causing the ship to be unduly delayed.

LIST OF ITEMS TO BE RECORDED

(A) When the ship operates outside the expected operating profile specified in the BFMP (e.g. speed, temperature or salinity)

1 Duration and dates when ship is not operating in line with its BFMP.

2 Reason for departure from normal operation.

3 Contingency actions taken to minimize biofouling accumulation (e.g. more frequent inspections) taken in the period when the ship is operating outside the expected operating profile.

4 Time and location (port name or latitude/longitude) when the ship operates again as specified in the BFMP.

(B) Maintenance/service or damage to AFC

1 Date/period and description of any observed reduction of the efficacy, damage or deviation from maintenance/service to anti-fouling coating (AFC) during its lifetime.

2 Date/period and description of any operation beyond expected lifetime.

3 Contingency actions taken to minimize biofouling accumulation (e.g. more frequent inspections).

4 Date/period and location where any AFC maintenance or repair was performed (e.g. in dry dock).

5 Description of any AFC, including patch repairs, that was applied during maintenance. Detail the type of AFC, the area and locations it was applied to (including the location of dry-dock support blocks if relevant), an estimated percentage cover of reapplication of the AFC, the coating thickness achieved and any surface preparation work undertaken (e.g. complete removal of underlying AFC or application of new AFC over the top of existing AFC).

6 Reference to any supporting data for AFC maintenance (e.g. AFC technical file).

7 Name, position and signature of the person in charge of the activity.

(C) Maintenance/service or downtime/malfunction of MGPS

1 Date/period and description of any observed reduction of the efficacy, downtime, malfunction or deviation from maintenance/service of marine growth prevention system (MGPS) during its lifetime.

2 Date/period and description of operation beyond the expected lifetime.

3 Date and location of any instances when the system was not operating in line with the BFMP.

4 Records of maintenance (including regularly monitoring the electrical and mechanical functions of the systems, calibration, or adjustment of treatment dosages).

5 Contingency actions taken to minimize biofouling accumulation (e.g. more frequent inspections).

6 Name, position and signature of the person in charge of the activity.

(D) Maintenance/service or downtime/malfunction of other AFS

1 Date/period and description of any observed reduction of the efficacy, downtime, malfunction or deviation from maintenance/service of other AFS during its lifetime.

2 Date/period and description of operation beyond expected lifetime.

3 Date and location of any instances when the system was not operating in line with the Biofouling Management Plan.

4 Records of maintenance.

5 Contingency actions taken to minimize biofouling accumulation (e.g. more frequent inspections).

(E) Deviation from regular use of expected proactive cleaning as specified in the BFMP

1 Date and location where ship did not conduct proactive cleaning as specified.

2 Contingency actions taken to minimize biofouling accumulation (e.g. inspections of biofouling and/or reactive cleaning before return to proactive cleaning activity).

3 Records of maintenance, if any.

4 Date when ship returned to normal activities with proactive cleaning.

(F) Deviation from necessary reactive cleaning as specified in the BFMP

1 Date and location where ship was inspected and reactive cleaning found necessary.

2 Contingency actions taken until reactive cleaning, including scheduling of reactive cleaning activity.

3 Date when ship completed the reactive cleaning and reference to relevant recording in Part I.

(G) When the ship is idle (berthed, anchored, moored) for a longer period

1 Date and location where ship was laid up, including general description of biofouling pressure, e.g. temperature and distance to the coastline.

2 Contingency actions taken to minimize biofouling accumulation (e.g. inspections, sea chests blanked off or short voyages taken prior to and following the period laid up).

3 Precautions taken to minimize biofouling accumulation (e.g. short voyage).

4 Date when ship returned to normal operations.

(H) When the ship has performance loss as per Performance Monitoring System for a period beyond the expected period as specified in the BFMP

1 Date and location where ship started with performance loss beyond the expectations.

2 Inspections or biofouling management actions taken prior to and following the period with performance loss.

3 Contingency actions taken to minimize biofouling accumulation.

4 Date when ship returned to normal performance.

(I) Other deviations

Name of ship ....

IMO number, distinctive number or letters ....

BIOFOULING MANAGEMENT ACTIVITIES

Date	Code (letter)	Item (number)	Record of risk / signature of officer in charge

Signature of master ....

***

ANNEX 18

RESOLUTION MEPC.379(80)
(adopted on 7 July 2023)

2023 GUIDELINES FOR THE DEVELOPMENT OF THE INVENTORY OF HAZARDOUS MATERIALS

THE MARINE ENVIRONMENT PROTECTION COMMITTEE,

RECALLING Article 38(a) of the Convention on the International Maritime Organization concerning the functions of the Marine Environment Protection Committee conferred upon it by international conventions for the prevention and control of marine pollution from ships,

RECALLING ALSO that the International Conference on the Safe and Environmentally Sound Recycling of Ships held in May 2009 adopted the Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships, 2009 (the Hong Kong Convention) together with six Conference resolutions,

NOTING that regulations 5.1 and 5.2 of the annex to the Hong Kong Convention require that ships shall have on board an Inventory of Hazardous Materials which shall be prepared and verified taking into account guidelines, including any threshold values and exemptions contained in those guidelines, developed by the Organization,

NOTING ALSO that, at its sixty-second session, it adopted, by resolution MEPC.197(62), the *Guidelines for the development of the Inventory of Hazardous Materials*,

NOTING FURTHER that, at its sixty-eighth session, it adopted, by resolution MEPC.269(68), the *2015 Guidelines for the development of the Inventory of Hazardous Materials*, which superseded the Guidelines adopted through resolution MEPC.197(62), to improve the guidance on threshold values and exemptions,

RECOGNIZING the need for a consequential revision of the Guidelines associated with amendments to Annex 1 to the *International Convention on the Control of Harmful Anti-fouling Systems on Ships, 2001* (AFS Convention) (resolution MEPC.331(76)), which introduced controls on cybutryne and entered into force on 1 January 2023,

HAVING CONSIDERED, at its eightieth session, the recommendation made by the Sub-Committee on Pollution Prevention and Response at its tenth session,

1 ADOPTS the *2023 Guidelines for the development of the Inventory of Hazardous Materials* as set out in the annex to this resolution;

2 INVITES Member Governments to apply the 2023 Guidelines as soon as possible, or at the latest when the Convention enters into force;

3 AGREES to keep the 2023 Guidelines under review in the light of experience gained with their application;

4 AGREES ALSO that the 2023 Guidelines supersede the guidelines adopted by resolution MEPC.269(68).

ANNEX

2023 GUIDELINES FOR THE DEVELOPMENT OF THE INVENTORY OF HAZARDOUS MATERIALS

1 INTRODUCTION

1.1 Objectives

These guidelines provide recommendations for developing the Inventory of Hazardous Materials (hereinafter referred to as "the Inventory" or "the IHM") to assist compliance with regulation 5 (Inventory of Hazardous Materials) of the Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships, 2009 (hereinafter referred to as "the Convention").

1.2 Application

These guidelines have been developed to provide relevant stakeholders (e.g. shipbuilders, equipment suppliers, repairers, shipowners and ship management companies) with the essential requirements for the practical and logical development of the Inventory.

1.3 Objectives

The objectives of the Inventory are to provide ship-specific information on the actual hazardous materials present on board, in order to protect health and safety and to prevent environmental pollution at ship recycling facilities. This information will be used by the ship recycling facilities to decide how to manage the types and amounts of materials identified in the Inventory of Hazardous Materials (regulation 9 of the Convention).

2 DEFINITIONS

The terms used in these guidelines have the same meaning as those defined in the Convention, with the following additional definitions which apply to these guidelines only.

2.1 *Exemption* (as referred to in regulation 5 of the Convention) means materials specified in paragraph 3.3 in these guidelines that do not need to be listed on the IHM, even if such materials or items exceed the IHM threshold values.

2.2 *Fixed* means the conditions that equipment or materials are securely fitted with the ship, such as by welding or with bolts, riveted or cemented, and used at their position, including electrical cables and gaskets.

2.3 *Homogeneous material* means a material of uniform composition throughout that cannot be mechanically disjointed into different materials, meaning that the materials cannot, in principle, be separated by mechanical actions such as unscrewing, cutting, crushing, grinding and abrasive processes.

2.4 *Loosely fitted equipment* means equipment or materials present on board the ship by the conditions other than "fixed", such as fire extinguishers, distress flares and lifebuoys.

2.5 *Product* means machinery, equipment, materials and applied coatings on board a ship.

2.6 *Supplier* means a company which provides products; it may be a manufacturer, trader or agency.

2.7 *Supply chain* means the series of entities involved in the supply and purchase of materials and goods, from raw materials to final product.

2.8 *Threshold value* is defined as the concentration value in homogeneous materials.

3 REQUIREMENTS FOR THE INVENTORY

3.1 Scope of the Inventory

The Inventory consists of:

Part I: Materials contained in ship structure or equipment;

Part II: Operationally generated wastes; and

Part III: Stores.

3.2 Materials to be listed in the Inventory

3.2.1 Appendix 1 of these guidelines (Items to be listed in the Inventory of Hazardous Materials), provides information on the hazardous materials that may be found on board a ship. Materials set out in appendix 1 should be listed in the Inventory. Each item in appendix 1 of these guidelines is classified under tables A, B, C or D, according to its properties:

.1 table A comprises the materials listed in appendix 1 of the Convention;

.2 table B comprises the materials listed in appendix 2 of the Convention;

.3 table C (Potentially hazardous items) comprises items which are potentially hazardous to the environment and human health at ship recycling facilities; and

.4 table D (Regular consumable goods potentially containing hazardous materials) comprises goods which are not integral to a ship and are unlikely to be dismantled or treated at a ship recycling facility.

3.2.2 Tables A and B correspond to part I of the Inventory. Table C corresponds to parts II and III and table D corresponds to part III.

3.2.3 For loosely fitted equipment, there is no need to list this in part I of the Inventory. Such equipment which remains on board when the ship is recycled should be listed in part III.

3.2.4 Those batteries containing lead acid or other hazardous materials that are fixed in place should be listed in part I of the Inventory. Batteries that are loosely fitted, which include consumer batteries and batteries in stores, should be listed in part III of the Inventory.

3.2.5 Similar materials or items that contain hazardous materials that potentially exceed the threshold value can be listed together (not individually) on the IHM with their general location and approximate amount specified there (hereinafter referred to as "bulk listing"). An example of how to list those materials and items is shown in row 3 of table 1 of appendix 3.

3.3 Exemptions – Materials not required to be listed in the Inventory

3.3.1 Materials listed in table B that are inherent in solid metals or metal alloys, such as steels, aluminium, brasses, bronzes, plating and solders, provided they are used in general construction, such as hull, superstructure, pipes or housings for equipment and machinery, are not required to be listed in the Inventory.

3.3.2 Although electrical and electronic equipment is required to be listed in the Inventory, the amount of hazardous materials potentially contained in printed wiring boards (printed circuit boards) installed in the equipment does not need to be reported in the Inventory.

3.4 Standard format of the Inventory of Hazardous Materials

The Inventory should be developed on the basis of the standard format set out in appendix 2 of these guidelines: Standard format of the Inventory of Hazardous Materials. Examples of how to complete the Inventory are provided for guidance purposes only.

3.5 Revision of threshold values

Revised threshold values in tables A and B of appendix 1 should be used for IHMs developed or updated after the adoption of the revised values and need not be applied to existing IHMs and IHMs under development. However, when materials are added to the IHM, such as during maintenance, the revised threshold values should be applied and recorded in the IHM.

4 REQUIREMENTS FOR DEVELOPMENT OF THE INVENTORY

4.1 Development of part I of the Inventory for new ships[1]

4.1.1 Part I of the Inventory for new ships should be developed at the design and construction stage.

4.1.2 *Checking of materials listed in table A*

During the development of the Inventory (part I), the presence of materials listed in table A of appendix 1 should be checked and confirmed; the quantity and location of table A materials should be listed in part I of the Inventory. If such materials are used in compliance with the Convention, they should be listed in part I of the Inventory. Any spare parts containing materials listed in table A are required to be listed in part III of the Inventory.

[1] In ascertaining whether a ship is a "new ship" or an "existing ship" according to the Convention, the term "a similar stage of construction" in regulation 1.4.2 of the annex to the Convention means the stage at which:

.1 construction identifiable with a specific ship begins; and

.2 assembly of that ship has commenced comprising at least 50 tonnes or 1% of the estimated mass of all structural material, whichever is less.

4.1.3 *Checking of materials listed in table B*

If materials listed in table B of appendix 1 are present in products above the threshold values provided in table B, the quantity and location of the products and the contents of the materials present in them should be listed in part I of the Inventory. Any spare parts containing materials listed in table B are required to be listed in part III of the Inventory.

4.1.4 *Process for checking of materials*

The checking of materials as provided in paragraphs 4.1.2 and 4.1.3 above should be based on the Material Declaration furnished by the suppliers in the shipbuilding supply chain (e.g. equipment suppliers, parts suppliers, material suppliers).

4.2 Development of part I of the Inventory for existing ships

4.2.1 In order to achieve comparable results for existing ships with respect to part I of the Inventory, the following procedure should be followed:

- .1 collection of necessary information;
- .2 assessment of collected information;
- .3 preparation of visual/sampling check plan;
- .4 onboard visual check and sampling check; and
- .5 preparation of part I of the Inventory and related documentation.

4.2.2 The determination of hazardous materials present on board existing ships should, as far as practicable, be conducted as prescribed for new ships, including the procedures described in sections 6 and 7 of these guidelines. Alternatively, the procedures described in this section may be applied for existing ships, but these procedures should not be used for any new installation resulting from the conversion or repair of existing ships after the initial preparation of the Inventory.

4.2.3 The procedures described in this section should be carried out by the shipowner, who may draw upon expert assistance. Such an expert or expert party should not be the same as the person or organization authorized by the Administration to approve the Inventory).

4.2.4 Reference is made to appendix 4 (Flow diagram for developing part I of the Inventory for existing ships) and appendix 5 (Example of development process for part I of the Inventory for existing ships).

4.2.5 *Collection of necessary information (step 1)*

The shipowner should identify, research, request and procure all reasonably available documentation regarding the ship. Information that will be useful includes maintenance, conversion and repair documents; certificates, manuals, ship's plans, drawings and technical specifications; product information data sheets (such as Material Declarations); and hazardous material inventories or recycling information from sister ships. Potential sources of information could include previous shipowners, the shipbuilder, historical societies, classification society records and ship recycling facilities with experience working with similar ships.

4.2.6 *Assessment of collected information (step 2)*

The information collected in step 1 above should be assessed. The assessment should cover all materials listed in table A of appendix 1; materials listed in table B should be assessed as far as practicable. The results of the assessment should be reflected in the visual/sampling check plan.

4.2.7 *Preparation of visual/sampling check plan (step 3)*

4.2.7.1 To specify the materials listed in appendix 1 of these guidelines, a visual/sampling check plan should be prepared taking into account the collated information and any appropriate expertise. The visual/sampling check plan should be based on the following three lists:

.1 List of equipment, system and/or area for visual check (any equipment, system and/or area specified regarding the presence of the materials listed in appendix 1 by document analysis should be entered in the List of equipment, system and/or area for visual check);

.2 List of equipment, system and/or area for sampling check (any equipment, system and/or area which cannot be specified regarding the presence of the materials listed in appendix 1 by document or visual analysis should be entered in the List of equipment, system and/or area as requiring sampling check. A sampling check is the taking of samples to identify the presence or absence of hazardous material contained in the equipment, systems and/or areas, by suitable and generally accepted methods such as laboratory analysis); and

.3 List of equipment, system and/or area classed as "potentially containing hazardous material" (any equipment, system and/or area which cannot be specified regarding the presence of the materials listed in appendix 1 by document analysis may be entered in the List of equipment, system and/or area classed as "potentially containing hazardous material" without the sampling check. The prerequisite for this classification is a comprehensible justification such as the impossibility of conducting sampling without compromising the safety of the ship and its operational efficiency).

4.2.7.2 Visual/sampling checkpoints should be all points where:

.1 the presence of materials to be considered for the Inventory part I as listed in appendix 1 is likely;

.2 the documentation is not specific; or

.3 materials of uncertain composition were used.

4.2.8 *Onboard visual/sampling check (step 4)*

4.2.8.1 The onboard visual/sampling check should be carried out in accordance with the visual/sampling check plan. When a sampling check is carried out, samples should be taken and the sample points should be clearly marked on the ship plan and the sample results should be referenced. Materials of the same kind may be sampled in a representative manner. Such materials are to be checked to ensure that they are of the same kind. The sampling check should be carried out drawing upon expert assistance.

4.2.8.2 Any uncertainty regarding the presence of hazardous materials should be clarified by a visual/sampling check. Checkpoints should be documented in the ship's plan and may be supported by photographs.

4.2.8.3 If the equipment, system and/or area of the ship are not accessible for a visual check or sampling check, they should be classified as "potentially containing hazardous material". The prerequisite for such classification should be the same prerequisite as in section 4.2.7. Any equipment, system and/or area classed as "potentially containing Hazardous Material" may be investigated or subjected to a sampling check at the request of the shipowner during a later survey (e.g. during repair, refit or conversion).

4.2.9 *Preparation of part I of the Inventory and related documentation (step 5)*

If any equipment, system and/or area is classed as either "containing hazardous material" or "potentially containing hazardous material", their approximate quantity and location should be listed in part I of the Inventory. These two categories should be indicated separately in the "Remarks" column of the Inventory.

4.2.10 *Testing methods*

4.2.10.1 Samples may be tested by a variety of methods. "Indicative" or "field tests" may be used when:

.1 the likelihood of a hazard is high;

.2 the test is expected to indicate that the hazard exists; and

.3 the sample is being tested by "specific testing" to show that the hazard is present.

4.2.10.2 Indicative or field tests are quick, inexpensive and useful on board the ship or on-site, but they cannot be accurately reproduced or repeated, and cannot identify the hazard specifically, and therefore cannot be relied upon except as "indicators".

4.2.10.3 In all other cases, and in order to avoid dispute, "specific testing" should be used. Specific tests are repeatable, reliable and can demonstrate definitively whether a hazard exists or not. They will also provide a known type of the hazard. The methods indicated are found qualitative and quantitative appropriate and only testing methods to the same effect can be used. Specific tests are to be carried out by a suitably accredited laboratory, working to international standards[2] or equivalent, which will provide a written report that can be relied upon by all parties.

4.2.10.4 Specific test methods for appendix 1 materials are provided in appendix 9.

4.2.11 *Diagram of the location of hazardous materials on board a ship*

Preparation of a diagram showing the location of the materials listed in table A is recommended in order to help ship recycling facilities gain a visual understanding of the Inventory.

[2] For example ISO 17025.

4.3 Maintaining and updating part I of the Inventory during operations

4.3.1 Part I of the Inventory should be appropriately maintained and updated, especially after any repair or conversion or sale of a ship.

4.3.2 *Updating of part I of the Inventory in the event of new installation*

If any machinery or equipment is added to, removed or replaced or the hull coating is renewed, part I of the Inventory should be updated according to the requirements for new ships as stipulated in paragraphs 4.1.2 to 4.1.4. Updating is not required if identical parts or coatings are installed or applied.

4.3.3 *Continuity of part I of the Inventory*

Part I of the Inventory should belong to the ship and the continuity and conformity of the information it contains should be confirmed, especially if the flag, owner or operator of the ship changes.

4.4 Development of part II of the Inventory (operationally generated waste)

4.4.1 Once the decision to recycle a ship has been taken, part II of the Inventory should be developed before the final survey, taking into account that a ship destined to be recycled shall conduct operations in the period prior to entering the ship recycling facility in a manner that minimizes the amount of cargo residues, fuel oil and wastes remaining on board (regulation 8.2 of the Convention).

4.4.2 *Operationally generated wastes to be listed in the Inventory*

If the wastes listed in part II of the Inventory provided in table C (Potentially hazardous items) of appendix 1 are intended for delivery with the ship to a ship recycling facility, the quantity of the operationally generated wastes should be estimated and their approximate quantities and locations should be listed in part II of the Inventory.

4.5 Development of part III of the Inventory (stores)

4.5.1 Once the decision to recycle has been taken, part III of the Inventory should be developed before the final survey, taking into account the fact that a ship destined to be recycled shall minimize the wastes remaining on board (regulation 8.2 of the Convention). Each item listed in part III should correspond to the ship's operations during its last voyage.

4.5.2 *Stores to be listed in the Inventory*

If the stores to be listed in part III of the Inventory provided in table C of appendix 1 are to be delivered with the ship to a ship recycling facility, the unit (e.g. capacity of cans and cylinders), quantity and location of the stores should be listed in part III of the Inventory.

4.5.3 *Liquids and gases sealed in ship's machinery and equipment to be listed in the Inventory*

If any liquids and gases listed in table C of appendix 1 are integral in machinery and equipment on board a ship, their approximate quantity and location should be listed in part III of the Inventory. However, small amounts of lubricating oil, anti-seize compounds and grease which are applied to or injected into machinery and equipment to maintain normal performance do not fall within the scope of this provision. For subsequent completion of part III of the Inventory during the recycling preparation processes, the quantity of liquids and gases listed in table C of appendix 1 required for normal operation, including the related pipe system volumes, should be prepared and documented at the design and construction stage. This information belongs to the ship, and continuity of this information should be maintained if the flag, owner or operator of the ship changes.

4.5.4 *Regular consumable goods to be listed in the Inventory*

Regular consumable goods, as provided in table D of appendix 1 should not be listed in part I or part II but should be listed in part III of the Inventory if they are to be delivered with the ship to a ship recycling facility. A general description including the name of item (e.g. TV set), manufacturer, quantity and location should be entered in part III of the Inventory. The check on materials provided for in paragraphs 4.1.2 and 4.1.3 of these guidelines does not apply to regular consumable goods.

4.6 Description of location of hazardous materials on board

The locations of hazardous materials on board should be described and identified using the name of location (e.g. second floor of engine-room, bridge DK, APT, No.1 cargo tank, frame number) given in the plans (e.g. general arrangement, fire and safety plan, machinery arrangement or tank arrangement).

4.7 Description of approximate quantity of hazardous materials

In order to identify the approximate quantity of hazardous materials, the standard unit used for hazardous materials should be kg, unless other units (e.g. m^3 for materials of liquid or gases, m^2 for materials used in floors or walls) are considered more appropriate. An approximate quantity should be rounded up to at least two significant figures.

5 REQUIREMENTS FOR ASCERTAINING THE CONFORMITY OF THE INVENTORY

5.1 Design and construction stage

The conformity of part I of the Inventory at the design and construction stage should be ascertained by reference to the collected Supplier's Declaration of Conformity described in section 7 and the related Material Declarations collected from suppliers.

5.2 Operational stage

Shipowners should implement the following measures in order to ensure the conformity of part I of the Inventory:

.1 to designate a person as responsible for maintaining and updating the Inventory (the designated person may be employed ashore or on board);

.2 the designated person, in order to implement paragraph 4.3.2, should establish and supervise a system to ensure the necessary updating of the Inventory in the event of new installation;

.3 to maintain the Inventory including dates of changes or new deleted entries and the signature of the designated person; and

.4 to provide related documents as required for the survey or sale of the ship.

6 MATERIAL DECLARATION

6.1 General

Suppliers to the shipbuilding industry should identify and declare whether or not the materials listed in table A or table B are present above the threshold value specified in appendix 1 of these guidelines. However, this provision does not apply to chemicals which do not constitute a part of the finished product.

6.2 Information required in the declaration

6.2.1 At a minimum the following information is required in the Material Declaration:

.1 date of declaration;

.2 Material Declaration identification number;

.3 supplier's name;

.4 product name (common product name or name used by manufacturer);

.5 product number (for identification by manufacturer);

.6 declaration of whether or not the materials listed in table A and table B of appendix 1 of these guidelines are present in the product above the threshold value stipulated in appendix 1 of these guidelines; and

.7 mass of each constituent material listed in table A and/or table B of appendix 1 of these guidelines if present above threshold value.

6.2.2 An example of the Material Declaration is shown in appendix 6.

7 SUPPLIER'S DECLARATION OF CONFORMITY

7.1 Purpose and scope

7.1.1 The purpose of the Supplier's Declaration of Conformity is to provide assurance that the related Material Declaration conforms to section 6.2, and to identify the responsible entity.

7.1.2 The Supplier's Declaration of Conformity remains valid as long as the products are present on board.

7.1.3 The supplier compiling the Supplier's Declaration of Conformity should establish a company policy.[3] The company policy on the management of the chemical substances in products which the supplier manufactures or sells should cover:

.1 Compliance with law:

The regulations and requirements governing the management of chemical substances in products should be clearly described in documents which should be kept and maintained; and

[3] A recognized quality management system may be utilized.

.2 Obtaining of information on chemical substance content:

In procuring raw materials for components and products, suppliers should be selected following an evaluation, and the information on the chemical substances they supply should be obtained.

7.2 Contents and format

7.2.1 The Supplier's Declaration of Conformity should contain the following:

.1 unique identification number;

.2 name and contact address of the issuer;

.3 identification of the subject of the Declaration of Conformity (e.g. name, type, model number, and/or other relevant supplementary information);

.4 statement of conformity;

.5 date and place of issue; and

.6 signature (or equivalent sign of validation), name and function of the authorized person(s) acting on behalf of the issuer.

7.2.2 An example of the Supplier's Declaration of Conformity is shown in appendix 7.

8 LIST OF APPENDICES

Appendix 1: Items to be listed in the Inventory of Hazardous Materials

Appendix 2: Standard format of the Inventory of Hazardous Materials

Appendix 3: Example of the development process for part I of the Inventory for new ships

Appendix 4: Flow diagram for developing part I of the Inventory for existing ships

Appendix 5: Example of the development process for part I of the Inventory for existing ships

Appendix 6: Form of Material Declaration

Appendix 7: Form of Supplier's Declaration of Conformity

Appendix 8: Examples of table A and table B materials of appendix 1 with CAS-numbers

Appendix 9: Specific test methods

Appendix 10: Examples of radioactive sources

APPENDIX 1

ITEMS TO BE LISTED IN THE INVENTORY OF HAZARDOUS MATERIALS

Table A – Materials listed in appendix 1 of the Annex to the Convention

No.	Materials		Inventory Part I	Inventory Part II	Inventory Part III	Threshold value
A-1	Asbestos		x			0.1%[4]
A-2	Polychlorinated biphenyls (PCBs)		x			50 mg/kg[5]
A-3	Ozone-depleting substances	CFCs	x			no threshold value[6]
		Halons	x			
		Other fully halogenated CFCs	x			
		Carbon tetrachloride	x			
		1,1,1-Trichloroethane (Methyl chloroform)	x			
		Hydrochlorofluorocarbons	x			
		Hydrobromofluorocarbons	x			
		Methyl bromide	x			
		Bromochloromethane	x			
A-4	Anti-fouling systems containing organotin compounds as a biocide		x			2,500 mg total tin/kg[7]
	Anti-fouling systems containing cybutryne		x			1,000 mg/kg[8]

4 In accordance with regulation 4 of the Convention, for all ships, new installation of materials which contain asbestos shall be prohibited. According to the UN recommendation "Globally Harmonized System of Classification and Labelling of Chemicals (GHS)" adopted by the United Nations Economic and Social Council's Sub-Committee of Experts on the Globally Harmonized System of Classification and Labelling of Chemicals (UNSCEGHS), the UN's Sub-Committee of Experts, in 2002 (published in 2003), carcinogenic mixtures classified as Category 1A (including asbestos mixtures) under the GHS are required to be labelled as carcinogenic if the ratio is more than 0.1%. However, if 1% is applied, this threshold value should be recorded in the Inventory and, if available, the Material Declaration and can be applied not later than five years after the entry into force of the Convention. The threshold value of 0.1% need not be retroactively applied to those Inventories and Material Declarations.

5 In accordance with regulation 4 of the Convention, for all ships, new installation of materials which contain PCBs shall be prohibited. The Organization set 50 mg/kg as the threshold value referring to the concentration level at which wastes, substances and articles containing, consisting of or contaminated with PCB are characterized as hazardous under the Basel Convention.

6 "No threshold value" is in accordance with the Montreal Protocol for reporting ODS. Unintentional trace contaminants should not be listed in the Material Declarations and in the Inventory.

7 This threshold value is based on the *2022 Guidelines for brief sampling of anti-fouling systems on ships* (resolution MEPC.356(78)).

8 When samples are directly taken from the hull, average values of cybutryne should not be present above 1,000 mg of cybutryne per kilogram of dry paint.

Table B – Materials listed in appendix 2 of the annex to the Convention

No.	Materials	Inventory			Threshold value
		Part I	Part II	Part III	
B-1	Cadmium and cadmium compounds	x			100 mg/kg[9]
B-2	Hexavalent chromium and hexavalent chromium compounds	x			1,000 mg/kg[8]
B-3	Lead and lead compounds	x			1,000 mg/kg[8]
B-4	Mercury and mercury compounds	x			1,000 mg/kg[8]
B-5	Polybrominated biphenyl (PBBs)	x			50 mg/kg[10]
B-6	Polybrominated diphenyl ethers (PBDEs)	x			1,000 mg/kg[8]
B-7	Polychlorinated naphthalenes (more than 3 chlorine atoms)	x			50mg/kg[11]
B-8	Radioactive substances	x			no threshold value[12]
B-9	Certain short-chain chlorinated paraffins (alkanes, C10-C13, chloro)	x			1%[13]

9 The Organization set this as the threshold value referring to the Restriction of Hazardous Substances (RoHS Directive 2011/65/EU, Annex II).

10 The Organization set 50 mg/kg as the threshold value referring to the concentration level at which wastes, substances and articles containing, consisting of or contaminated with PBB are characterized as hazardous under the Basel Convention.

11 The Organization set 50 mg/kg as the threshold value referring to the concentration level at which wastes, substances and articles containing, consisting of or contaminated with PCN are characterized as hazardous under the Basel Convention.

12 All radioactive sources should be included in the Material Declaration and in the Inventory. *Radioactive source* means radioactive material permanently sealed in a capsule or closely bonded and in a solid form that is used as a source of radiation. This includes consumer products and industrial gauges with radioactive materials. Examples are listed in appendix 10.

13 The Organization set 1% as the threshold value referring to the EU legislation that restricts chlorinated paraffins from being placed on the market for use as substances or as constituents of other substances or preparations in concentrations higher than 1% (EU Regulation 1907/2006, Annex XVII Entry 42 and Regulation 519/2012).

Table C – Potentially hazardous items

No.	Properties		Goods	Inventory		
				Part I	Part II	Part III
C-1	Liquid	Oiliness	Kerosene			x
C-2			White spirit			x
C-3			Lubricating oil			x
C-4			Hydraulic oil			x
C-5			Anti-seize compounds			x
C-6			Fuel additive			x
C-7			Engine coolant additives			x
C-8			Antifreeze fluids			x
C-9			Boiler and feed water treatment and test re-agents			x
C-10			De-ionizer regenerating chemicals			x
C-11			Evaporator dosing and descaling acids			x
C-12			Paint stabilizers/rust stabilizers			x
C-13			Solvents/thinners			x
C-14			Paints			x
C-15			Chemical refrigerants			x
C-16			Battery electrolyte			x
C-17			Alcohol, methylated spirits			x
C-18	Gas	Explosives/ inflammables	Acetylene			x
C-19			Propane			x
C-20			Butane			x
C-21			Oxygen			x
C-22		Green House Gases	CO_2			x
C-23			Perfluorocarbons (PFCs)			x
C-24			Methane			x
C-25			Hydrofluorocarbon (HFCs)			x
C-27			Nitrous oxide (N_2O)			x
C-28			Sulphur hexafluoride (SF_6)			x
C-29	Liquid	Oiliness	Bunkers: fuel oil			x
C-30			Grease			x
C-31			Waste oil (sludge)		x	
C-32			Bilge and/or wastewater generated by the after-treatment systems fitted on machineries		x	
C-33			Oily liquid cargo tank residues		x	
C-34			Ballast water		x	
C-35			Raw sewage		x	
C-36			Treated sewage		x	
C-37			Non-oily liquid cargo residues		x	
C-38	Gas	Explosibility/ inflammability	Fuel gas			x

No.	Properties	Goods	Inventory		
			Part I	Part II	Part III
C-39	Solid	Dry cargo residues		x	
C-40		Medical waste/infectious waste		x	
C-41		Incinerator ash[14]		x	
C-42		Garbage		x	
C-43		Fuel tank residues		x	
C-44		Oily solid cargo tank residues		x	
C-45		Oily or chemical contaminated rags		x	
C-46		Batteries (incl. lead acid batteries)			x
C-47		Pesticides/insecticide sprays			x
C-48		Extinguishers			x
C-49		Chemical cleaner (incl. electrical equipment cleaner, carbon remover)			x
C-50		Detergent/bleacher (could be a liquid)			x
C-51		Miscellaneous medicines			x
C-52		Fire-fighting clothing and personal protective equipment			x
C-53		Dry tank residues		x	
C-54		Cargo residues		x	
C-55		Spare parts which contain materials listed in table A or table B			x

Table D – Regular consumable goods potentially containing hazardous materials[15]

No.	Properties	Example	Inventory		
			Part I	Part II	Part III
D-1	Electrical and electronic equipment	Computers, refrigerators, printers, scanners, television sets, radio sets, video cameras, video recorders, telephones, consumer batteries, fluorescent lamps, filament bulbs, lamps			x
D-2	Lighting equipment	Fluorescent lamps, filament bulbs, lamps			x
D-3	Non-ship-specific furniture, interior and similar equipment	Chairs, sofas, tables, beds, curtains, carpets, garbage bins, bed-linen, pillows, towels, mattresses, storage racks, decoration, bathroom installations, toys, not structurally relevant or integrated artwork			x

14 Definition of garbage is identical to that in MARPOL Annex V. However, incinerator ash is classified separately because it may include hazardous substances or heavy metals.

15 This table does not include ship-specific equipment integral to ship operations, which has to be listed in part I of the inventory.

APPENDIX 2

STANDARD FORMAT OF THE INVENTORY OF HAZARDOUS MATERIALS[16]

Part I
Hazardous materials contained in the ship's structure and equipment

I-1 – Paints and coating systems containing materials listed in table A and table B of appendix 1 of these guidelines

No.	Application of paint	Name of paint	Location	Materials (classification in appendix 1)	Approximate quantity		Remarks
1	Anti-drumming compound	Primer, xx Co., xx primer #300	Hull part	Lead	35.00	kg	
2	Anti-fouling	xx Co., xx coat #100	Underwater parts	TBT	120.00	kg	

16 Examples of how to complete the Inventory are provided for guidance purposes only in accordance with paragraph 3.4 of the Guidelines.

I-2 – Equipment and machinery containing materials listed in table A and table B of appendix 1 of these guidelines

No.	Name of equipment and machinery	Location	Materials (classification in appendix 1)	Parts where used	Approximate quantity		Remarks
1	Switchboard	Engine control room	Cadmium	Housing coating	0.02	kg	
			Mercury	Heat gauge	<0.01	kg	less than 0.01kg
2	~~Diesel engine, xx Co., xx #150~~	~~Engine room~~	~~LeadCadmium~~	~~BearingStarter for blower~~	~~0.02~~	~~kg~~	
3	Diesel engine, xx Co., xx #200	Engine-room	Lead	Starter for blower	0.01	kg	revised by XXX on Oct. XX, 2008 (revoking No.2)
4	Diesel generator (x 3)	Engine-room	Lead	Ingredient of copper compounds	0.01	kg	
5	Radioactive level gauge	No. 1 Cargo tank	Radioactive substances	Gauge	5 (1.8E+11)	Ci (Bq)	Radionuclides: ^{60}Co

I-3 - Structure and hull containing materials listed in table A and table B of appendix 1 of these guidelines

No.	Name of structural element	Location	Materials (classification in appendix 1)	Parts where used	Approximate quantity		Remarks
1	Wall panel	Accommodation	Asbestos	Insulation	2,500.00	kg	
2	Wall insulation	Engine control room	Lead	Perforated plate	0.01	kg	cover for insulation material
			Asbestos	Insulation	25.00	kg	under perforated plates
3							

Part II

Operationally generated waste

No.	Location[1]	Name of item (classification in appendix 1) and detail (if any) of the item	Approximate quantity		Remarks
1	Garbage locker	Garbage (food waste)	35.00	kg	
2	Bilge tank	Bilgewater	15.00	m^3	
3	No.1 cargo hold	Dry cargo residues (iron ore)	110.00	kg	
4	No.2 cargo hold	Waste oil (sludge) (crude)	120.00	kg	
5	No.1 ballast tank	Ballast water	2,500.00	m^3	
		Sediments	250.00	kg	

[1] The location of a part II or part III item should be entered in order based on its location, from a lower level to an upper level and from a fore part to an aft part. The location of part I items is recommended to be described similarly, as far as practicable.

Part III
Stores

III-1 - *Stores*

No.	Location[1]	Name of item (classification in appendix 1)	Unit quantity		Figure		Approximate quantity		Remarks[2)]
								m^3	
								kg	
								kg	
									Details are shown in the attached list.
5	Paint stores	Paint, xx Co., #600	20.00	kg	5	pcs	100.00	kg	Cadmium containing.

[1] The location of a part II or part III item should be entered in order based on its location, from a lower level to an upper level and from a fore part to an aft part. The location of part I items is recommended to be described similarly, as far as practicable.

[2] In column "Remarks" for part III items, if hazardous materials are integrated in products, the approximate amount of the contents should be shown as far as possible.

III-2 – Liquids sealed in ship's machinery and equipment

No.	Type of liquids (classification in appendix 1)	Name of machinery or equipment	Location	Approximate quantity		Remarks
1	Hydraulic oil	Deck crane hydraulic oil system	Upper deck	15.00	m^3	
		Deck machinery hydraulic oil system	Upper deck and bosun store	200.00	m^3	
		Steering gear hydraulic oil system	Steering gear room	0.55	m^3	
2	Lubricating oil	Main engine system	Engine-room	0.45	m^3	
3	Boiler water treatment	Boiler	Engine-room	0.20	m^3	

III-3 – Gases sealed in ship's machinery and equipment

No.	Type of gases (classification in appendix 1)	Name of machinery or equipment	Location	Approximate quantity		Remarks
1	HFC	AC system	AC room	100.00	kg	
2	HFC	Refrigerated provision chamber machine	AC room	50.00	kg	

III-4 – Regular consumable goods potentially containing hazardous materials

No.	Location[17]	Name of item	Quantity	Remarks
1	Accommodation	Refrigerators	1	
2	Accommodation	Personal computers	2	

17 The location of a part II or part III item should be entered in order based on its location, from a lower level to an upper level and from a fore part to an aft part. The location of part I items is recommended to be described similarly, as far as practicable.

APPENDIX 3

EXAMPLE OF THE DEVELOPMENT PROCESS FOR PART I OF THE INVENTORY FOR NEW SHIPS

1 OBJECTIVE OF THE TYPICAL EXAMPLE

This example has been developed to give guidance and to facilitate understanding of the development process for part I of the Inventory of Hazardous Materials for new ships.

2 DEVELOPMENT FLOW FOR PART I OF THE INVENTORY

Part I of the Inventory should be developed using the following three steps. However, the order of these steps is flexible and can be changed depending on the schedule of shipbuilding:

.1 collection of hazardous materials information;
.2 utilization of hazardous materials information; and
.3 preparation of the Inventory (by filling out standard format).

3 COLLECTION OF HAZARDOUS MATERIALS INFORMATION

3.1 Data-collection process for hazardous materials

Materials Declaration (MD) and Supplier's Declaration of Conformity (SDoC) for products from suppliers (tier 1 suppliers) should be requested and collected by the shipbuilding yard. Tier 1 suppliers may request from their suppliers (tier 2 suppliers) the relevant information if they cannot develop the MD based on the information available. Thus the collection of data on hazardous materials may involve the entire shipbuilding supply chain (figure 1).

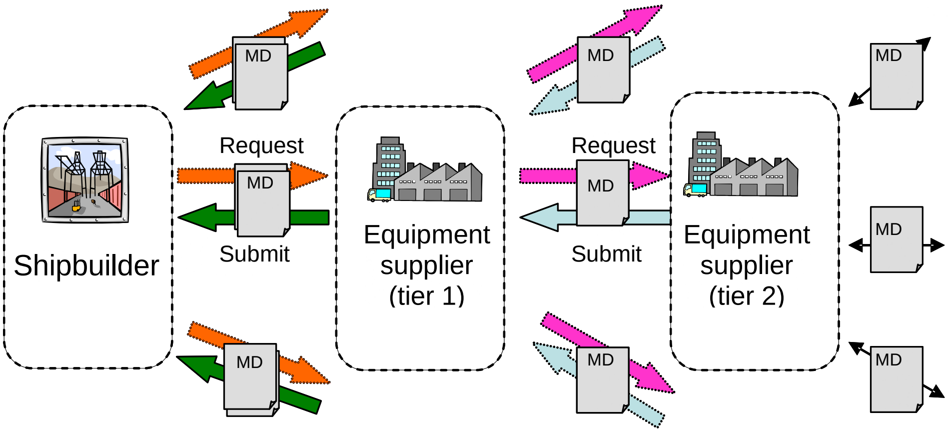


Figure 1 – Process of MD (and SDoC) collection showing involvement of supply chain

3.2 Declaration of hazardous materials

Suppliers should declare whether or not the hazardous materials listed in table A and table B in the MD are present in concentrations above the threshold values specified for each homogeneous material in a product.

3.2.1 *Materials listed in table A*

If one or more materials listed in table A are found to be present in concentrations above the specified threshold value according to the MD, the products which contain these materials shall not be installed on a ship. However, if the materials are used in a product in accordance with an exemption specified by the Convention (e.g. new installations containing hydrochlorofluorocarbons (HCFCs) before 1 January 2020), the product should be listed in the Inventory.

3.2.2 *Materials listed in table B*

If one or more materials listed in table B are found to be present in concentrations above the specified threshold value according to the MD, the products should be listed in the Inventory.

3.3 Example of homogeneous materials

Figure 2 shows an example of four homogeneous materials which constitute a cable. In this case, sheath, intervention, insulator and conductor are all individual homogeneous materials.

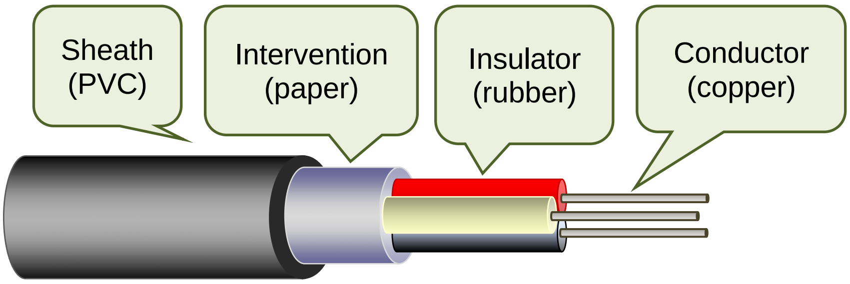


Figure 2 – *Example of homogeneous materials (cable)*

4 UTILIZATION OF HAZARDOUS MATERIALS INFORMATION

Products which contain hazardous materials in concentrations above the specified threshold values should be clearly identified in the MD. The approximate quantity of the hazardous materials should be calculated if the mass data for hazardous materials are declared in the MD using a unit which cannot be directly utilized in the Inventory.

5 PREPARATION OF INVENTORY (BY FILLING OUT STANDARD FORMAT)

The information received for the Inventory, as contained in table A and table B of appendix 1 of these guidelines, ought to be structured and utilized according to the following categorization for part I of the Inventory:

Part I-1 Paints and coating systems;

Part I-2 Equipment and machinery; and

Part I-3 Structure and hull.

5.1 "Name of equipment and machinery" column

5.1.1 *Equipment and machinery*

5.1.1.1 The name of each item of equipment or machinery should be entered in this column. If more than one hazardous material is present in the equipment or machinery, the row relating to that equipment or machinery should be appropriately divided such that all of the hazardous materials contained in the piece of equipment or machinery are entered. If more than one item of equipment or machinery is situated in one location, both name and quantity of the equipment or machinery should be entered in the column. Examples are shown in rows 1 and 2 of table 1.

5.1.1.2 For identical or common items, such as but not limited to bolts, nuts and valves, there is no need to list each item individually (see Bulk Listing in paragraph 3.2 of the guidelines). An example is shown in row 3 of table 1.

Table 1 – Example showing more than one item of equipment or machinery situated in one location

No.	Name of equipment and machinery	Location	Materials (classification in appendix 1)	Parts where used	Approximate quantity		Remarks
1	Main engine	Engine-room	Lead	Piston pin bush	0.75	kg	
			Mercury	Thermometer charge air temperature	0.01	kg	
2	Diesel generator (x 3)	Engine-room	Mercury	Thermometer	0.03	kg	
3	FC valve (x 100)	Throughout the ship	Lead and lead compounds		20.5	kg	

5.1.2 *Pipes and cables*

The names of pipes and of systems, including electric cables, which are often situated in more than one compartment of a ship, should be described using the name of the system concerned. A reference to the compartments where these systems are located is not necessary as long as the system is clearly identified and properly named.

5.2 "Approximate quantity" column

The standard unit for approximate quantity of solid hazardous materials should be kg. If the hazardous materials are liquids or gases, the standard unit should be either m^3 or kg. An approximate quantity should be rounded up to at least two significant figures. If the hazardous material is less than 10 g, the description of the quantity should read "<0.01 kg".

Table 2 – Example of a switchboard

No.	Name of equipment and machinery	Location	Materials (classification in appendix 1)	Parts where used	Approximate quantity		Remarks
	Switchboard	Engine control room	Cadmium	Housing coating	0.02	kg	
			Mercury	Heat gauge	<0.01	kg	less than 0.01 kg

5.3 "Location" column

5.3.1 *Example of a location list*

It is recommended to prepare a location list which covers all compartments of a ship based on the ship's plans (e.g. general arrangement, engine-room arrangement, accommodation and tank plan) and on other documentation on board, including certificates or spare parts lists. The description of the location should be based on a location such as a deck or room to enable easy identification. The name of the location should correspond to the ship's plans so as to ensure consistency between the Inventory and the ship's plans. Examples of names of locations are shown in table 3. For bulk listings, the locations of the items or materials may be generalized. For example, the location may only include the primary classification such as "Throughout the ship" as shown in the table 3 below.

Table 3 – Examples of location names

(A) Primary classification	(B) Secondary classification	(C) Name of location
Throughout the ship		
Hull part	Fore part	Bosun store
		…
	Cargo part	No.1 cargo hold/tank
		No.1 garage deck
		…
	Tank part	Fore peak tank
		No.1 WBT
		No.1 FOT
		…
		Aft Peak Tank
	Aft part	Steering gear room
		Emergency fire pump space
		…
	Superstructure	Accommodation
		Compass deck
		Nav. bridge deck
		…
		Wheel house
		Engine control room
		Cargo control room
		…
	Deck house	Deck house
		…
(A) Primary classification	(B) Secondary classification	(C) Name of location
Machinery part	Engine-room	Engine-room
		Main floor
		2nd floor
		…
		Generator space/room
		Purifier space/room
		Shaft space/room
		Engine casing
		Funnel
		Engine control room
		…
	Pump-room	Pump-room
		…
Exterior part	Superstructure	Superstructure
	Upper deck	Upper deck
	Hull shell	Hull shell
		bottom
		under waterline
		…

5.3.2 *Description of location of pipes and electrical systems*

5.3.2.1 Locations of pipes and systems, including electrical systems and cables situated in more than one compartment of a ship, should be described for each system concerned. If they are situated in a number of compartments, the most practical of the following two options should be used:

.1 listing of all components in the column; or

.2 description of the location of the system using an expression such as those shown under "primary classification" and "secondary classification" in table 3.

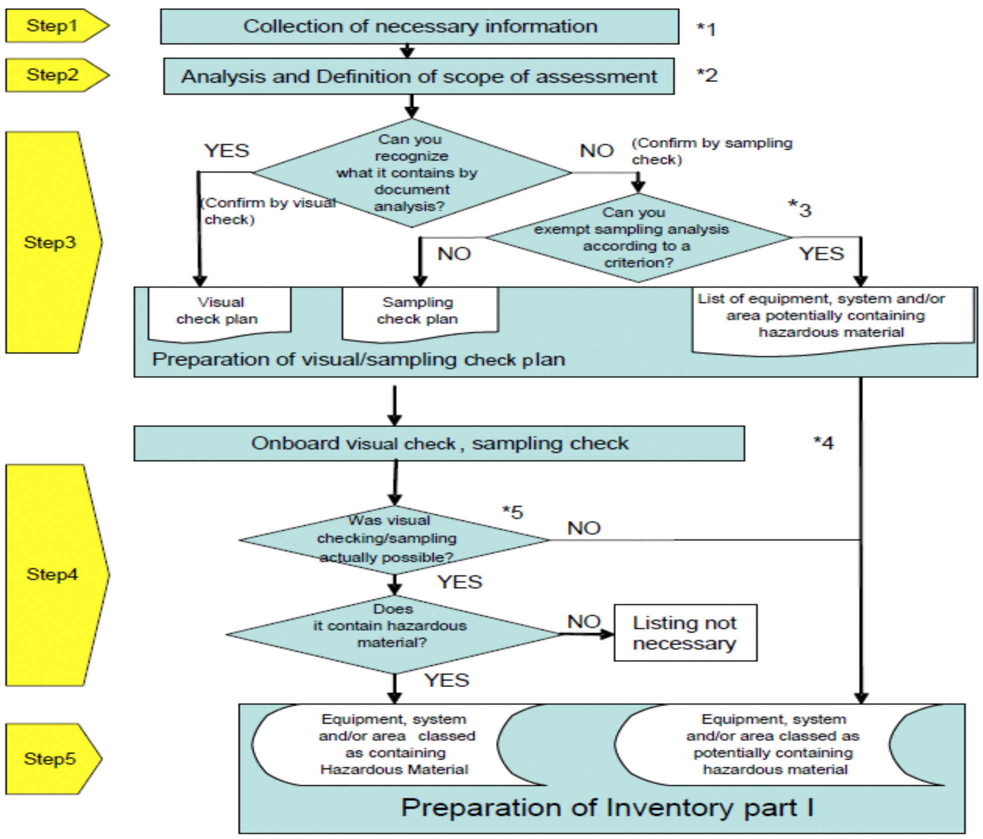
5.3.2.2 A typical description of a pipe system is shown in table 4.

Table 4 – Example of description of a pipe system

No.	Name of equipment and machinery	Location	Materials (classification in appendix 1)	Parts where used	Approximate quantity		Remarks
	Ballast water system	Engine-room, Hold parts					

APPENDIX 4

FLOW DIAGRAM FOR DEVELOPING PART I OF THE INVENTORY FOR EXISTING SHIPS



*1 : Documents may include any certificates, manuals, ship's plans drawings, technical specifications and information from sister and/or similar ships.

*2 : The assessment should cover all materials listed in table A of appendix 1 of the Guideline; the materials listed in table B should be listed as far as practicable.
It is impossible to assess all equipment and areas including those which are assumed not to contain hazardous materials described above.
Using analysis of available documents based on knowledge and experience, it must be made clear which equipment and/or area should be included in the scope of the assessment.

*3 : Equipment, system and/or areas which cannot be specified as containing materials listed in appendix 1 of these guidelines on the basis of documents can be listed in the List of equipment, system and/or area classed as "potentially containing hazardous material" without the sampling check. The prerequisite for this classification is a comprehensible justification of the conclusion, such as the impossibility to conduct samplings without compromising ship safety and operational efficiency.

*4 : Sampling check. This means sampling and identification of hazardous material contained in the equipment, systems, and/or areas, by laboratory analysis. The sampling check should be applied where the presence of prohibited and restricted hazardous material is assumed but cannot be recognized by analysis of the available documentation.

*5 : When equipment, systems and/or areas of a ship are not accessible for visual check or sampling check, this equipment, system and/or area is classified as "potentially containing hazardous material".

APPENDIX 5

EXAMPLE OF THE DEVELOPMENT PROCESS FOR PART I OF THE INVENTORY FOR EXISTING SHIPS

1 INTRODUCTION

1.1 In order to develop part I of the Inventory of Hazardous Materials for existing ships, documents of the individual ship as well as the knowledge and experience of specialist personnel (experts) is required. An example of the development process for part I of the Inventory of Hazardous Materials for existing ships is useful to understand the basic steps as laid out in the guidelines and to ensure a unified application. However, attention should be paid to variations in different types of ships.[18]

1.2 Compilation of part I of the Inventory of Hazardous Material for existing ships involves the following five steps which are described in paragraph 4.2 and appendix 4 of these guidelines.

Step 1: Collection of necessary information;

Step 2: Assessment of collected information;

Step 3: Preparation of visual/sampling check plan;

Step 4: Onboard visual/sampling check; and

Step 5: Preparation of part I of the Inventory and related documentation.

2 STEP 1 – COLLECTION OF NECESSARY INFORMATION

2.1 Sighting of available documents

A practical first step is to collect detailed documents for the ship. The shipowner should try to collate documents normally retained on board the ship or by the shipping company as well as relevant documents that the shipyard, manufacturers or classification society may have. The following documents should be used when available:

.1 Ship's specification

.2 General Arrangement

.3 Machinery Arrangement

.4 Spare Parts and Tools List

.5 Piping Arrangement

.6 Accommodation Plan

.7 Fire-Control Plan

.8 Fire Protection Plan

.9 Insulation Plan (Hull and Machinery)

[18] The example of a 28,000 gross tonnage bulk carrier constructed in 1985 is used in this appendix.

.10 International Anti-Fouling System Certificate

.11 Related manuals and drawings

.12 Information from other inventories and/or sister or similar ships, machinery, equipment, materials and coatings

.13 Results of previous visual/sampling checks and other analysis

2.1.2 If the ship has undergone conversions or major repair work, it is necessary to identify as far as possible the modifications from the initial design and specification of the ship.

2.2 Indicative list

2.2.1 It is impossible to check all equipment, systems and/or areas on board the ship to determine the presence or absence of hazardous materials. The total number of parts on board may exceed several thousand. In order to take a practical approach, an indicative list should be prepared that identifies the equipment, system and/or area on board that is presumed to contain hazardous materials. Field interviews with the shipyard and suppliers may be necessary to prepare such lists. A typical example of an indicative list is shown below.

2.2.2 Materials to be checked and documented

Hazardous Materials, as identified in appendix 1 of these guidelines, should be listed in part I of the Inventory for existing ships. Appendix 1 of the guidelines contains all the materials concerned. Table A shows those which are required to be listed and table B shows those which should be listed as far as practicable.

2.2.3 Materials listed in table A

2.2.3.1 Table A lists the following four materials:

.1 Asbestos

.2 Polychlorinated biphenyls (PCBs)

.3 Ozone-depleting substances

.4 Anti-fouling systems containing organotin compounds as a biocide or cybutryne

2.2.3.2 *Asbestos*

Field interviews were conducted with over 200 Japanese shipyards and suppliers regarding the use of asbestos in production. Indicative lists for asbestos developed on the basis of this research are shown below:

Structure and/or equipment	Component
Propeller shafting	Packing with low pressure hydraulic piping flange
	Packing with casing
	Clutch
	Brake lining
	Synthetic stern tubes

Structure and/or equipment	Component
Diesel engine	Packing with piping flange
	Lagging material for fuel pipe
	Lagging material for exhaust pipe
	Lagging material turbocharger
Turbine engine	Lagging material for casing
	Packing with flange of piping and valve for steam line, exhaust line and drain line
	Lagging material for piping and valve of steam line, exhaust line and drain line

Structure and/or equipment	**Component**
Structure and/or equipment	Component
Boiler	Insulation in combustion chamber
	Packing for casing door
	Lagging material for exhaust pipe
	Gasket for manhole
	Gasket for hand hole
	Gas shield packing for soot blower and other hole
	Packing with flange of piping and valve for steam line, exhaust line, fuel line and drain line
	Lagging material for piping and valve of steam line, exhaust line, fuel line and drain line
Exhaust gas economizer	Packing for casing door
	Packing with manhole
	Packing with hand hole
	Gas shield packing for soot blower
	Packing with flange of piping and valve for steam line, exhaust line, fuel line and drain line
	Lagging material for piping and valve of steam line, exhaust line, fuel line and drain line
Incinerator	Packing for casing door
	Packing with manhole
	Packing with hand hole
	Lagging material for exhaust pipe
Auxiliary machinery (pump, compressor, oil purifier, crane)	Packing for casing door and valve
	Gland packing
	Brake lining
Heat exchanger	Packing with casing
	Gland packing for valve
	Lagging material and insulation
Valve	Gland packing with valve, sheet packing with piping flange
	Gasket with flange of high pressure and/or high temperature
Pipe, duct	Lagging material and insulation
Tank (fuel tank, hot water, tank, condenser), other equipment (fuel strainer, lubricant oil strainer)	Lagging material and insulation
Electric equipment	Insulation material
Airborne asbestos	Wall, ceiling
Ceiling, floor and wall in accommodation area	Ceiling, floor, wall
Fire door	Packing, construction and insulation of the fire door
Inert gas system	Packing for casing, etc.
Air conditioning system	Sheet packing, lagging material for piping and flexible joint

Structure and/or equipment	Component
Miscellaneous	Ropes
	Thermal insulating materials
	Fire shields/fire proofing
	Space/duct insulation
	Electrical cable materials
	Brake linings
	Floor tiles/deck underlay
	Steam/water/vent flange gaskets
	Adhesives/mastics/fillers
	Sound damping
	Moulded plastic products
	Sealing putty
	Shaft/valve packing
	Electrical bulkhead penetration packing
	Circuit breaker arc chutes
	Pipe hanger inserts
	Weld shop protectors/burn covers
	Fire-fighting blankets/clothing/equipment
	Concrete ballast

2.2.3.3 *Polychlorinated biphenyl (PCBs)*

Worldwide restriction of PCBs began on 17 May 2004 as a result of the implementation of the Stockholm Convention, which aims to eliminate or restrict the production and use of persistent organic pollutants. In Japan, domestic control began in 1973, with the prohibition of all activities relating to the production, use and import of PCBs. Japanese suppliers can provide accurate information concerning their products. The indicative list of PCBs has been developed as shown below:

Equipment	**Component of equipment**
Transformer	Insulating oil
Condenser	Insulating oil
Fuel heater	Heating medium
Electric cable	Covering, insulating tape
Lubricating oil	
Heat oil	Thermometers, sensors, indicators
Rubber/felt gaskets	
Rubber hose	
Plastic foam insulation	
Thermal insulating materials	
Voltage regulators	
Switches/reclosers/bushings	
Electromagnets	
Adhesives/tapes	
Surface contamination of machinery	
Oil-based paint	
Caulking	
Rubber isolation mounts	
Pipe hangers	

Equipment	Component of equipment
Light ballasts (component within fluorescent light fixtures)	
Plasticizers	
Felt under septum plates on top of hull bottom	

2.2.3.4 *Ozone-depleting substances*

The indicative list for ozone-depleting substances is shown below. Ozone-depleting substances have been controlled according to the Montreal Protocol and MARPOL Convention. Although almost all substances have been banned since 1996, HCFC can still be used until 2020.

Materials	Component of equipment	Period for use of ODS in Japan
CFCs (R11, R12)	Refrigerant for refrigerators	Until 1996
CFCs	Urethane formed material	Until 1996
	Blowing agent for insulation of LNG carriers	Until 1996
Halons	Extinguishing agent	Until 1994
Other fully halogenated CFCs	The possibility of usage in ships is low	Until 1996
Carbon tetrachloride	The possibility of usage in ships is low	Until 1996
1,1,1-Trichloroethane (methyl chloroform)	The possibility of usage in ships is low	Until 1996
HCFC (R22, R141b)	Refrigerant for refrigerating machine	It is possible to use it until 2020
HBFC	The possibility of usage in ships is low	Until 1996
Methyl bromide	The possibility of usage in ships is low	Until 2005

2.2.3.5 *Organotin compounds*

Organotin compounds include tributyl tins (TBT), triphenyl tins (TPT) and tributyl tin oxide (TBTO). Organotin compounds have been used as anti-fouling paint on ships' bottoms, and the International Convention on the Control of Harmful Anti-fouling Systems on Ships (AFS Convention, as amended) stipulates that all ships shall not apply or reapply organotin compounds after 1 January 2003, and that, after 1 January 2008, all ships shall either not bear such compounds on their hulls or shall bear a coating that forms a barrier preventing such compounds from leaching into the sea. The above-mentioned dates may have been extended by permission of the Administration bearing in mind that the AFS Convention entered into force on 17 September 2008.

2.2.3.6 *Cybutryne*

Cybutryne has been used as biocide in anti-fouling systems, and the International Convention on the Control of Harmful Anti-fouling Systems on Ships (AFS Convention, as amended) stipulates that all ships shall not apply or reapply cybutryne after 1 January 2023, and that ships bearing an anti-fouling system that contains this substance in the external coating layer of their hulls or external parts or surfaces on 1 January 2023 shall either remove the anti-fouling system or apply a coating that forms a barrier to this substance leaching from the underlying non-compliant anti-fouling system at the next scheduled renewal of the anti-fouling system after 1 January 2023, but no later than 60 months following the last application to the ship of an anti-fouling system containing cybutryne.

2.2.4 *Materials listed in table B*

For existing ships it is not obligatory for materials listed in table B to be listed in part I of the Inventory. However, if they can be identified in a practical way, they should be listed in the Inventory, because the information will be used to support ship recycling processes. The Indicative list of materials listed in table B is shown below:

Materials	Component of equipment
Cadmium and cadmium compounds	Plating film, bearing
Hexavalent chromium compounds	Plating film
Mercury and mercury compounds	Fluorescent light, mercury lamp, mercury cell, liquid-level switch, gyro compass, thermometer, measuring tool, manganese cell, pressure sensors, light fittings, electrical switches, fire detectors
Lead and lead compounds	Corrosion resistant primer, solder (almost all electric appliances contain solder), paints, preservative coatings, cable insulation, lead ballast, generators
Polybrominated biphenyls (PBBs)	Non-flammable plastics
Polybrominated diphenyl ethers (PBDE)	Non-flammable plastics
Polychlorinated naphthalenes	Paint, lubricating oil
Radioactive substances	Refer to appendix 10
Certain short-chain chlorinated paraffins	Non-flammable plastics

3 STEP 2 – ASSESSMENT OF COLLECTED INFORMATION

Preparation of a checklist is an efficient method for developing the Inventory for existing ships in order to clarify the results of each step. Based on collected information including the indicative list mentioned in step 1, all equipment, systems and/or areas on board assumed to contain hazardous materials listed in tables A and B should be included in the checklist. Each listed equipment, system and/or area on board should be analysed and assessed for its hazardous materials content.

The existence and volume of hazardous materials may be judged and calculated from the Spare parts and tools list and the maker's drawings. The existence of asbestos contained in floors, ceilings and walls may be identified from Fire Protection Plans, while the existence of TBT in coatings can be identified from the International Anti-Fouling System Certificate, Coating scheme and the History of Paint.

Example of weight calculation

No.	Hazardous Materials	Location/equipment/ component	Reference	Calculation
1.1-2	TBT	Flat bottom/paint	History of coatings	
1.2-1	Asbestos	Main engine/ exh. pipe packing	Spare parts and tools list	250 g x 14 sheet = 3.50 kg
1.2-3	HCFC	Ref. provision plant	Maker's drawings	20 kg x 1 cylinder = 20 kg
1.2-4	Lead	Batteries	Maker's drawings	6kg x 16 unit = 96 kg
1.3-1	Asbestos	Engine-room ceiling	Accommodation plan	

When a component or coating is determined to contain hazardous materials, a "Y" should be entered in the column for "Result of document analysis" in the checklist, to denote "Contained". Likewise, when an item is determined not to contain hazardous materials, the entry "N" should be made in the column to denote "Not contained". When a determination cannot be made as to the hazardous materials content, the column should be completed with the entry "Unknown".

Checklist (step 2)

Analysis and definition of scope of assessment for "Sample Ship"

No.	Table A/B	Hazardous materials *1	Location	Name of equipment	Component	Quantity Unit (kg)	Quantity No.	Quantity Total (kg)	Manufacturer/brand name	Result of documents analysis *2	Procedure of check *3	Result of check *4	Reference/DWG No.
[Inventory part I-1.1]													
1	A	TBT	Top side	Painting and coating	A/F Paints			NIL	Paints Co./marine P1000	N			•On Aug., 200X, Sealer Coat applied to all over submerged area before tin-free coating.
2	A	TBT	Flat Bottom				$3000m^2$		Unknown AF	Unknown			
[Inventory part I-1.2]													
1	A	Asbestos	Lower deck	Main engine	Exh. pipe packing	0.25	14		Diesel Co.	Y			M-100
2	A	Asbestos	3rd deck	Aux.boiler	Lagging		12		Unknown lagging	Unknown			M-300
3	A	Asbestos	Engine room	Piping/flange	Packing					PCHM			
4	A	HCFC	2nd deck	Ref. provision plant	Refrigerant(R22)	20.00	1		Reito Co.	Y			Maker's dwg
5	B	Lead	Nav. Br. deck	Batteries		6	16		Denchi Co.	Y			E-300
[Inventory part I-1.3]													
1	A	Asbestos	Upper deck	Back deck ceilings	Engine room ceiling		$20m^2$		Unknown ceiling	Unknown			O-25

Notes

*1 Hazardous materirials: material classification

*2 Result of documents analysis: Y=Contained, N=Not contained, Unknown, PCHM=Potentially containing hazardous material

*3 Procedure of Check:. V=Visual check, S=Sampling check

*4 Result of Check: Y=Contained, N=Not contained, PCHM=Potentially containing hazardous material

4 STEP 3 – PREPARATION OF VISUAL/SAMPLING CHECK PLAN

4.1 Each item classified as "Contained" or "Not contained" in step 2 should be subjected to a visual check on board, and the entry "V" should be made in the "Check procedure" column to denote "Visual check".

4.2 For each item categorized as "unknown", a decision should be made as to whether to apply a sampling check. However, any item categorized as "unknown" may be classed as "potentially containing hazardous material" provided comprehensive justification is given, or if it can be assumed that there will be little or no effect on disassembly as a unit and later ship recycling and disposal operations. For example, in the following checklist, in order to carry out a sampling check for "Packing with aux. boiler" the shipowner needs to disassemble the auxiliary boiler in a repair yard. The costs of this check are significantly higher than the later disposal costs at a ship recycling facility. In this case, therefore, the classification as "potentially containing hazardous material" is justifiable.

Checklist (step 3)

Analysis and definition of scope of assessment for "Sample Ship"

No.	Table A/B	Hazardous materials *1	Location	Name of equipment	Component	Quantity Unit (kg)	Quantity No.	Quantity Total (kg)	Manufacturer/brand name	Result of documents analysis *2	Procedure of check *3	Result of check *4	Reference/DWG No.
[Inventory part I-1.1]													
1	A	TBT	Top side	Painting & Coating	A/F Paints			NIL	Paints Co./marine P1000	N	V		・On Aug., 200X, Sealer Coat applied to all over submerged area before tin-free coating.
2	A	TBT	Flat bottom				3000m^2		Unknown AF	Unknown	S		
[Inventory Part I-1.2]													
1	A	Asbestos	Lower deck	Main engine	Exh. pipe packing	0.25	14		Diesel Co.	Y	V		M-100
2	A	Asbestos	3rd deck	Aux.boiler	Lagging		12		Unknown lagging	Unknown	S		M-300
3	A	Asbestos	Engine room	Piping/flange	Packing					PCHM	V		
4	A	HCFC	2nd deck	Ref. provision plant	Refrigerant(R22)	20.00	1		Reito Co.	Y	V		Maker's dwg
5	B	Lead	Nav. Br. deck	Batteries		6	16		Denchi Co.	Y	V		E-300
[Inventory Part I-1.3]													
1	A	Asbestos	Upper deck	Back deck ceilings	Engine room ceiling		20m^2		Unknown ceiling	Unknown	S		O-25

Notes
*1 Hazardous materirials: material classification
*2 Result of documents analysis: Y=Contained, N=Not contained, Unknown, PCHM=Potentially containing hazardous material
*3 Procedure of check:. V=Visual check, S=Sampling check
*4 Result of check: Y=Contained, N=Not contained, PCHM=Potentially containing hazardous material

4.3 Before any visual/sampling check on board is conducted, a "visual/sampling check plan" should be prepared. An example of such a plan is shown below.

4.4 To prevent any incidents during the visual/sampling check, a schedule should be established to eliminate interference with other ongoing work on board. To prevent potential exposure to hazardous materials during the visual/sampling check, safety precautions should be in place on board. For example, sampling of potential asbestos containing materials could release fibres into the atmosphere. Therefore, appropriate personnel safety and containment procedures should be implemented prior to sampling.

4.5 Items listed in the visual/sampling check should be arranged in sequence so that the onboard check is conducted in a structured manner (e.g. from a lower level to an upper level and from a fore part to an aft part).

Example of visual/sampling check plan

Name of ship	XXXXXXXXXX
IMO number	XXXXXXXXXX
Gross tonnage	28,000 GT
L x B x D	xxx.xx × xx.xx × xx.xx m
Date of delivery	dd.mm.1987
Shipowner	XXXXXXXXXX
Contact point (Address, Telephone, Fax, Email)	XXXXXXXXXX Tel: XXXX-XXXX Fax: XXXX-XXXX Email: abcdefg@hijk.co.net
Check schedule	Visual check： dd, mm, 20XX Sampling check：dd, mm, 20XX
Site of check	XX shipyard, No. Dock
In charge of check	XXXX XXXX
Check engineer	XXXX XXXX, YYYY YYYY, ZZZZ ZZZZ
Sampling engineer	Person with specialized knowledge of sampling
Sampling method and anti-scattering measure for asbestos	Wet the sampling location prior to cutting and allow it to harden after cutting to prevent scatter. Notes: Workers performing sampling activities shall wear protective equipment.
Sampling of fragments of paints	Paints suspected to contain TBT should be collected and analysed from load line, directly under bilge keel and flat bottom near amidships.
Laboratory	QQQQ QQQQ
Chemical analysis method	Method by ISO/DIS 22262-1 Bulk materials – Part 1: Sampling and qualitative determination of asbestos in commercial bulk materials and ISO/CD 22262-2 Bulk materials – Part 2: Quantitative determination of asbestos by gravimetric and microscopic methods. ICP Luminous analysis (TBT)
Location of visual/sampling check	Refer to lists for visual/sampling check

Listing for equipment, system and/or area for visual check
See attached "Analysis and definition of scope of investigation for sample ship"

List of equipment, system and/or area for sampling check				
Location	**Equipment, machinery and/or zone**	**Name of parts**	**Materials**	**Result of doc. checking**
Upper deck	Back deck ceilings	Engine-room ceiling	Asbestos	Unknown
Engine-room	Exhaust gas pipe	Insulation	Asbestos	Unknown
Engine-room	Pipe/flange	Gasket	Asbestos	Unknown
Refer to attached "Analysis and definition of scope of investigation for sample ship" and "Location plan of hazardous materials for sample ship"				

List of equipment, system and/or area classed as PCHM				
Location	**Equipment, machinery and/or zone**	**Name of part**	**Material**	**Result of doc. checking**
Floor	Propeller cap	Gasket	Asbestos	PCHM
Engine-room	Air operated shut-off valve	Gland packing	Asbestos	PCHM
Refer to attached "Analysis and definition of scope of investigation for sample ship" and "Location plan of hazardous materials for sample ship"				

This plan is established in accordance with the guidelines for the development of the Inventory of Hazardous Materials

・Document check・date/place：
dd, mm, 20XX at XX Lines Co. Ltd.

・Preparation date of plan：dd. mm, 20XX

5 STEP 4 – ONBOARD VISUAL/SAMPLING CHECK

5.1 The visual/sampling check should be conducted according to the plan. Checkpoints should be marked in the ship's plan or recorded with photographs.

5.2 A person taking samples should be protected by the appropriate safety equipment relevant to the suspected type of hazardous materials encountered. Appropriate safety precautions should also be in place for passengers, crew members and other persons on board, to minimize the potential exposure to hazardous materials. Safety precautions could include the posting of signs or other verbal or written notification for personnel to avoid such areas during sampling. The personnel taking samples should ensure compliance with relevant national regulations.

5.3 The results of visual/sampling checks should be recorded in the checklist. Any equipment, systems and/or areas of the ship that cannot be accessed for checks should be classified as "potentially containing hazardous material". In this case, the entry in the "Result of check" column should be "PCHM".

6 STEP 5 – PREPARATION OF PART I OF THE INVENTORY AND RELATED DOCUMENTATION

6.1 *Development of part I of the Inventory*

The results of the check and the estimated quantity of hazardous materials should be recorded on the checklist. Part I of the Inventory should be developed with reference to the checklist.

6.2 *Development of location diagram of hazardous materials*

With respect to part I of the Inventory, the development of a location diagram of hazardous materials is recommended in order to help the ship recycling facility gain a visual understanding of the Inventory.

Checklist (step 4 and step 5)

Analysis and definition of scope of assessment for "Sample Ship"

No.	Table A/B	Hazardous materials *1	Location	Name of equipment	Component	Quantity Unit (kg)	Quantity No.	Quantity Total (kg)	Manufacturer/brand name	Result of documents analysis *2	Procedure of check *3	Result of check *4	Reference/DWG No.
[Inventory part I-1.1]													
1	A	TBT	Top side	Painting & Coating	A/F Paints			NIL	Paints Co./marine P1000	N	V	N	・On Aug., 200X, Sealer Coat applied to all over submerged area before tin-free coating.
2	A	TBT	Flat Bottom			0.02	$3000m^2$	60.00	Unknown AF	Unknown	S	Y	
[Inventory part I-1.2]													
1	A	Asbestos	Lower deck	Main engine	Exh. pipe packing	0.25	14	3.50	Diesel Co.	Y	V	Y	M-100
2	A	Asbestos	3rd deck	Aux. boiler	Lagging		12		Unknown lagging	Unknown	S	N	M-300
3	A	Asbestos	Engine room	Piping/flange	Packing					PCHM	V	PCHM	
4	A	HCFC	2nd deck	Ref. provision plant	Refrigerant(R22)	20.00	1	20.00	Reito Co.	Y	V	Y	Maker's dwg
5	B	Lead	Nav. Br. deck	Batteries		6	16	96.00	Denchi Co.	Y	V	Y	E-300
[Inventory part I-1.3]													
1	A	Asbestos	Upp.deck	Back deck ceilings	Engine room ceiling	0.19	$20m^2$	3.80	Unknown ceiling	Unknown	S	Y	O-25

Notes

*1 Hazardous materirials: material classification

*2 Result of documents analysis: Y=Contained, N=Not contained, Unknown, PCHM=Potentially containing hazardous material

*3 Procedure of check:. V=Visual check, S=Sampling check

*4 Result of check: Y=Contained, N=Not contained, PCHM=Potentially containing hazardous material

Example of the Inventory for existing ships

Inventory of Hazardous Materials for "Sample Ship"

Particulars of the "Sample Ship"

Distinctive number or letters	XXXXNNN
Port of registry	Port of World
Type of vessel	Bulk carrier
Gross tonnage	28,000 GT
IMO number	NNNNNNN
Name of shipbuilder	xx Shipbuilding Co. Ltd
Name of shipowner	yy Maritime SA
Date of delivery	MM/DD/1988

This inventory was developed in accordance with the guidelines for the development of the Inventory of Hazardous Materials.

Attachment:

1: Inventory of Hazardous Materials

2: Assessment of collected information

3: Location diagram of hazardous materials

Prepared by XYZ (Name & address) (dd/mm/20XX)

Inventory of Hazardous Materials: "Sample Ship"

Part I – *Hazardous materials contained in the ship's structure and equipment*

I-1 Paints and coating systems containing materials listed in table A and table B of appendix 1 of the guidelines

No.	Application of paint	Name of paint	Location*	Materials (classification in appendix 1)	Approximate quantity		Remarks
1	AF paint	Unknown paints	Flat bottom	TBT	60.00	kg	Confirmed by sampling
2							
3							

I-2 Equipment and machinery containing materials listed in table A and table B of appendix 1 of the guidelines

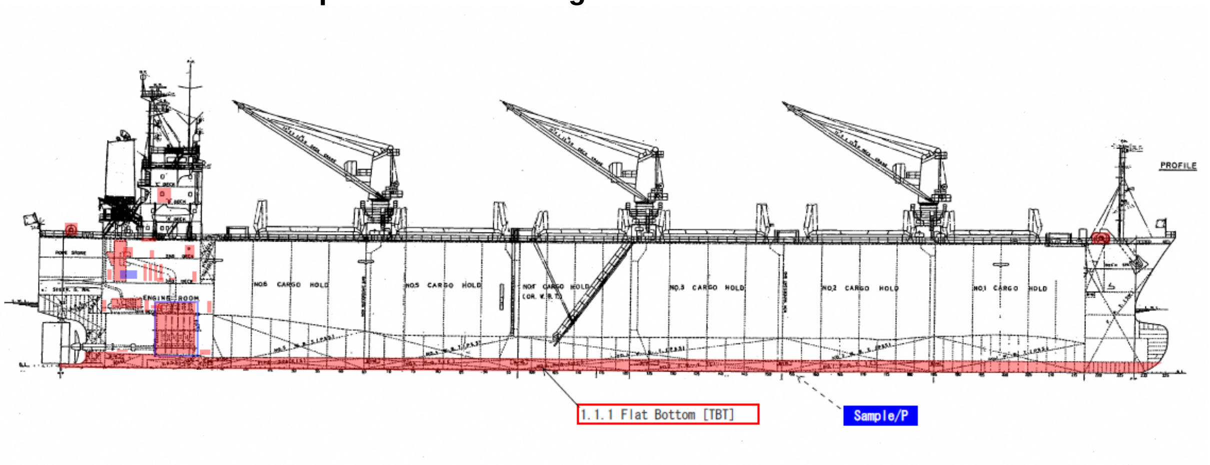
No.	Name of equipment and machinery	Location *1	Materials (classification in appendix 1)	Parts where used	Approximate quantity		Remarks
1	Main engine	Lower floor	Asbestos	Exh. pipe packing	3.50	kg	
2	Aux. boiler	3rd deck	Asbestos	Unknown packing	10.00	kg	PCHM (potentially containing hazardous material)
3	Piping/flange	Engine-room	Asbestos	Packing	50.00	kg	PCHM
4	Ref. provision plant	2nd deck	HCFC	Refrigerant (R22)	20.00	kg	
5	Batteries	Navig. bridge deck	Lead		96.00	kg	

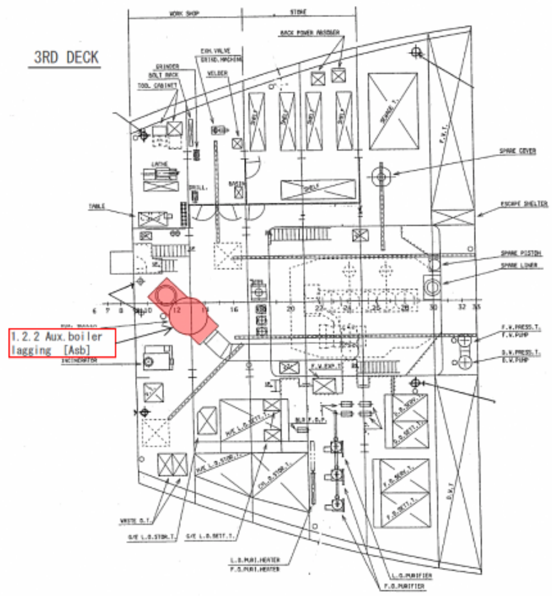
I-3 Structure and hull containing materials listed in table A and table B of appendix 1 of the guidelines

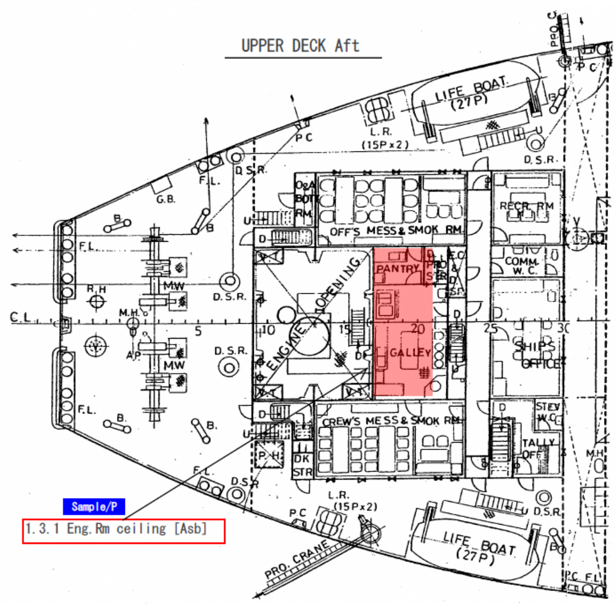
No.	Name of structural element	Location *1	Materials (classification in appendix 1)	Parts where used	Approximate quantity		Remarks
1	Back deck ceiling	Upper deck	Asbestos	Engine-room ceiling (A class)	3.80	kg	Confirmed by sampling
2							
3							

* Each item should be entered in order based on its location, from a lower level to an upper level and from a fore part to an aft part.

Example of location diagram of hazardous materials







APPENDIX 6

FORM OF MATERIAL DECLARATION

<Date of declaration>

Date	

<MD ID number>

MD- ID No.	

<Supplier (respondent) information>

Company name	
Division name	
Address	
Contact person	
Telephone number	
Fax number	
Email address	
SDoC ID no.	

<Other information>

Remark 1	
Remark 2	
Remark 3	

<Product information>

Product name	Product number	Delivered unit			Product information
		Amount	Unit		

<Materials information>

		Unit	
This materials information shows the amount of hazardous materials contained in	1		(unit: piece, kg, m, m^2, m^3, etc.) of the product.

Table	Material name		Threshold value	Present above threshold value	If yes, material mass		If yes, information on where it is used
				Yes / No	Mass	Unit	
Table A (materials listed in appendix 1 of the Convention)	Asbestos	Asbestos	0.1%[19]				
	Polychlorinated biphenyls (PCBs)	Polychlorinated biphenyls (PCBs)	50 mg/kg				
	Ozone-depleting substance	Chlorofluorocaobons (CFCs)	no threshold value				
		Halons					
		Other fully halogenated CFCs					
		Carbon tetrachloride					
		1,1,1-Trichloroethane					
		Hydrochlorofluorocaobons					
		Hydrobromofluorocaobons					
		Methyl bromide					
		Bromochloromethane					
	Anti-fouling systems containing organotin compounds as a biocide		2,500 mg total tin/kg				
	Anti-fouling systems containing cybutryne		1,000 mg/kg[20]				

19 In accordance with regulation 4 of the Convention, for all ships, new installation of materials which contain asbestos shall be prohibited. According to the UN recommendation "Globally Harmonized System of Classification and Labelling of Chemicals (GHS)" adopted by the United Nations Economic and Social Council's Sub-Committee of Experts on the Globally Harmonized System of Classification and Labelling of Chemicals (UNSCEGHS), the UN'S Sub-Committee of Experts, in 2002 (published in 2003), carcinogenic mixtures classified as Category 1A (including asbestos mixtures) under the GHS are required to be labelled as carcinogenic if the ratio is more than 0.1%. However, if 1% is applied, this threshold value should be recorded in the Inventory and, if available, the Material Declaration and can be applied not later than five years after the entry into force of the Convention. The threshold value of 0.1% need not be retroactively applied to those Inventories and Material Declarations.

20 When samples are directly taken from the hull, average values of cybutryne should not be present above 1,000 mg of cybutryne per kilogram of dry paint.

Table	Material name	Threshold value	Present above threshold value	If yes, material mass		If yes, information on where it is used
			Yes / No	Mass	Unit	
Table B (materials listed in appendix 2 of the Convention)	Cadmium and cadmium compounds	100 mg/kg				
	Hexavalent chromium and hexavalent chromium compounds	1,000 mg/kg				
	Lead and lead compounds	1,000 mg/kg				
	Mercury and mercury compounds	1,000 mg/kg				
	Polybrominated biphenyl (PBBs)	50 mg/kg				
	Polybrominated dephenyl ethers (PBDEs)	1,000 mg/kg				
	Polychloronaphthalenes (Cl >= 3)	50 mg/kg				
	Radioactive substances	no threshold value				
	Certain short-chain chlorinated paraffins	1%				

APPENDIX 7

FORM OF SUPPLIER'S DECLARATION OF CONFORMITY

SUPPLIER'S DECLARATION OF CONFORMITY FOR MATERIAL DECLARATION MANAGEMENT

1 Identification number ___________

2 Issuer's name ______________________________

Issuer's address ______________________________

3 Object(s) of the declaration ______________________________

____

____

4 The object(s) of the declaration described above is in conformity with the following documents :

Document No.	Title	Edition/date of issue
5 ____________	______________________________	____________
____________	______________________________	____________
____________	______________________________	____________

6 Additional information ______________________________

____

Signed for and on behalf of

____

____

(place and date of issue)

7 ______________________________ ______________________________

(name, function) *(signature)*

APPENDIX 8

EXAMPLES OF TABLE A AND TABLE B MATERIALS OF APPENDIX 1 WITH CAS NUMBERS

This list was developed with reference to Joint Industry Guide No.101. This list is not exhaustive; it represents examples of chemicals with known CAS numbers and may require periodical updating.

Table	Material Category	Substances	CAS Numbers
Table A (materials listed in appendix 1 of the Convention)	Asbestos	Asbestos	1332-21-4
		Actinolite	77536-66-4
		Amosite (Grunerite)	12172-73-5
		Anthophyllite	77536-67-5
		Chrysotile	12001-29-5
		Crocidolite	12001-28-4
		Tremolite	77536-68-6
	Polychlorinated biphenyls (PCBs)	Polychlorinated biphenyls	1336-36-3
		Aroclor	12767-79-2
		Chlorodiphenyl (Aroclor 1260)	11096-82-5
		Kanechlor 500	27323-18-8
		Aroclor 1254	11097-69-1
	Ozone-depleting substances/ isomers (they may contain isomers that are not listed here)	Trichlorofluoromethane (CFC11)	75-69-4
		Dichlorodifluoromethane (CFC12)	75-71-8
		Chlorotrifluoromethane (CFC 13)	75-72-9
		Pentachlorofluoroethane (CFC 111)	354-56-3
		Tetrachlorodifluoroethane (CFC 112)	76-12-0
		Trichlorotrifluoroethane (CFC 113) 1,1,2 Trichloro-1,2,2 trifluoroethane	354-58-5 76-13-1
		Dichlorotetrafluoroethane (CFC 114)	76-14-2
		Monochloropentafluoroethane (CFC 115)	76-15-3
		Heptachlorofluoropropane (CFC 211)	422-78-6 135401-87-5
		Hexachlorodifluoropropane (CFC 212)	3182-26-1
		Pentachlorotrifluoropropane (CFC 213)	2354-06-5 134237-31-3
		Tetrachlorotetrafluoropropane (CFC 214) 1,1,1,3-Tetrachlorotetrafluoropropane	29255-31-0 2268-46-4
		Trichloropentafluoropropane (CFC 215) 1,1,1-Trichloropentafluoropropane 1,2,3-Trichloropentafluoropropane	1599-41-3 4259-43-2 76-17-5
		Dichlorohexafluoropropane (CFC 216)	661-97-2
		Monochloroheptafluoropropane (CFC 217)	422-86-6
		Bromochlorodifluoromethane (Halon 1211)	353-59-3
		Bromotrifluoromethane (Halon 1301)	75-63-8
		Dibromotetrafluoroethane (Halon 2402)	124-73-2
		Carbon tetrachloride (Tetrachloromethane)	56-23-5
		1,1,1, - Trichloroethane (methyl chloroform) and its isomers except 1,1,2-trichloroethane	71-55-6
		Bromomethane (Methyl bromide)	74-83-9
		Bromodifluoromethane and isomers (HBFC's)	1511-62-2
		Dichlorofluoromethane (HCFC 21)	75-43-4
		Chlorodifluoromethane (HCFC 22)	75-45-6
		Chlorofluoromethane (HCFC 31)	593-70-4

Table	Material Category	Substances	CAS Numbers
		Tetrachlorofluoroethane (121) HCFC 1,1,1,2-tetrachloro-2-fluoroethane (HCFC 121a) 1,1,2,2-tetracloro-1-fluoroethane	134237-32-4 354-11-0 354-14-3
		Trichlorodifluoroethane (HCFC 122) 1,2,2-trichloro-1,1-difluoroethane	41834-16-6 354-21-2
		Dichlorotrifluoroethane(HCFC 123) Dichloro-1,1,2-trifluoroethane 2,2-dichloro-1,1,1-trifluroethane 1,2-dichloro-1,1,2-trifluroethane (HCFC-123a) 1,1-dichloro-1,2,2-trifluroethane (HCFC-123b) 2,2-dichloro-1,1,2-trifluroethane (HCFC-123b)	34077-87-7 90454-18-5 306-83-2 354-23-4 812-04-4 812-04-4
		Chlorotetrafluoroethane (HCFC 124) 2-chloro-1,1,1,2-tetrafluoroethane 1-chloro-1,1,2,2-tetrafluoroethane (HCFC 124a)	63938-10-3 2837-89-0 354-25-6
		Trichlorofluoroethane (HCFC 131) 1-Fluoro-1,2,2-trichloroethane 1,1,1-trichloro-2-fluoroethane (HCFC131b)	27154-33-2; (134237-34-6) 359-28-4 811-95-0
		Dichlorodifluoroethane (HCFC 132) 1,2-dichloro-1,1-difluoroethane (HCFC 132b) 1,1-dichloro-1,2-difluoroethane (HFCF 132c) 1,1-dichloro-2,2-difluoroethane 1,2-dichloro-1,2-difluoroethane	25915-78-0 1649-08-7 1842-05-3 471-43-2 431-06-1
		Chlorotrifluoroethane (HCFC 133) 1-chloro-1,2,2-trifluoroethane 2-chloro-1,1,1-trifluoroethane (HCFC-133a)	1330-45-6 1330-45-6 75-88-7
		Dichlorofluoroethane(HCFC 141) 1,1-dichloro-1-fluoroethane (HCFC-141b) 1,2-dichloro-1-fluoroethane	1717-00-6; (25167-88-8) 1717-00-6 430-57-9
		Chlorodifluoroethane (HCFC 142) 1-chloro-1,1-difluoroethane (HCFC142b) 1-chloro-1,2-difluoroethane (HCFC142a)	25497-29-4 75-68-3 25497-29-4
		Hexachlorofluoropropane (HCFC 221)	134237-35-7
		Pentachlorodifluoropropane (HCFC 222)	134237-36-8
		Tetrachlorotrifluropropane (HCFC 223)	134237-37-9
		Trichlorotetrafluoropropane (HCFC 224)	134237-38-0
		Dichloropentafluoropropane, (Ethyne, fluoro-) (HCFC 225) 2,2-Dichloro-1,1,1,3,3-pentafluoropropane(HCFC 225aa) 2,3-Dichloro-1,1,1,2,3-pentafluoropropane (HCFC 225ba) 1,2-Dichloro-1,1,2,3,3-pentafluoropropane (HCFC 225bb) 3,3-Dichloro-1,1,1,2,2-pentafluoropropane (HCFC 225ca) 1,3-Dichloro-1,1,2,2,3-pentafluoropropane (HCFC 225cb) 1,1-Dichloro-1,2,2,3,3-pentafluoropropane(HCFC 225cc) 1,2-Dichloro-1,1,3,3,3-pentafluoropropane (HCFC 225da) 1,3-Dichloro-1,1,2,3,3-pentafluoropropane (HCFC 225ea) 1,1-Dichloro-1,2,3,3,3-pentafluoropropane(HCFC 225eb)	127564-92-5; (2713-09-9) 128903-21-9 422-48-0 422-44-6 422-56-0 507-55-1 13474-88-9 431-86-7 136013-79-1 111512-56-2
		Chlorohexafluoropropane (HCFC 226)	134308-72-8
		Pentachlorofluoropropane (HCFC 231)	134190-48-0
		Tetrachlorodifluoropropane (HCFC 232)	134237-39-1
		Trichlorotrifluoropropane (HCFC 233) 1,1,1-Trichloro-3,3,3-trifluoropropane	134237-40-4 7125-83-9
		Dichlorotetrafluoropropane (HCFC 234)	127564-83-4
		Chloropentafluoropropane (HCFC 235) 1-Chloro-1,1,3,3,3-pentafluoropropane	134237-41-5 460-92-4
		Tetrachlorofluoropropane (HCFC 241)	134190-49-1
		Trichlorodifluoropropane (HCFC 242)	134237-42-6
		Dichlorotrifluoropropane (HCFC 243) 1,1-dichloro-1,2,2-trifluoropropane 2,3-dichloro-1,1,1-trifluoropropane 3,3-Dichloro-1,1,1-trifluoropropane	134237-43-7 7125-99-7 338-75-0 460-69-5
		Chlorotetrafluoropropane (HCFC 244)	134190-50-4

Table	Material Category	Substances	CAS Numbers
		3-chloro-1,1,2,2-tetrafluoropropane	679-85-6
		Trichlorofluoropropane (HCFC 251) 1,1,3-trichloro-1-fluoropropane	134190-51-5 818-99-5
		Dichlorodifluoropropane (HCFC 252)	134190-52-6
		Chlorotrifluoropropane (HCFC 253) 3-chloro-1,1,1-trifluoropropane (HCFC 253fb)	134237-44-8 460-35-5
		Dichlorofluoropropane (HCFC 261) 1,1-dichloro-1-fluoropropane	134237-45-9 7799-56-6
		Chlorodifluoropropane (HCFC 262) 2-chloro-1,3-difluoropropane	134190-53-7 102738-79-4
		Chlorofluoropropane (HCFC 271) 2-chloro-2-fluoropropane	134190-54-8 420-44-0
	Organotin compounds (tributyl tin, triphenyl tin, tributyl tin oxide)	Bis(tri-n-butyltin) oxide	56-35-9
		Triphenyltin N,N'-dimethyldithiocarbamate	1803-12-9
		Triphenyltin fluoride	379-52-2
		Triphenyltin acetate	900-95-8
		Triphenyltin chloride	639-58-7
		Triphenyltin hydroxide	76-87-9
		Triphenyltin fatty acid salts (C=9-11)	47672-31-1
		Triphenyltin chloroacetate	7094-94-2
		Tributyltin methacrylate	2155-70-6
		Bis(tributyltin) fumarate	6454-35-9
		Tributyltin fluoride	1983-10-4
		Bis(tributyltin) 2,3-dibromosuccinate	31732-71-5
		Tributyltin acetate	56-36-0
		Tributyltin laurate	3090-36-6
		Bis(tributyltin) phthalate	4782-29-0
		Copolymer of alkyl acrylate, methyl methacrylate and tributyltin methacrylate(alkyl; C=8)	-
		Tributyltin sulfamate	6517-25-5
		Bis(tributyltin) maleate	14275-57-1
		Tributyltin chloride	1461-22-9
		Mixture of tributyltin cyclopentanecarboxylate and its analogues (Tributyltin naphthenate)	-
		Mixture of tributyltin 1,2,3,4,4a, 4b, 5,6,10,10adecahydro-7-isopropyl-1, 4a-dimethyl-1-phenanthlenecarboxylate and its analogues (Tributyltin rosin salt)	-
		Other tributyl tins & triphenyl tins	-
	Anti-fouling systems containing cybutryne	Cybutryne	28159-98-0
Table B (Materials listed in appendix 2 of the Convention)	Cadmium/ cadmium compounds	Cadmium	7440-43-9
		Cadmium oxide	1306-19-0
		Cadmium sulfide	1306-23-6
		Cadmium chloride	10108-64-2
		Cadmium sulfate	10124-36-4
		Other cadmium compounds	-
	Chromium VI compounds	Chromium (VI) oxide	1333-82-0
		Barium chromate	10294-40-3
		Calcium chromate	13765-19-0
		Chromium trioxide	1333-82-0
		Lead (II) chromate	7758-97-6
		Sodium chromate	7775-11-3
		Sodium dichromate	10588-01-9
		Strontium chromate	7789-06-2
		Potassium dichromate	7778-50-9
		Potassium chromate	7789-00-6
		Zinc chromate	13530-65-9

Table	Material Category	Substances	CAS Numbers
		Other hexavalent chromium compounds	-
	Lead/lead compounds	Lead	7439-92-1
		Lead (II) sulfate	7446-14-2
		Lead (II) carbonate	598-63-0
		Lead hydrocarbonate	1319-46-6
		Lead acetate	301-04-2
		Lead (II) acetate, trihydrate	6080-56-4
		Lead phosphate	7446-27-7
		Lead selenide	12069-00-0
		Lead (IV) oxide	1309-60-0
		Lead (II,IV) oxide	1314-41-6
		Lead (II) sulfide	1314-87-0
		Lead (II) oxide	1317-36-8
		Lead (II) carbonate basic	1319-46-6
		Lead hydroxidcarbonate	1344-36-1
		Lead (II) phosphate	7446-27-7
		Lead (II) chromate	7758-97-6
		Lead (II) titanate	12060-00-3
		Lead sulfate, sulphuric acid, lead salt	15739-80-7
		Lead sulphate, tribasic	12202-17-4
		Lead stearate	1072-35-1
		Other lead compounds	-
	Mercury/ mercury compounds	Mercury	7439-97-6
		Mercuric chloride	33631-63-9
		Mercury (II) chloride	7487-94-7
		Mercuric sulfate	7783-35-9
		Mercuric nitrate	10045-94-0
		Mercuric (II) oxide	21908-53-2
		Mercuric sulfide	1344-48-5
		Other mercury compounds	-
	Polybrominated biphenyls (PBBs) and polybrominated diphenyl ethers (PBDEs)	Bromobiphenyl and its ethers	2052-07-5 (2-Bromobiphenyl)
			2113-57-7 (3-Bromobiphenyl)
			92-66-0 (4-Bromobiphenyl)
			101-55-3 (ether)
		Decabromobiphenyl and its ethers	13654-09-6
			1163-19-5 (ether)
		Dibromobiphenyl and its ethers	92-86-4
			2050-47-7 (ether)
		Heptabromobiphenylether	68928-80-3
		Hexabromobiphenyl and its ethers	59080-40-9
			36355-01-8 (hexabromo-1,1'-biphenyl)
			67774-32-7 (Firemaster FF-1)
			36483-60-0 (ether)
		Nonabromobiphenylether	63936-56-1
		Octabromobiphenyl and its ethers	61288-13-9
			32536-52-0 (ether)
		Pentabromobidphenyl ether (note: commercially available PeBDPO is a complex reaction mixture containing a variety of brominated diphenyloxides)	32534-81-9 (CAS number used for commercial grades of PeBDPO)
		Polybrominated biphenyls	59536-65-1
		Tetrabromobiphenyl and its ethers	40088-45-7
			40088-47-9 (ether)
		Tribromobiphenyl ether	49690-94-0
	Polychlorinated naphthalenes	Polychlorinated naphthalenes	70776-03-3
		Other polychlorinated naphthalenes	-
	Radioactive substances	Uranium	-
		Plutonium	-
		Radon	-

Table	Material Category	Substances	CAS Numbers
		Americium	-
		Thorium	-
		Caesium	7440-46-2
		Strontium	7440-24-6
		Other radioactive substances	-
	Certain short-chain chlorinated paraffins (with carbon length of 10-13 atoms)	Chlorinated paraffins (C10-13)	85535-84-8
		Other short-chain chlorinated paraffins	-

APPENDIX 9

SPECIFIC TEST METHODS

1 Asbestos

Types to test for: Actinolite CAS 77536-66-4 Amosite (Grunerite) CAS 12172-73-5 Anthophyllite CAS 77536-67-5 Chrysotile CAS 12001-29-5 Crocidolite CAS 12001-28-4 Asbestos Tremolite CAS 77536-68-6.

Specific testing techniques: Polarized Light Microscopy, electron microscope techniques and/or X-Ray Diffraction (XRD) as applicable.

Specific reporting information: The presence/no presence of asbestos, indicate the concentration range, and state the type when necessary.

Notes: .1 The suggested three kinds of testing techniques are most commonly used methods when analysing asbestos and each of them has its limitation. Laboratories should choose the most suitable methods to determine, and in most cases, two or more techniques should be utilized together.

.2 The quantification of asbestos is difficult at this stage, although the XRD technique is applicable. Only a few laboratories conduct the quantification rather than the qualification, especially when a precise number is required. Considering the demand from the operators and ship recycling parties, the precise concentration is not strictly required. Thereby, the concentration range is recommended to report, and the recommended range division according to standard VDI 3866 is as follows:

- Asbestos not detected
- Traces of asbestos detected
- Asbestos content approx. 1% to 15% by mass
- Asbestos content approx. 15% to 40% by mass
- Asbestos content greater than 40% by mass

Results that specified more precisely must be provided with a reasoned statement on the uncertainty.

.3 As to the asbestos types, to distinguish all six different types is time-consuming and in some cases not feasible by current techniques; while on the practical side, the treatment of different types of asbestos is the same. Therefore, it is suggested to report the type when necessary.

2 Polychlorinated biphenyls (PCBs)

Note: There are 209 different congeners (forms) of PCB of it is impracticable to test for all. Various organizations have developed lists of PCBs to test for as indicators. In this instance two alternative approaches are recommended. Method 1 identifies the seven congeners used by the International Council for the Exploration of the Sea (ICES). Method 2 identifies 19 congeners and seven types of aroclor (PCB mixtures commonly found in solid shipboard materials containing PCBs). Laboratories should be familiar with the requirements and consequences for each of these lists.

Types to test for: Method 1: ICES7 congeners (28, 52, 101, 118, 138, 153, 180). Method 2: 19 congeners and seven types of aroclor, using the US EPA 8082a test.

Specific testing technique: GC-MS (congener specific) or GC-ECD or GC-ELCD for applicable mixtures such as aroclors. Note: standard samples must be used for each type.

Sample Preparation: It is important to properly prepare PCB samples prior to testing. For solid materials (cables, rubber, paint, etc.), it is especially critical to select the proper extraction procedure in order to release PCBs since they are chemically bound within the product.

Specific reporting information: PCB congener, ppm per congener in sample, and for Method 2, ppm per aroclor in sample should also be reported.

Notes:

.1 Certain field or indicator tests are suitable for detecting PCBs in liquids or surfaces. However, there are currently no such tests that can accurately identify PCBs in solid shipboard materials. It is also noted that many of these tests rely on the identification of free chlorine ions and are thus highly susceptible to chlorine contamination and false readings in a marine environment where all surfaces are highly contaminated with chlorine ions from the seawater and atmosphere.

.2 Several congeners are tested for as "indicator" congeners. They are used because their presence often indicates the likelihood of other congeners in greater quantities (many PCBs are mixes, many mixes use a limited number of PCBs in small quantities, therefore the presence of these small quantities indicates the potential for a mix containing far higher quantities of other PCBs).

.3 Many reports refer to "total PCB", which is often a scaled figure to represent likely total PCBs based on the sample and the common ratios of PCB mixes. Where this is done the exact scaling technique must be stated, and is for information only and does not form part of the specific technique.

3 Ozone-depleting substances

Types to test for: as per appendix 8 of these guidelines all the listed CFCs, Halons, HCFCs and other listed substance as required by Montreal Protocol.

Specific testing technique: Gas Chromatography-Mass Spectrometry (GC-MS), coupled Electron Capture Detectors (GC-ECD) and Electrolytic Conductivity Detectors (GC-ELCD).

Specific reporting information: Type and concentration of ODS.

4 Anti-fouling systems containing organotin compounds as a biocide and/or cybutryne

4.1 Anti-fouling systems containing organotin compounds as a biocide

Types to test for: Anti-fouling compounds and systems regulated under annex I to the International Convention on the Control of Harmful Anti-fouling Systems on Ships, 2001 (AFS Convention, as amended), including: tributyl tins (TBT), triphenyl tins (TPT) and tributyl tin oxide (TBTO).

Specific testing technique: As per resolution MEPC.356(78) (*2022 Guidelines for brief sampling of anti-fouling systems on ships*), adopted on 10 June 2022, using ICPOES, ICP, AAS, XRF, GC-MS as applicable.

Specific reporting information: Type and concentration of organotin compound.

Note: For "field" or "indicative" testing it may be acceptable to simply identify presence of tin, owing to the expected good documentation on anti-fouling systems.

4.2 Anti-fouling systems containing cybutryne

Types to test for: Anti-fouling systems containing cybutryne regulated under Annex 1 to the International Convention on the Control of Harmful Anti-fouling Systems on Ships, 2001 (AFS Convention, as amended).

Specific testing technique: As per resolution MEPC.356(78) (*2022 Guidelines for brief sampling of anti-fouling systems on ships*), adopted on 10 June 2022, using GC-MS.

Specific reporting information: Concentration of cybutryne.

4.3 Simplified approach to detect organotin compounds or cybutryne

Types to test for: Anti-fouling systems containing organotin compounds as biocides and/or cybutryne regulated under Annex 1 to the International Convention on the Control of Harmful Anti-fouling Systems on Ships, 2001 (AFS Convention, as amended).

Specific testing technique: As per resolution MEPC.356(78) (*2022 Guidelines for brief sampling of anti-fouling systems on ships*), adopted on 10 June 2022, using GC-MS.

Specific reporting information: Concentration of organotin compound and/or cybutryne.

APPENDIX 10

EXAMPLES OF RADIOACTIVE SOURCES

The following list contains examples of radioactive sources that should be included in the Inventory, regardless of the number, the amount of radioactivity or the type of radionuclide.

Examples of consumer products with radioactive materials

Ionization chamber smoke detectors (typical radionuclides ^{241}Am; ^{226}Ra)
Instruments/signs containing gaseous tritium light sources (^{3}H)
Instruments/signs containing radioactive painting (typical radionuclide ^{226}Ra)
High intensity discharge lamps (typical radionuclides ^{85}Kr; ^{232}Th)
Radioactive lighting rods (typical radionuclides ^{241}Am; ^{226}Ra)

Examples of industrial gauges with radioactive materials

Radioactive level gauges
Radioactive dredger gauges[21]
Radioactive conveyor gauges[21]
Radioactive spinning pipe gauges[21]

***

[21] Typical radionuclides: ^{241}Am; ^{241}Am/Be; ^{252}Cf; ^{244}Cm; ^{60}Co; ^{137}Cs; ^{153}Gd; ^{192}Ir; ^{147}Pm; ^{238}Pu; ^{239}Pu/Be; ^{226}Ra; ^{75}S; ^{90}Sr (^{90}Y); ^{170}Tm; ^{169}Yb

ANNEX 19

DRAFT AMENDMENTS TO ARTICLE V OF PROTOCOL I OF MARPOL

PROTOCOL I – PROVISIONS CONCERNING REPORTS ON INCIDENTS INVOLVING HARMFUL SUBSTANCES

Article V
Reporting procedures

1 The following new paragraph 3 is inserted after existing paragraph 2:

"In case of the loss of freight container(s), the report required by article II (1) (b) shall be made in accordance with the provisions of SOLAS regulations V/31 and V/32."

***

ANNEX 20

RESOLUTION MEPC.380(80)
(adopted on 7 July 2023)

DESIGNATION OF THE NORTH-WESTERN MEDITERRANEAN SEA AS A PARTICULARLY SENSITIVE SEA AREA

THE MARINE ENVIRONMENT PROTECTION COMMITTEE,

RECALLING Article 38(a) of the Convention on the International Maritime Organization concerning the functions of the Marine Environment Protection Committee conferred upon it by international conventions for the prevention and control of marine pollution from ships,

BEING AWARE of the ecological criteria, in particular relating to uniqueness or rarity, critical habitat, dependency, fragility and bio-geographic criteria, and the social, economic and cultural, and scientific and educational criteria of the North-Western Mediterranean Sea Area as well as its vulnerability to damage by international shipping activities and the steps taken by France, Italy, Monaco and Spain to address that vulnerability,

NOTING the *Revised guidelines for the identification and designation of Particularly Sensitive Sea Areas* adopted by resolution A.982(24) as amended by resolution MEPC.267(68), (Revised PSSA Guidelines), and the *Guidance document for submission of PSSA proposals to IMO* set forth in MEPC.1/Circ.510,

NOTING ALSO the *Guidance document for minimizing the risk of ship strikes with cetaceans* (MEPC.1/Circ.674) sets out a number of measures to reduce the risk of collision between large cetaceans and ships,

HAVING AGREED that the criteria for the identification and designation of a Particularly Sensitive Sea Area (PSSA) provided in the Revised PSSA Guidelines are fulfilled for the North-Western Mediterranean Sea,

HAVING NOTED that the Sub-Committee on Navigation, Communications and Search and Rescue (NCSR) at its tenth session agreed a set of draft recommended associated protective measures (APMs) within a Particularly Sensitive Sea Area in the North-Western Mediterranean Sea, which address ship strikes with cetaceans, and that the Maritime Safety Committee, at its one-hundredth and seventh session, agreed that these APMs could be referred by the NCSR Sub-Committee directly to MEPC 80, taking into account the general nature of the APMs, aiming at information-sharing primarily for contributing to the protection of the marine environment,

1 DESIGNATES the North-Western Mediterranean Sea, as defined in annex 1, as a Particularly Sensitive Sea Area;

2 INVITES Member Governments to recognize the ecological, socio-economic and scientific criteria of the North-Western Mediterranean Sea area, set forth in annex 2 to the present resolution, as well as its vulnerability to damage by international shipping activities, as described in annex 3 to this resolution;

3 ALSO INVITES Member Governments to note the associated protective measures established to address the area's vulnerability, the details of which are contained in annex 4 to this resolution, and request ships flying their flag that they act in accordance with such measures.

ANNEX 1

DESCRIPTION OF THE NORTH-WESTERN MEDITERRANEAN SEA PARTICULARLY SENSITIVE SEA AREA (NW MED PSSA)*

Description of the Particularly Sensitive Sea Area

To minimize the risk of ship strikes with cetaceans and ship-generated pollution and to protect the area's unique and threatened species as well as to preserve as far as practicable its critical habitat and diversity, mariners should exercise extreme care when navigating in the area bounded by the geographical coordinates of the Particularly Sensitive Sea Area, provided below, and adhere to the Associated Protective Measures set out in annex 4.

The North-Western Mediterranean Sea Particularly Sensitive Sea Area (NW Med PSSA) is located between the coastline of France, Italy, Monaco and Spain and is defined by a line encompassing the following coordinates:

A	38° 39' 59.379" N	000° 6'0.000" E
B	38° 39' 59.379" N	000° 47' 59.476" E
C	38° 50' 03.331" N	001° 00' 00.398" E
D	39° 19' 01.812" N	001° 00' 25.212" E
E	39° 28' 42.075" N	001° 40' 02.495" E
F	39° 51' 21.986" N	002° 16' 09.853" E
G	40° 34' 13.067" N	004° 04' 31.926" E
H	40° 58' 0.000" N	008° 12'0.000" E
I	41° 09' 10.800" N	009° 31'10.800" E
J	42° 21' 14.400" N	011° 31'0.000" E

To be noted, from H (Falcoe Cape) to I (Ferro Cape) the south boundary follows the coastline of Sardinia. Coordinates are provided by the WGS84 datum.

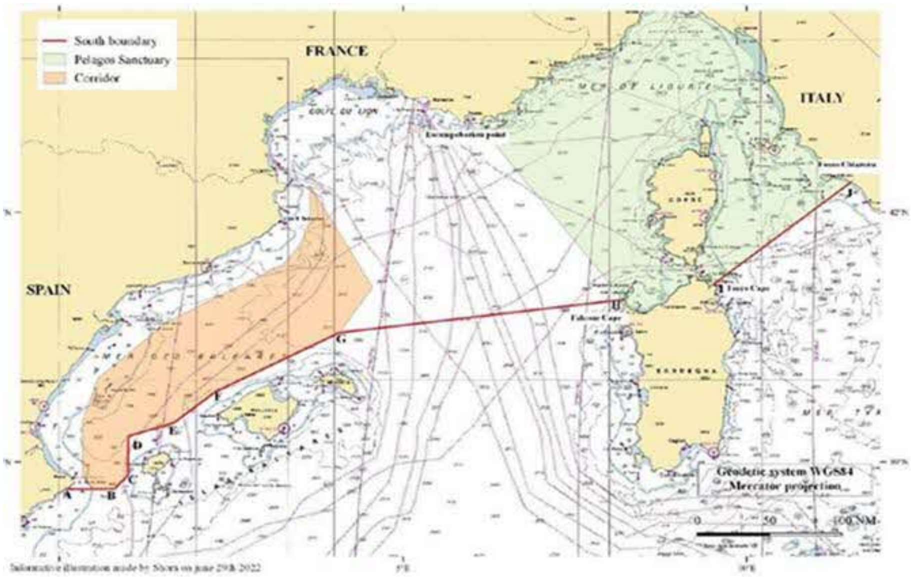


Figure 1: Map showing the NW Med PSSA (Source: SHOM)

* The text in this annex is taken from the information provided by France, Italy, Monaco and Spain in document MEPC 79/10.

This area encompasses the existing Spanish "Mediterranean Cetacean Migration Corridor" and the Pelagos Sanctuary defined as such:

A – "Mediterranean Cetacean Migration Corridor"

ID	Longitude (ETRS-89)	Latitude (ETRS-89)
1.	003° 39' 02.002"E	42° 18' 57.294" N
2.	003° 39' 02.026"E	41° 54' 15.252" N
3.	003° 30' 32.060"E	41° 37' 36.567" N
4.	003° 15' 18.370"E	41° 23' 05.374" N
5.	001° 34' 43.766"E	40° 42' 21.785" N
6.	000° 33' 27.757"E	40° 00' 55.698" N
7.	000° 20' 21.559"E	39° 30' 07.070" N
8.	000° 20' 21.559"E	38° 49' 44.729" N
9.	000° 30' 05.254"E	38° 39' 59.379" N
10.	000° 47' 59.476"E	38° 39' 59.379" N
11.	001° 00' 00.398"E	38° 50' 03.331" N
12.	001° 00' 25.212"E	39° 19' 01.812" N
13.	001° 40' 02.495"E	39° 28' 42.075" N
14.	002° 16' 09.853"E	39° 51' 21.986" N
15.	004° 04' 31.926"E	40° 34' 13.067" N
16.	004° 33' 24.766"E	41° 06' 51.050" N

B – Pelagos Sanctuary

Boundary	Description	Longitude	Latitude
Western	*A line extending from the Escampobariou Point (on the western edge of the Giens peninsula)*	N 43°01'70"	E 06°05'90"
	to the Falcone Cape (the westernmost part of the Gulf of Asinara)	N 40°58'00"	E 08°12'00"
Eastern	*A line extending from the Ferro Cape (on Sardinia's north-eastern coast)*	N 41°09'18"	E 09°31'18"
	to Fosso Chiarone (on the west coast of Italy)	N 42°21'24"	E 11°31'00"

ANNEX 2

ECOLOGICAL AND SOCIO-ECONOMIC CRITERIA OF THE NORTH-WESTERN MEDITERRANEAN SEA PARTICULARLY SENSITIVE SEA AREA (NW MED PSSA)*

1 Introduction

1.1 The NW Med PSSA covers a perimeter corresponding to the eastern boundary of the Pelagos Sanctuary and to the west to the Spanish cetacean migration corridor. These are two specially protected areas of Mediterranean importance (SPAMI) established under the Barcelona Convention and dedicated to cetaceans including over 230 EU Natura 2000 sites. The area fully or partly overlaps, under the Convention on Biological Diversity (CBD) framework, the two ecologically or biologically significant marine areas (EBSA) and three important marine mammal areas (IMMA) identified by the International Union for Conservation of Nature (IUCN) Marine Mammal Protected area task force. This perimeter also includes most of the Strait of Bonifacio PSSA.

Physical features

1.2 The North-Western Mediterranean portion of the basin is characterized by the rapid plunge of its coasts towards the deep-sea (up to 2,000 m in some area) in proximity of the main islands (Corsica and Sardinia) and off the Ligurian coasts and most of the Provence-Alpes-Côte d'Azur's and Catalonia's coasts. The continental shelf is developed off Tuscan coasts (including all around the Tuscan archipelago) and Valencian coasts, with a maximum extension (about 100 km wide) within the study area in the Gulf of Lion (Occitanie).

1.3 Another notable feature of the North-West Mediterranean seabed is that it shows one of the highest densities of canyons globally, veritable submarine valleys present on the oceanic slope, generally between 300 and 600 m deep. Canyons are usually defined from the border of the continental shelf, having their "head" beginning at -200 m deep, and finishing at the bottom of the oceanic bed at -2,000 m deep.

1.4 The Mediterranean is an evaporation basin: precipitation and river inputs do not compensate for evaporation. This water deficit is made up by Atlantic water entering the surface through the Strait of Gibraltar. Less salty and therefore less dense than the Mediterranean water, this water will remain on the surface and determine the surface circulation.

1.5 The surface currents have a complex organization, particularly around Corsica. The main horizontal marine currents have a so-called cyclonic direction (counterclockwise). The areas where they reach a higher intensity in our study area, i.e. an average annual speed of more than 0.25 m per second, are the Ligurian Sea and the Tyrrhenian Sea, east of Bonifacio (Corsica). Seasonal trends show an increase in speed during the summer and autumn.

1.6 Upwelling phenomena, vertical currents that allow deep water to rise to the surface, are due to a combination of horizontal currents with the wind and can be influenced by the presence of submarine canyons. The Ligurian Sea and the northern Tyrrhenian Sea are the most exposed to this phenomenon. In spring, the increase in the temperature of the marine waters leads to a vertical stabilization of the water masses. Thus, marine currents play a very important role in the functioning of ecosystems: through their associated horizontal and vertical movements, they accompany the export of organic matter from the coast to the open sea.

* The text in this annex is drawn from information provided by France, Italy, Monaco and Spain in document MEPC 79/10. All references used in this resolution are set out in the annex to document MEPC 79/10.

General

1.7 The North-Western Mediterranean Sea is one of the world's 10 biodiversity hot spots, and although it represents only 1% of the total surface area of the oceans, it is home to around 10% of the world's recorded species. The area therefore simultaneously evidences multiple criteria for PSSA designation: critical habitat, dependency, diversity, productivity, spawning or breeding grounds, fragility, biogeographic importance, social or economic dependency, and research and education. These criteria, which are described below, demonstrate the global importance of the area, they have also been considered thoroughly under a number of policy frameworks on natural heritage and socio-economic elements of the marine environment, including under the CBD and Barcelona conventions, and European Union policies (e.g. Marine Spatial Planning, Marine Strategy Framework Directive, Common Fishery Policy, Habitats Directive and the General Fisheries Commission for the Mediterranean (GFCM)).

2 Ecological criteria

Uniqueness or rarity

2.1 The North-Western Mediterranean is part of a semi-enclosed sea with a high rate of endemism. The vast majority of its biological populations are composed of Mediterranean subpopulations, genetically isolated from the Atlantic populations and the others.

Critical habitat

2.2 The ecological and biological significance of the PSSA is supported by the existence of two areas listed under the CBD framework of the EBSAs, which are overlapping it:

.1 the North-Western Mediterranean Benthic Ecosystems; and

.2 the North-Western Mediterranean Pelagic Ecosystems.

In addition, over two thirds of the PSSA are covered by the "North-Western Mediterranean Sea, Slope and Canyon System", the "The Shelf of the Gulf of Lion" and the "Western Ligurian Sea and Genoa Canyon" IMMAs, identified by the IUCN Marine Mammal Protection Working Group. Moreover, the PSSA includes a candidate IMMA (the "Central Tyrrhenian Sea IMMA") and an Area of Interest (the Tuscan Archipelago), which could soon become IMMAs. It is also adjacent to the "Balearic Islands Shelf and Slope IMMA", off the southern coasts of Balearic Islands, a critical habitat for the Mediterranean sperm whale. It also includes the Pelagos Sanctuary for marine mammals.

2.3 These areas have a set of geomorphological and oceanographic features that favour productivity levels of extraordinary biological and ecological importance for the region. In particular, the PSSA area overlaps important habitats for the endangered Mediterranean fin whales (*Balaenoptera physalus*), the endangered sperm whales (*Physeter macrocephalus*), the vulnerable Cuvier's beaked whales (*Ziphius cavirostris*), the Habitats European Directive Annex II bottlenose dolphins (*Tursiops truncatus*) and the endangered Risso's dolphins (*Grampus griseus*) (ACCOBAMS 2022). All cetacean species are also listed in Annex IV of the Habitats, Fauna and Flora European Directive 92/43/EEC (animal and plant species of Community interest that require strict protection). These species are included in the IUCN red list.

2.4 The preservation of cetaceans is a necessity in terms of maintaining the ecological balance in the Mediterranean Sea and contributes to the mitigation of climate change (Roman et al. 2014) their economic value must also be considered, as cetaceans play a major role in the development of tourism in the area. Finally, from the point of view of biodiversity, some of the Mediterranean cetacean subpopulations are genetically isolated from Atlantic populations and the others (e.g. fin and sperm whales), which gives them a unique value.

2.5 Numerous studies have attempted to define the habitat of cetaceans and distinguish the presence of different species by physical and hydrological factors such as surface water temperature and the different water masses present, topographical features, and currents. The presence of cetaceans is often dependent on the distribution of the prey they feed on. The continental slope is the preferred habitat of species with a specialized diet composed mainly of cephalopods: the sperm whale, the Cuvier's beaked whale, the long-finned pilot whale and the Risso's dolphin; the great abyssal plain is the preferred habitat of the fin whale. The bottlenose dolphin prefers waters to the continental shelf, usually within the 100 m isobath.

2.6 The PSSA is frequented by several species of cetaceans, eight of which (fin, sperm, Cuvier's beaked and long-finned pilot whales, Risso's, bottlenose, striped and common dolphins) are regularly present all year round.

2.7 The importance of this area for fin whales is clear: the estimated abundance of this species within the PSSA represents about 67% of the whole Mediterranean population (ACCOBAMS 2021). Concerning the sperm whale, compared to the total Mediterranean estimate of about 1,400 individuals (ACCOBAMS 2021), the estimate in half of the PSSA (the whole Pelagos Sanctuary and French waters; Laran et al., 2017) was between 300 and 600 individuals, with higher numbers in winter. The predicted distribution of these two species is shown in figures 2 and 3.

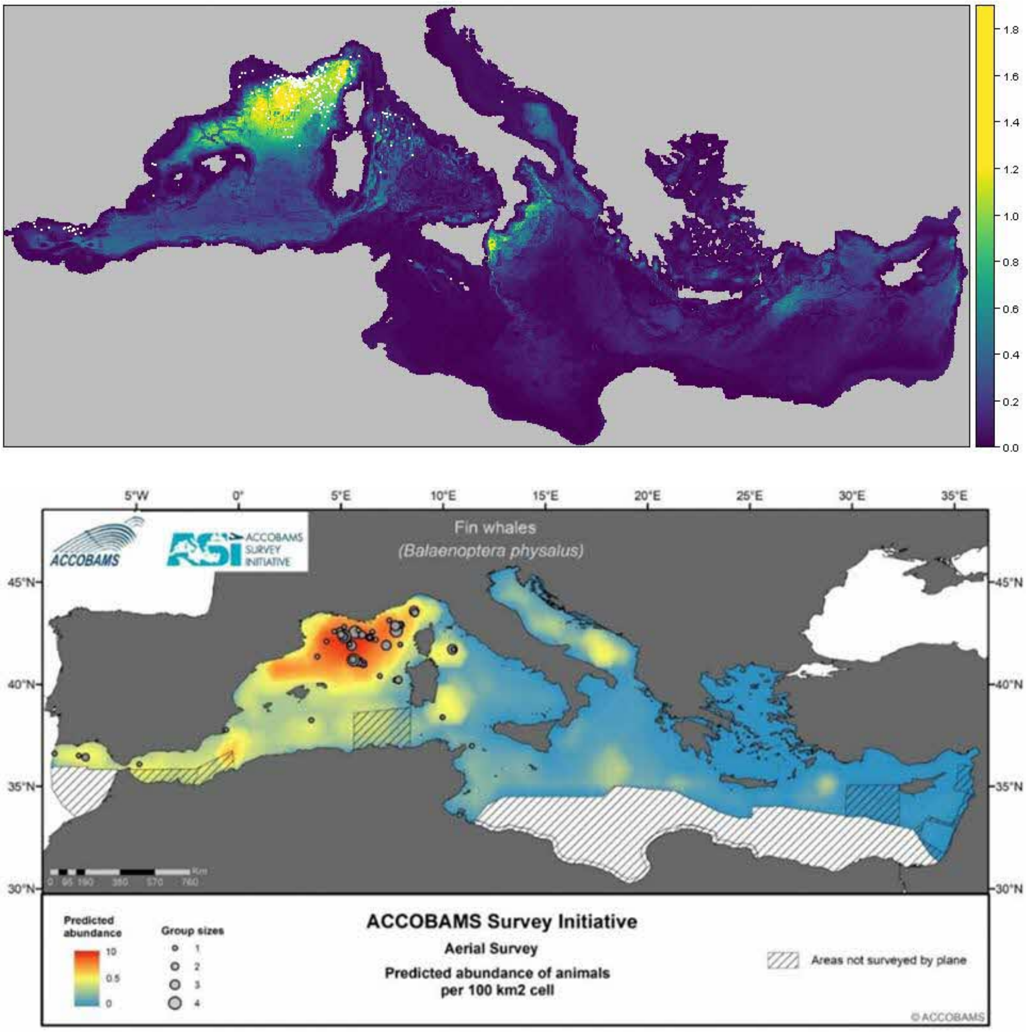


Figure 2: Above: Fin whale predicted densities (summer data: 1999-2016) (Mannocci et al., 2018); Below: Fin whale predicted densities (summer 2018) (ACCOBAMS, 2021).

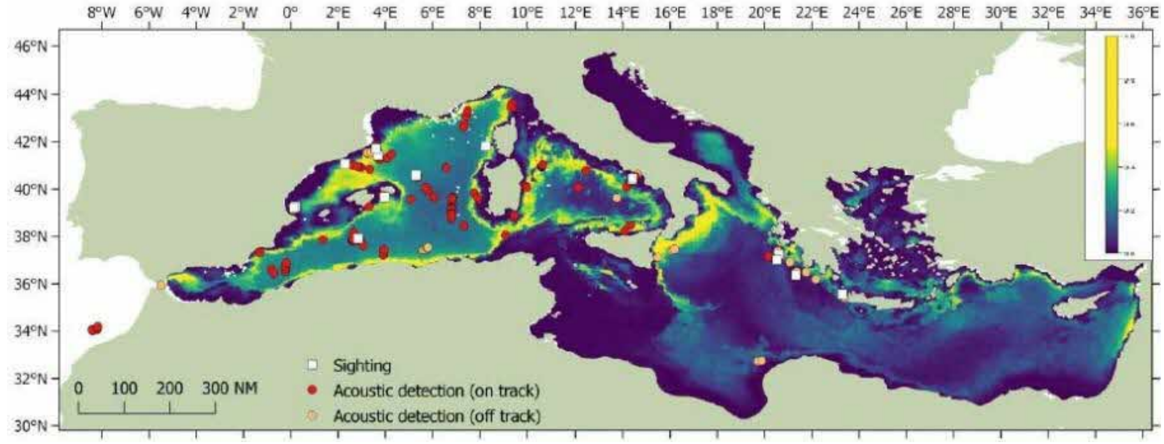


Figure 3: Sperm whale sightings and acoustic detections (ASI 2018, white squares and red/orange circles), overlaid on a predictive density map from Mannocci et al., 2018 (yellow = highest probability, blue = lowest probability) (ACCOBAMS, 2021).

2.8 To date, there is no fine-scale mapping of the preferential habitats of these cetacean species for the entire North-Western Mediterranean basin that could be used to guide a zoning approach. Thus, the identification of areas with higher risk of collision between ships and sensitive species (the fin whale and the sperm whale) within the PSSA is complex.

2.9 The latest cetacean research campaigns in the Mediterranean carried out as part of the ACCOBAMS Survey Initiative (ASI) have confirmed the knowledge on preferential presence of fin whales within the PSSA (figure 2), particularly from off the Gulf of Lion to the coastal and offshore waters off Catalonia. Concerning the offshore areas, this may be linked to the presence of cyclonic eddies that are the main reason for the high productivity of the area, as canyons play more a local role.

2.10 The North-Western Mediterranean has one of the highest densities of marine canyons recorded globally and regionally, which probably strongly contributes to make it highly productive (see section 2.13). Concerning the Spanish offshore and coastal areas, this has been recently confirmed as a core-feeding habitat for fin whales, especially in shallow coastal waters, through satellite tagging. Interestingly, these coastal waters coincide with areas of higher density within the North-West Mediterranean for European sardines (*Sardina pilchardus*) and European anchovies (European anchovy). Their occurrence extends to the edge of the continental shelf and their distribution generally overlaps, although sardines are distributed closer to the coast and reach larger sizes (EC et al,. 2020).

2.11 Concerning the sperm whale, the predicted distribution by Mannocci and colleagues (2018) (figure 3) shows higher densities in the area within the PSSA between the Balearic Islands and the Spanish continental coast.

2.12 A synthesis of distribution of both species has also been carried out for the Pelagos Sanctuary and adjacent waters (Laran et al., 2012). Based on multiple data sets over 15 years, gathering more than 6,000 opportunistic observations, this study highlighted a number of important features on species' spatial and temporal distribution, including:

.1 the fin whale regularly frequents both the Pelagos Sanctuary and the adjacent waters of the Provençal area and southern Gulf of Lion;

.2 within the Sanctuary, the fin whale seems to be present mainly in the western part;

.3 the distribution of fin whales in spring seems to be mainly related to permanent frontal structures, while from June to September it is also related to temporary frontal structures. At the end of the summer, the distribution of fin whales is more related to permanent frontal zones located closer to the coast in the Liguro-Provençal area or certain upwelling zones such as the one to the east of Bonifacio;

.4 the sperm whale is frequently found on the continental slope but can also be found in certain restricted areas offshore; and

.5 the highest sperm whale encounter rates are in areas with lower fin whale encounter rates, demonstrating very distinct ecological niches likely due to their very different diets (planktonophagous the fin whale, teutophagous the sperm whale).

Dependency

2.13 The area and particularly the Pelagos Sanctuary is an essential feeding ground for several cetacean species in the North-Western Mediterranean; here, meteorological and oceanic conditions allow primary productivity in spring and summer to be higher than in the coastal area. For example, Atlantic krill (*Meganyctiphanes norvegica*), a zooplankton species that is exceptionally abundant in the Sanctuary in summer and autumn, is the only identified source of food for fin whales in summer in the Ligurian-Provençal basin.

2.14 Cuvier's beaked whales, long-finned pilot whales, sperm whales and Risso's dolphins also take advantage of the Sanctuary's high productivity, particularly on the slope and in the canyons, but with a time lag compared to fin whales, since the peak abundance of their prey (mainly cephalopods) is observed later in the season. Bottlenose dolphins or striped dolphins are permanently present in the waters of the Sanctuary thanks to less specific diets consisting of cephalopods or fish.

2.15 The NW Med PSSA also includes cetacean corridors. Of particular importance are the Spanish cetacean migration corridor, north of the Balearic Archipelago, which is also an important feeding area for striped dolphins, Risso's dolphins, sperm whales and beaked whales (mainly a three-month period, between April and June). This corridor is also used by fin whales during their migration from the African coasts of the Mediterranean to the Gulf of Lion and the Ligurian Sea, in June and July.

2.16 The North-West Mediterranean is characterized by a very high density of submarine canyons. Canyons are important habitats for some cetacean species (e.g. Cuvier's beaked whales) and they also contribute to upwelling phenomena enhancing local primary productivity with the effects extending up the food chain to include birds, marine mammals and fisheries. Commercially important pelagic and demersal fisheries and unique benthic habitats are commonly associated with the heads of shelf-incising submarine canyons that are characterized by steep bedrock exposures. Submarine canyons that extend across the continental shelf and approach the coast are known to intercept organic-matter-rich sediments being transported along the inner shelf zone. This process causes organic-rich material to be supplied and transported downslope, where it provides nourishment to feed a diverse and abundant macrofauna (Wurtz 2012).

2.17 Other unique habitats that are highly vulnerable to shipping accidents are present in the region surrounding the PSSA. For example, the Camargue wetlands – a Ramsar site of about 135,000 ha, the largest French wetland and the second largest Mediterranean wetland after the Nile Delta region and a key site of international importance for nesting, staging and wintering of several species of waterbirds.

Productivity

2.18 Although the Mediterranean is generally considered to be an oligotrophic sea, i.e. low in nutrients, its North-Western basin is characterized by relatively high mesotrophic productivity throughout the year, due in part to the physical characteristics mentioned above (see sections 1.2 and 2.13). The phytoplankton bloom begins in mid-April. This high level of primary productivity conditions the structuring of the upper levels of the food web, in particular the presence of tertiary consumers such as cetaceans, which are particularly abundant in summer.

Spawning and breeding grounds

2.19 Mediterranean cetaceans do not show specific breeding grounds. However, a high percentage of juvenile whales are reported in the study area. Biopsy sampling analyses determined that at least one third of the individuals sampled were breeding females and the remaining two thirds were active breeding males (Siliart et al., 2012), supporting the hypothesis of this as an area favourable to the reproduction of the species. Similarly, the analysis of the structure and composition of the groups and their sex ratio have shown that this area is favourable for sperm whales and long-finned pilot whales too (Di-Méglio et al., 2016).

2.20 Sardines' persistent spawning habitats are identified along Spanish and French waters, especially surrounding the river mouth areas of Ebro and Rhone, with persistent nursery habitats in the coastal areas and over the continental shelf edge of the Gulf of Lion and in the northern part of the Ebro delta. Concerning anchovies, persistent spawning areas are described along the continental shelf of the same region, with persistent nursery habitats found mainly over the Spanish continental shelf and in a localized area of the central part of the French waters (EC et al., 2020).

Fragility

2.21 The semi-enclosed nature of the Mediterranean Sea and its high level of endemism, already mentioned, as well as the near absence of tides, make it particularly vulnerable to any change. The constant increase in human activities at sea, in particular maritime traffic, combined with phenomena linked to climate change (warming, acidification, eutrophication and bioaccumulation of marine waters in particular) are weakening the natural balance of the North-Western Mediterranean zone.

2.22 As far as cetaceans are concerned, all the species frequenting the area are particularly vulnerable because of their slow growth, their high longevity (up to 100 years for some individuals) and their low reproduction rate: for these species in particular, human exploitation of the area at high levels (maritime traffic, but also fishing and leisure activities) is a permanent challenge (Reeves and Notarbartolo, 2006).

2.23 The importance and fragility of this region is clearly demonstrated by the large and consistent amount of official international deliberations and recognitions (Pelagos Agreement, Strait of Bonifacio PSSA, 11 SPAMIs, 2 EBSAs) and expert recognitions (3 IMMAs) and the national implementations of area-based protection measures (7 National Parks, 230 Natura 2000 sites and other marine protected areas).

Bio-geographic criteria

2.24 The particular qualities of the North-Western Mediterranean Sea have already been mentioned and make it singular in biogeographic terms. This singularity is particularly marked in the Ligurian Sea with the presence of the Ligurian-Provençal front, a region of rapid transition between the light waters of the Ligurian current and the denser waters of the central zone of this front, in the shape of a horseshoe. It runs about 20 nautical miles along the western coast of Corsica, the Italian coast of Liguria and the French Riviera in a cyclonic movement. The permanent nature of this front, as well as its inter-annual stability in terms of hydrology, gives it a dominant role in the organization of phytoplankton communities and ensures the maintenance of a zone that is richer in nutrients than the adjacent regions, particularly in spring (Goffart et al., 1994).

2.25 The North-Western Mediterranean is of particular importance from an ornithological point of view. It is the most important area in the world for the conservation of the Balearic Shearwater (*Puffinus mauretanicus*), a species endemic to the North-Western Mediterranean whose status is considered critically endangered in Europe. The area is also essential for Audouin's Gull (*Larus audouinii*), whose conservation status in Europe is said to be "localized" as more than 90% of the breeding population is clustered in less than 10 sites. The colony in the Ebro Delta (Spain) alone accounts for 67% of the world population of this species (Gutierrez et al., 2008). The area is also used extensively by the Mediterranean endemic subspecies of the crested cormorant (*Phalacrocorax aritotelis desmarestii*) and storm-petrel (*Hydrobates pelagicus melitensis*).

2.26 This area hosts Mediterranean subpopulations of tropical, subtropical or boreal fish species or coastal invertebrates, but also top predators such as fin whales, sperm whales or bottlenose dolphins. This allows the existence of a naturally balanced and functional food web. The importance of biodiversity within the study area and the genetic specificity of its populations makes it a special area, whose deterioration could lead to the disappearance of entire subpopulations.

3 Social, cultural and economic criteria

Social or economic dependency

3.1 The Mediterranean coasts welcome an ever-increasing number of travellers and are a stronghold of world tourism. Seaside tourism, favoured by an exceptional marine environment, is one of the main economic resources of this region. The proximity of several beautiful islands (Corsica, Sardinia, the Tuscan archipelago, Balearic Islands, etc.) makes this region particularly attractive and, to a large extent, economically dependent on tourism.

3.2 Commercial whale-watching (a tourist service that allows visitors to observe cetaceans in their natural environment) has been a fast-growing activity since the 1990s. A study conducted in the French Mediterranean identified 32 operators (with a capacity of 1,075 places). Between the 1980s and the early 2000s, the annual growth rate in the number of operators was estimated at 3.5% (Mayol et al., 2014). This activity is mainly carried out between June and September.

3.3 Professional fishing is an integral part of the Mediterranean landscape, despite a relative economic weight and decreases in the number of vessels, sailors, sales in value and volume. It contributes to the dynamism and survival of the Mediterranean coastal economic fabric as well as to its reputation. Fishing activity is constrained in several ways, particularly with the decline in fish stocks and the management measures implemented to remedy this (MTES, 2019).

4 Scientific and educational criteria

Research

4.1 It is essential to study Mediterranean cetaceans in order to gain a better understanding of them and then define the most effective management and conservation rules. The Pelagos Sanctuary, which includes France, Italy and Monaco, is a pilot area in which a number of international research programmes are already being conducted to improve knowledge not only of cetacean populations in the North-Western Mediterranean, but also of the main anthropogenic threats to which they are exposed, both at sea and on land. The establishment of the Spanish cetacean migration corridor also makes it possible to promote research on these populations, embracing an even wider diversity of habitats.

Education

4.2 Knowledge of cetacean populations must continue to progress, but it must also be disseminated to as many people as possible. The existence of marine protected areas contributes effectively to this and promotes collective awareness of the rich and fragile nature of marine areas and the populations they shelter, through the awareness-raising and communication activities they implement.

4.3 The development of whale-watching activities in situ also contributes to this, when properly supervised. The emblematic nature of cetaceans makes it possible to communicate more widely with the general public on ecological issues that concern the entire marine environment and the impacts it is suffering, particularly as a result of direct human action and climate change. The training of marine professionals is also an important lever for raising awareness, which can be deployed in different formats: initial and ongoing training, courses, webinars, etc.

ANNEX 3

VULNERABILITY TO DAMAGE BY INTERNATIONAL SHIPPING ACTIVITIES*

1 Vessel traffic characteristics

Introduction

1.1 The Mediterranean Sea is one of the busiest shipping areas in the world, being the gateway between the European continent and Asia via the Suez Canal. With an estimated 220,000 merchant ships per year, commercial shipping is particularly intense in the Western Mediterranean, especially in relation to passenger transport. Commercial activity concerns the transport of passengers or goods by ships often exceeding 100 m in size, sailing at between 14 and over 20 knots (ferries, cargo ships, tankers, container ships, etc.) and up to more than 35 knots for high-speed craft (HSC), which are mainly used to serve the islands.

1.2 From the mid-1990s to the mid-2000s, the Mediterranean Sea has seen a 58% increase in transit capacity, coupled with a 30% increase in vessel size since 1997. Maritime transport in the Mediterranean basin is expected to increase in the coming years, both in number of routes and in intensity, especially in connection with the enlargement of the Suez Canal. Marine Mammal Observers working within the Fix Line Transect Mediterranean Network (FLT) aboard ferries, at the command deck, raise awareness of the navigating staff of ferries.

1.3 An analysis of Automatic Identification System (AIS) data by the Centre for studies and expertise on risks, environment, mobility and urban and country planning (Cerema – France) shows a gradual trend towards an increase in the number of vessels equipped with this identification system using the area and in the number of voyages made in the area (figure 4).

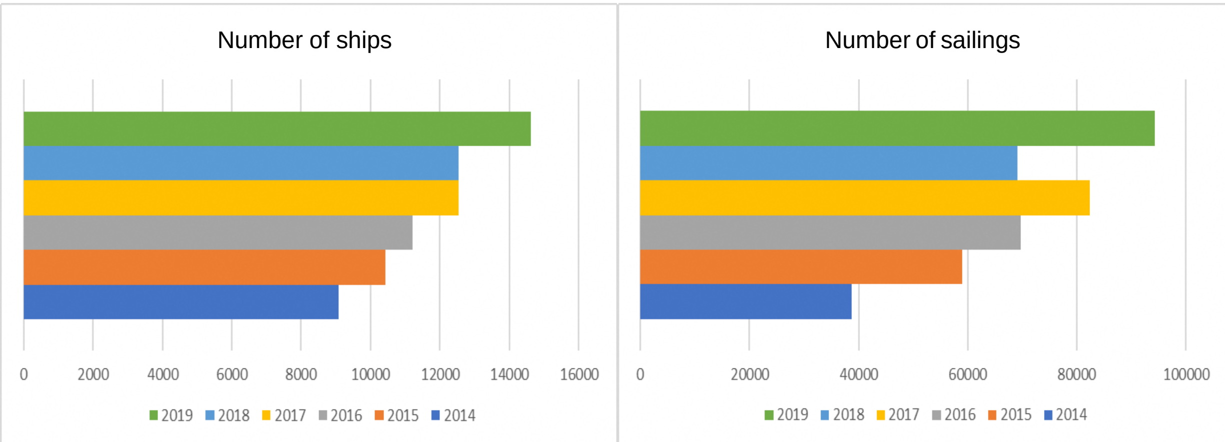


Figure 4: Number of ships and sailings in the study area (based on AIS data).

* The text in this annex is taken from the information provided by France, Italy, Monaco and Spain in document MEPC 79/10. All references used in this resolution are set out in the annex to document MEPC 79/10.

Operational factors

1.4 In the North-Western Mediterranean, shipping traffic is mainly structured towards or from the ports of Valencia, Tarragona, Barcelona, Marseille, Genoa, La Spezia and Livorno for goods traffic, to which are added the ports of Toulon, Sète, Nice, Savona and all ports in the islands of Corsica, Sardinia, the Tuscan archipelago, Sicily and the Balearic Islands for passenger transport. This geographical situation of proximity to the islands, combined with commercial port infrastructures, promotes maritime ferry traffic. Moreover, the cruise activity has largely developed in the Mediterranean, benefiting from favourable weather conditions and dedicated infrastructures: the region represents the second world market for this sector, after the Caribbean (Di-Méglio et al., 2010). Finally, more than 700 marinas are listed in the Mediterranean basin.

Vessel types

1.5 A study conducted by the Quiet Oceans consultancy on behalf of WWF (Gallou and Folegot, 2020) analysed shipping traffic in the North-Western Mediterranean, using AIS data from 2019. In terms of distance travelled in this area, passenger ships and cargo ships travel by far the greatest distance, followed by motorized pleasure craft and fishing vessels.

Traffic characteristics

1.6 Freight traffic is higher in winter, in the northern part of the study area, along the coasts of the Gulf of Lion, towards Barcelona and with Corsica and Sardinia. Passenger traffic is highly structured around links between the main ports of France, Spain and Italy on the one hand, and Corsica, the Balearic Islands, Sardinia and the Tuscan archipelago on the other. Traffic intensity increases significantly during the summer months for passenger transport between the Mediterranean islands and the mainland, as well as with additional connections to North Africa and Barcelona and with cruise activity (see figures 5 and 6).

1.7 More than two thirds of the vessels using the study area (68% in winter and 71% in summer) fly a European flag, representing more than 70% of the cumulative distances travelled, whatever the season.

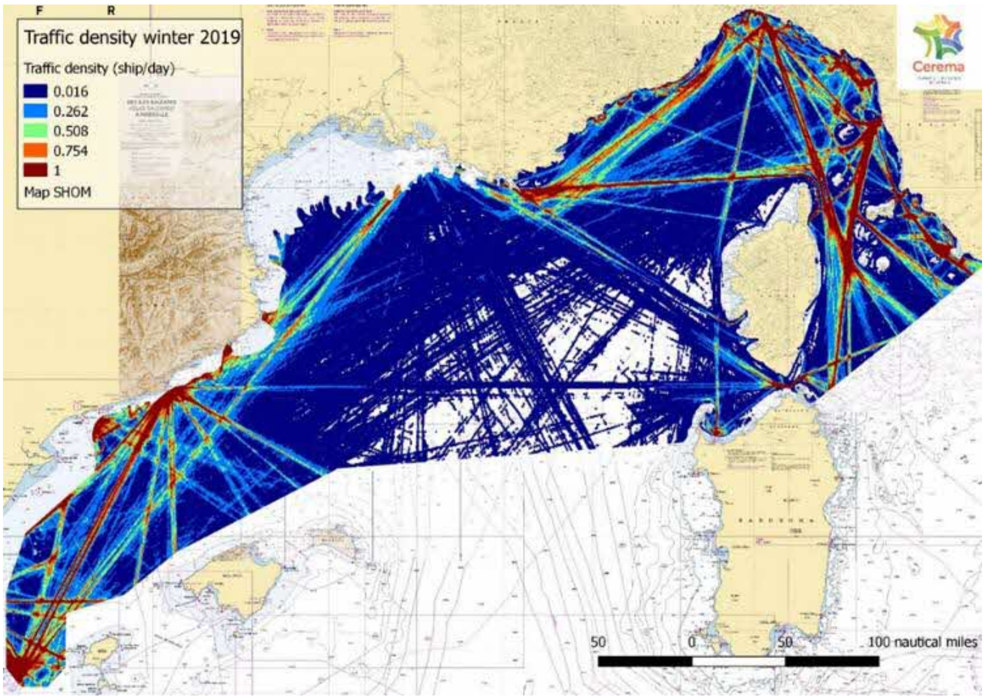


Figure 5: Representation of the maritime traffic during the winter period (2019, AIS source).

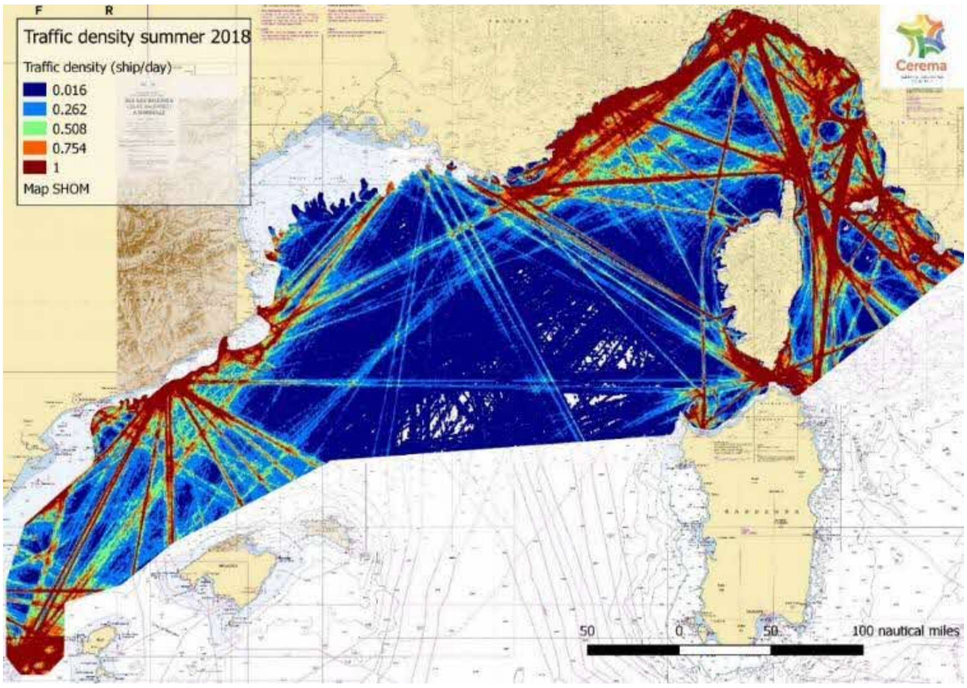


Figure 6: Representation of the maritime traffic during the summer period (2018, AIS source).

Harmful substances carried

1.8 The rules on the transport of harmful substances are derived from the International Convention for the Prevention of Pollution from Ships, known as the MARPOL Convention. These rules are contained in different international codes, depending on the nature and mode of transport of these substances. The Mediterranean is an important transport route, but also a major oil loading and unloading centre. It is also a major route for tankers.

1.9 In 2006, about 18% of the world's crude oil shipping, representing 4,224 voyages and 421 million tonnes, took place in the Mediterranean (MIU, 2008). Of the 10 main ports of discharge identified in 2006, 4 are located in the study area: Fos and Port-de-bouc (Marseille region), Genoa and Savona (Italy).

1.10 In 2006, liquefied natural gas (LNG) and liquefied petroleum gas (LPG) loadings amounted to 31 and 19 million tonnes respectively and unloading to 25 and 20 million tonnes for the whole Mediterranean (MIU, 2008).

1.11 Transported chemicals include organic compounds, animal oils and fats, inorganic compounds and other miscellaneous products. The transport of chemicals in liquid and gaseous form represents a relatively small share of international maritime trade (about 2%) but remains a very dynamic and important sector in terms of value of goods; however, their accidental release would be harmful to the marine environment.

2 Natural factors

Hydrographical

2.1 Some areas are known to present risks to navigation, due to the presence of the narrowness of the passage or sectors with numerous islands and islets. This is particularly the case of the Strait of Bonifacio, which is 15 to 20 km wide and 100 m deep at its deepest point between southern Corsica and northern Sardinia. At its eastern mouth, it also contains the islands of the archipelagos of La Maddalena, Lavezzi and the island of Cavallo. This passage is considered dangerous due to the presence of numerous rocks and strong currents that can increase the risk of grounding and other accidents. These characteristics prompted the establishment of the Bonifacio Strait PSSA.

2.2 The small pass of the islands of Hyères is also a potentially dangerous area for large vessels. Located between the Giens peninsula and the island of Porquerolles, its narrowest part extends over less than one mile, with depths of less than 20 m. The traffic of passenger HSC is very important in the summer season. Cruise ships and ro-ro passenger ships also use it, generally in an east-west direction in heavy westerly weather (GIS3M, 2010).

Meteorological

2.3 The Mediterranean climate is characterized by hot, dry summers under the influence of the Azores anticyclone, and mild, relatively rainy winters. Local winds are variable, in both direction and strength, and become stronger in winter with gusts that can exceed 100 km/h. North and north-west winds (Tramontane and Mistral) create the most violent storms.

Oceanographic

2.4 In the Mediterranean, the influence of the tides is weak; the tidal range does not exceed 40 cm on average near the coast. Tidal currents are weak and negligible compared to wind-induced currents. Generally, they are not felt near the coast in wide open areas, but they can be rapid in some narrow passages or shallow areas. The average sea waves and swell are generally weak, due to the small size of the Mediterranean basin where swells are infrequent and not very developed. The strongest states of the sea, in terms of height, are generated by north to north-west winds.

3 Other Information: Impacts of shipping traffic on the area

Collisions between ships and large cetaceans

3.1 The impact of ship collisions is now internationally recognized as an important threat to cetaceans, especially as shipping traffic, vessel size and speed continue to increase. Collisions involve a wide variety of vessels, with the risk of collision increasing with vessel speed (as does the severity of injury to the animal), although there is currently insufficient data to adequately quantify this risk (Leaper, 2019).

3.2 The actual total number of collisions between large cetaceans and ships and the consequent impact at population level are difficult to be assessed. Accidents generally take place offshore and are rarely noticed by seafarers (this is particularly true when the vessels are large). Nevertheless, scientific work carried out over the last 15 years, sometimes in collaboration with shipping companies, has shown that two species are mainly concerned in the Mediterranean: the fin whale (*Balaenoptera physalus*) and the sperm whale (*Physeter macrocephalus*). The latter spends long periods of rest floating at the surface, usually about 10 minutes, between deep dives: this behaviour makes it very vulnerable to ship strikes (UNEP/MAP-RAC/PSA, 2016).

3.3 Analysis of records of collisions between ships and the Mediterranean fin whale population over the period 1971-2001 showed that more than 80% of fatal ship strikes occurred in the North-West Mediterranean (Panigada et al., 2006). During the period 2012-2018, the annual number of deadly collisions within the PSSA perimeter was up to 25.38 (Standard Deviation (SD) =5.97) fin whales per year. Based on recognized management rules, this value means that collisions alone prevent the restoration of the fin whale subpopulation within 100 years. Furthermore, there is almost a 10% chance that ship strike mortality triggers a subpopulation decline.

3.4 Strandings data may complement the information on these accidents. A study carried out on strandings on the French coast since 1972 (Peltier et al., 2019) gave the following results:

.1 collisions are the main human cause of death for fin whales in the western Mediterranean (22.5% of stranding causes analysed on average; they are the cause of one in five strandings for all species combined);

.2 evidence of collision could only be found for the period 2005 - 2017 for the sperm whale in the Mediterranean;

.3 the majority of fin whales fatally struck by ships had not yet reached the reproductive stage; and

.4 the small size of the fin whale population in Mediterranean waters makes it particularly vulnerable to anthropogenic pressures.

3.5 An assessment carried out by France as part of the implementation of the European Marine Strategy Framework Directive (MSFD), in 2018, reports that in the western Mediterranean collisions are a cause for concern for fin whales, accounting for 80% of recorded events, compared to 10% for sperm whales (Spitz et al., 2018). Other work indicates that collisions and incidental catches alone may be responsible for the decline of the Mediterranean fin whale subpopulation, and points to the need for further research to determine how indirect anthropogenic mortalities (pollution, prey depletion) affect the sperm whale population (Sèbe et al., 2020).

3.6 Another approach to assessing the risk of collision is theoretical statistical analysis. Thus, the processing of data concerning shipping traffic with those mentioning the presence of cetaceans made it possible to calculate a theoretical ship-whale encounter rate ("near miss event" or NME). This approach was implemented for the study area (excluding the Spanish corridor), and gives the following results for fin whales (Gallou and Folegot, 2020), however this work could not be carried out for sperm whales due to the lack of sufficient biological data:

.1 seasonal differences are mainly due to the variability in the number of ships using the area, which doubles in summer compared to winter; and

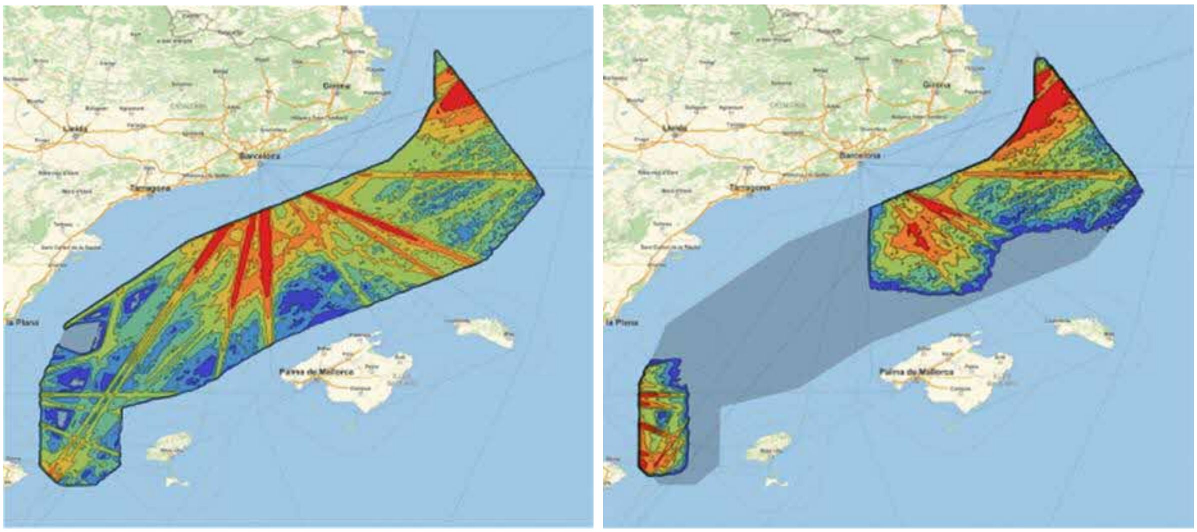
.2 passenger ships and cargo ships have the highest cumulative risk of collision (84% NME in winter, 72% in summer).

3.7 In a similar manner the Spanish experience focused on a study carried out in the MPA Cetacean Migration Corridor in the Mediterranean (CEDEX, 2021), where the presence of fin whales) and sperm whales has been confirmed. For this purpose, a spatial qualitative indicator of "potential risk of collision" was used considering, on the one hand, data related to maritime traffic, based on AIS data, and on the other hand, the available information related to sightings of the species under study, cited above.

3.8 The analysis carried out for the period of Oct 2018-Sep 2019 showed that up to 4,552 ships (including high-speed crafts, passenger ships, cargoes and tankers) have transited this marine protected area, making a total of 5.81 million km travelled with an average route per ship of 132 km.

3.9 In order to obtain the spatial distribution of collision risk, a hazard analysis was carried out, based on the logistic curve that relates the ship's speed and mortality (Vanderlaan and Taggart, 2007) and an approximation to a hazard index based on Vaes and Druon (2013). This index includes not only the traffic involved, but also the characteristics of the ship and its navigation features (i.e. distance travelled), which can affect the fate of the cetacean after the collision. This concept of risk represents a further step, since it combines the hazard of maritime traffic with the exposure associated with the presence of cetaceans.

3.10 The final objective was to identify those zones within the study area where the concentration of individuals and overall risk was higher. Within the cetacean migration corridor, for the total traffic analysed, these areas were identified with the north-western end of the corridor and the area affected by the routes starting from the port of Barcelona, as shown in figure 7. A more detailed analysis (not included in this document) makes it possible to quantify the contribution to this risk indicator of the different categories of ships or the incidence of the seasonal effects of traffic.



Balaenoptera physalus *Physeter macrocephalus*

Figure 7: Potential collision risk index associated with the presence of the cetaceans and maritime traffic in the CCM Oct 2018-Sept 2019 (CEDEX, 2021).

3.11 In order to help the decision-making process, this analysis allows focusing on where and when to take measures (i.e. depending on the availability of data related to a temporal distribution of cetaceans). Based on the above, it is concluded that the whale population has suffered ship strikes in the region and therefore the cetacean population is at risk. Without associated protective measures to mitigate the risk of collision within the perimeter of the PSSA, a decline in the populations of medium and large cetaceans is to be expected. Implementing a speed reduction strategy will allow a significant decrease in the likelihood of collision and fatal wildlife-related injuries.

3.12 The IWC Scientific Committee has identified the need for a better understanding of the relationship between vessel speed, the risk of death or injury to the whale and damage to the vessel. It has considered a number of studies and approaches since 2009 when MEPC.1/Circ.674 was adopted. All the studies considered have confirmed an increased risk with increased speed, supporting the use of speed restrictions as a way of reducing risk. Some studies have attempted to quantify the speed-risk relationship for specific whale species (Conn and Silber, 2013) or the hydrodynamic forces in relation to speed (Silber et al., 2014). Others (e.g. Wiley et al., 2011) have evaluated the relative risk reduction that might be achieved by speed restrictions. In addition to studies based on collisions, studies based on observations of whales close to vessels have inferred greater collision risks with increases in speed (Gende et al., 2011; Harris et al., 2012).

3.13 At its meeting in 2022, the IWC Scientific Committee recommended that "*action needs to be taken to reduce ship strike risks to the Mediterranean populations of fin and sperm whales*". The Committee also recognized that, "*in line with its previous recommendations, since routeing options do not seem to be possible in the area, the most effective way to reduce risk is through speed reductions*". Finally, the Committee recommended that "*any measures that are implemented are fully monitored and evaluated in terms of the risk reduction that is expected to be achieved, including through the use of AIS data to assess levels of industry cooperation, and that measures can be adapted based on this*".

3.14 The most recent example of voluntary speed reduction to mitigate cetacean ship strikes is given by the case of the endangered Bryde's whales in the Hauraki Gulf, New Zealand (Constantine et al., 2015). Since the introduction of a speed limit of 10 knots in 2013, no collision events were recorded after an average of 2.4 whales per annum recorded in the period 1996 - 2014 (Ebdon et al., 2019).

3.15 Along the Atlantic coast of the United States, in the five years after the enactment of mandatory 10 knots speed restrictions in several Seasonal Management Areas, there were no right whale mortalities attributed to ship strikes either in or within 45 NM of these areas. These results indicate a statistically significant reduction in right whale ship lethal strikes in these areas suggesting that the speed limits have been effective (Laist et al., 2014).

3.16 Several models have shown that speeds between 10 and 13 knots drastically decrease the probability of lethal injuries in case of collisions between ships and cetaceans (Vanderlaan & Taggart 2007; Gende et al., 2011; Conn & Siliber 2013). There is strong support to identify 12 knots (11.8 knots or 6.1 m/s) as Bayesian change point of probability for the relationship between ship speed and encounter distance. Average encounter distances above and below the 11.8 knots change point vary from 448 m (95%CrI, 398-485) to 562 m (95%CrI, 468-676) (Gende et al., 2011).

Physical disturbance of cetaceans by ships

3.17 The presence of ships may influence cetaceans: attraction, flight or no apparent reaction, depending on species and individuals (Di-Méglio et al., 2010). It is likely to generate behavioural responses causing individuals to move to less favourable habitats, altering the normal course of functions such as foraging, social functioning, reproduction, suckling, resting or migration. This state of stress alters the health status of individuals and demographic parameters may be degraded. If changes in cetacean behaviour have been observed (notably in the case of the bottlenose dolphin in the Mediterranean) and disturbance distances have sometimes been inferred, it is difficult in the current state of knowledge to quantify the impacts of this pressure in terms of population ecology.

Underwater noise from commercial shipping

3.18 Underwater noise generated by human activities is one of the pressures identified and assessed in the framework of the implementation of the Marine Strategy Framework Directive (descriptor 11 of the Directive) and its complementary process at the Mediterranean level (Ecosystem Approach Process (EcAp) led by the Barcelona Convention). Among the activities concerned is shipping, where the main contributor to the noise generated by a merchant ship is the movement of the engine propeller. The noise level increases with the shape of the propeller, the state of wear of the ship, its size, speed and loading. The literature shows a direct relationship between speed and noise (McKenna et al., 2013; Zobell et al., 2021). Leaper (2019) concluded that a 10% speed reduction would reduce the total sound energy from shipping by around 40% on the global scale.

3.19 In the Mediterranean basin, anthropogenic noise levels have been steadily increasing over the past 50 years as shipping traffic has increased. According to the first EU maritime transport first environmental impact report (EMTER report) published in 2021, for EU waters the total accumulated underwater radiated noise energy more than doubled between 2014 and 2019. The underwater radiated noise (URN) from shipping is now recognized both in IMO and EU as a significant environmental issue with regional and global impact. The European Maritime Safety Agency (EMSA) conducted a study in 2021, focusing on a number of key aspects related to URN: the existing policy and current understanding about sources of continuous URN from different types of ships, its impacts on the marine environment, and mitigation actions. The study was carried out by "WavEC Offshore Renewables" and "Maritime Research Institute Netherlands" (MARIN) on behalf of EMSA. Commercial vessels can have short- and long-term negative consequences for marine life, in particular marine mammals (IMO, 2014, MEPC.1/Circ.833): the diffuse increase by maritime traffic in ambient noise levels, especially in the low frequencies, reduces the communication range of cetaceans, making it difficult for them to find mates or establish social relationships, as well as foraging and orientation. Furthermore, repeated shallow dives to cope with persistent acoustic disturbance are likely to increase the risk of decompression illness in marine mammals (GIS3M, 2010).

3.20 To be noted, ships concerned with speed reductions should be chosen carefully, as these measures can also have opposite effects on underwater noise and gas emissions depending on propeller designs (Leaper, 2019), and the technical criteria of the electrical distribution and the type of propulsion of the ship. As the aim of this project is not to increase the impact of maritime traffic on cetaceans, consideration should be given to the equipment of vessels to reduce noise. For example, changing the propellers during maintenance, having a certificate of conformity, equipping with a noise self-estimation and cavitation detection system. The designation of the PSSA will allow further studies to be carried out on the matter.

Chemical pollution

Hydrocarbons

3.21 Accidental oil spills have become rare in the Mediterranean, the last major accident being the MT Haven in the Gulf of Genoa in 1991, but they can cause considerable damage to the marine environment given the quantities of oil spilled and the length of time it takes for the impacted habitats to recover.

3.22 With regard to illegal discharges, the use of satellite imagery can contribute to the estimation of the number of oil spills from ships, without providing proof that the discharge is illegal or that it is from a ship. In 2016, EMSA's CleanSeaNet platform recorded a total of 1,073 detections of likely polluting incidents and a total of 1,060 detections of potentially polluting incidents in the Mediterranean region and off the Atlantic coasts of Morocco, Portugal, Spain and France. Although these data remain to be confirmed, both in terms of the nature of the pollution and its origin, they clearly indicate that oil pollution incidents caused by ships remain a concern in the Mediterranean.

3.23 Polycyclic aromatic hydrocarbons (PAHs) can bioaccumulate in the tissues of marine mammals. The viscous crude oil spilled during an oil spill can cover the surface of the cetacean's body for a long period of time, which can reduce its filtering capacity: this can be the case for fin whales. The deterioration of zooplankton by an oil spill can also generate an indirect negative impact on some whales, as it is the main food for them.

Anti-fouling paints

3.24 Anti-fouling paints are one of the sources of heavy metals and biocides in Mediterranean waters, particularly off the coast of port areas. Through bioaccumulation, marine mammals can be sensitive to this type of pollution, which can disrupt their immune system and even lead to death.

Other toxic products

3.25 In addition to oil, hazardous and noxious substances (HNS) accidentally spilled into the marine environment can threaten marine species such as cetaceans. HNS include bulk liquid cargoes (petrochemicals, solvents and liquefied gases, etc.), bulk solid cargoes (fertilizers, etc.) and packaged chemicals. The quantities of HNS accidentally spilled have decreased considerably between 1994 and 2013 in the Mediterranean. Since 2003, the discharge of HNS has become insignificant compared to the period from 1994 to 2002.

Marine litter

3.26 The Mediterranean Sea is one of the most affected areas by marine litter in the world and by plastic in particular, which can constitute up to 90% of the seabed litter. A study by Arcangeli et al. 2020 showed that there is a gradient x10 in density of marine litter from offshore, to coastal and to river. Meaning that marine litters are coming from land through rivers (highest densities) and then are spread over the vast oceanic surface. Its origin is mainly land-based, but it is estimated that ships are the source of almost a quarter of this litter (Koutsodendris et al., 2008; Loakeimidis et al., 2014).

3.27 Accumulation rates vary greatly and are influenced by several factors, such as the proximity of large cities, coastal artificialization and frequentation, hydrodynamics and maritime activities. The semi-enclosed nature of the Mediterranean basin also explains the high accumulation rates observed. The analysis of this waste shows a great variability in its nature and origin, with the highest quantities located mainly near large cities, river mouths and coastal canyons where currents are slower and strong sedimentation occurs.

3.28 In the French part of the study area, accumulation rates of 290 objects/km² can be reached on the continental shelf, with plastic waste found at different depths. The majority of plastic waste found in this area originates from fishing activities, with ferry traffic around Corsica also representing a considerable source of waste, particularly bottles and cans thrown overboard (Gerigny et al., 2019). The presence of marine litter in increasing quantities is a serious threat to marine ecosystems, particularly for turtles and marine mammals (risk of entanglement, suffocation by ingestion).

Biological pollution

3.29 Shipping transport is considered to be the most important vector for the import of exogenous marine species in the world, via ballast water or biofouling accumulated on the surface of ships' hulls, respectively managed by IMO through the Ballast Water Management Convention and the Anti-Fouling System Convention. The semi-enclosed nature of the Mediterranean Sea and the importance of shipping traffic, particularly in its north-western basin, make it very sensitive to this risk. Invasive species can cause the restructuring of entire habitats to the detriment of native species, with the risk of reducing biological and genetic diversity within populations. However, this risk is only likely to affect very indirectly cetacean populations in the Mediterranean.

Greenhouse gas and air pollutant emissions

3.30 Greenhouse gas emissions have a global impact and are generated by various sectors of activity, including transport. Shipping traffic contributes to this, but only to a limited extent: in 2017, 3.15% of total EU greenhouse gas emissions were attributable to international shipping. However, with a significant increase of 32% over the last 20 years and an estimated projection of 50 - 250% by 2050, despite reductions in fuel consumption, the European Parliament voted on 16 September 2020 to include shipping in the EU Emissions Trading Scheme (EU ETS) and to set binding standards for shipping companies to reduce their CO_2 emissions by at least 40% by 2030. Negotiations are still ongoing on the EU's Fit for 55 legislative package.

3.31 CO_2 emissions from maritime transport are estimated at about 10% of the total CO_2 inventories emitted by the 21 Mediterranean countries that are signatories to the Barcelona Convention. These emissions also contribute to increased acidification and eutrophication of the marine environment.

3.32 The consequences of the increase in greenhouse gases on the marine environment are known and include the increase in temperature and acidification of marine waters. This may have consequences for cetaceans in terms of the distribution of their prey and their vulnerability to pathogens, which could thus find more favourable conditions for their development.

3.33 The Mediterranean States have jointly committed, within the framework of IMO, in a landmark initiative on the greening of maritime transport. The States submitted to IMO a joint and coordinated proposal to establish an Emission Control Area for Sulphur Oxides and particulate matter (SECA) in the whole Mediterranean Sea at the seventy-eighth session of the Committee for the Protection of the Marine Environment (MEPC). The designation of this area as a SECA entails the obligation for all ships entering the Mediterranean to use fuel with sulphur content not exceeding 0.10% by mass, i.e. fuel five times less polluting than the international standard in non-SECA. MEPC adopted amendments to designate the Mediterranean Sea, as a whole, as a SECA under MARPOL Annex VI, at its seventy-ninth session in 2022. The amendment is expected to enter into force on 1 May 2024, with the new sulphur limit taking effect from 1 May 2025. This new SECA will significantly improve air quality in the area and protect the health of millions of Mediterranean citizens and their fragile environment.

Summary of groundings, collisions or spills in the area

3.34 The Mediterranean Integrated Geographic Information System for Risk Assessment and Response to Marine Pollution (MEDGIS-MAR), administered by REMPEC, lists 82 events that occurred in the study area between 1977 and 2017. However, as no data is available for the study area between 2002 and 2011, it is likely that some information is missing or not published.

3.35 Of the events listed, 8 resulted in the release of more than 700 tonnes of hazardous substances into the environment (6 involving oil pollution), 8 resulted in the release of between 7 and 700 tonnes, 42 resulted in the release of less than 7 tonnes of hazardous substances.

3.36 The most dramatic event for the marine environment in the area was the accident off Genoa on 11 April 1991, when an explosion followed by a fire on the Cypriot tanker **MT Haven** resulted in the loss of 144,000 tonnes of heavy oil at sea. In terms of media coverage, the sinking of the cruise ship **Costa Concordia** in 2012 is widely remembered, mainly for the loss of life, although its impact on the marine environment was limited.

3.37 In relation to collisions between ships and cetaceans, a very recent collision event can be cited. The vessel **Hypatia de Alexandria**, from the Balearia fleet, brushed against two fin whales that were 15 miles off the coast of the Llobregat Delta on 26 May 2022. One of the individuals made an emergency dive about 50 m from the vessel and the other is believed to have grazed the keel of the vessel.

Measures taken to protect the area and their positive effects

3.38 The wealth and plurality of environmental issues in the study area, as already described, have prompted the coastal States or local authorities concerned to take specific protection measures by creating various marine protected areas. In total, almost 145,000 km² of the study area has a special status.

3.39 A number of measures have already been adopted by IMO including:

.1 adoption on 2 November 1973 of a Special Area (SA) covering the entire Mediterranean under Annexes I (Regulation for the Prevention of Pollution by oil) and V (Regulation for the Prevention of Pollution by garbage from ships) of the MARPOL Convention. This measure came into force on 2 October 1983;

.2 adoption on 15 July 2011 of a PSSA for the Strait of Bonifacio by resolution MEPC.204(62) which refers to protective measures previously adopted by resolution A.766(18) on 4 November 1993; and

.3 adoption on 16 December 2022 of the Mediterranean Sea Emission Control Area for Sulphur Oxides and Particulate Matter by resolution MEPC.361(79).

3.40 Measures have also been taken for the protection of cetaceans including

.1 *International Pelagos Sanctuary* - the Pelagos Agreement (November 1999) for the protection of marine mammals within the Pelagos Sanctuary entered into force on 21 February 2002, after ratification by the three concerned countries (France, Italy, Monaco). The Sanctuary covers a total area of 87,500 km². The objective of the agreement is to maintain a favourable conservation status for marine mammal populations within the Sanctuary, and to this end, to monitor cetacean populations, to reinforce the application of existing legislation on certain fishing activities, to reduce pollution, to regulate tourist observation of cetaceans and to improve the dissemination of information to the public. Since November 2002, the Pelagos Sanctuary has also been recognized by the Barcelona Convention Contracting Parties as a specially protected area of Mediterranean importance (SPAMI); and

.2 *The MPA cetacean migration corridor in the Mediterranean (Spain)* - The Spanish government has designated a 46,385 km² corridor between Valencia, Catalonia and the Balearic Islands as a Marine Protected Area, to protect cetaceans present and migrating in the area. The Barcelona Convention, allowing the area to be designated as a SPAMI, validated this in December 2019.

3.41 In addition a large number of measures have been taken for the wider protection of environments at the national level, these are listed in document MEPC 79/10.

ANNEX 4

ASSOCIATED PROTECTIVE MEASURE FOR THE NORTH-WESTERN MEDITERRANEAN SEA PARTICULARLY SENSITIVE SEA AREA (NW MED PSSA)

Associated Protective Measures (APMs)

The associated protective measures (APMs) recommendatory in nature as identified below are deemed to be applied by any commercial ships and pleasure yachts from 300 gross tonnage and upwards; the APMs would not apply to any warship and other governmental ships operated for non-commercial purposes.

1 Mariners should navigate with particular caution within the NW Med PSSA, in areas where large and medium cetaceans are detected or reported, and reduce their speed to between 10 and 13 knots as voluntary speed reduction (VSR). However, a safe speed should be kept, so that proper and effective action could be taken to avoid collision and any possible negative impacts on ship's manoeuvrability.

2 Mariners should keep an appropriate safety distance or speed reduction measure from any large and medium cetaceans observed or detected in close quarter situation. The safety distance or speed reduction measure should be adapted to the actual navigation circumstances and conditions of the ship.

3 Mariners should broadcast on VHF or other available means on scene, the position of medium and large cetaceans observed or detected within the designated PSSA and transmit the information and the position to a designated coastal Authority or Authorities.

4 Mariners should report any collision with cetaceans to a designated coastal Authority or Authorities, which should forward this information to the International Whaling Commission (IWC) global cetacean ship strikes database.

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ANNEX 21

RESOLUTION MEPC.381(80)
(adopted on 7 July 2023)

ESTABLISHMENT OF THE DATE ON WHICH REGULATIONS 15.3, 15.5 AND 34.3 TO 34.5 OF MARPOL ANNEX I, IN RESPECT OF THE RED SEA AND THE GULF OF ADEN SPECIAL AREAS, SHALL TAKE EFFECT

THE MARINE ENVIRONMENT PROTECTION COMMITTEE,

RECALLING Article 38(a) of the Convention on the International Maritime Organization concerning the functions of the Marine Environment Protection Committee (the Committee) conferred upon it by international conventions for the prevention and control of marine pollution from ships,

NOTING regulation 1.11.4 and 1.11.6 of Annex I of the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto (MARPOL), defines the Red Sea and the Gulf of Aden as Special Areas under the said Annex,

NOTING ALSO the definition of the Special Area under MARPOL Annex I, i.e. a sea area where for recognized technical reasons in relation to its oceanographical and ecological condition and to the particular character of its traffic the adoption of special mandatory methods for the prevention of sea pollution by oil is required,

NOTING FURTHER the information provided to the Committee, at its eightieth session, by Parties, including Djibouti, Egypt, Jordan, Israel, Saudi Arabia, Somalia and the Sudan, the coastlines of which border the Red Sea Special Area, that adequate reception facilities are provided in all ports and terminals within the said Special Area, in accordance with the provisions of regulation 38.8 of MARPOL Annex I,

NOTING the information provided to the Committee, at its eightieth session, by Parties, including Djibouti and Somalia, the coastlines of which border the Gulf of Aden Special Area, that adequate reception facilities are provided in all ports and terminals within the said Special Area, in accordance with the provisions of regulation 38 .8 of MARPOL Annex I

HAVING CONSIDERED the matter to establish the date, on which the discharge requirements of regulations 1.11.4 and 1.11.6 of MARPOL Annex I in respect of the Red Sea and Gulf of Aden Special Areas shall take effect,

1 DECIDES that the discharge requirements of regulations 15.3, 15.5 and 34.3 to 34.5 of MARPOL Annex I in respect to the Red Sea and the Gulf of Aden Special Areas shall take effect on 1 January 2025, in accordance with the requirements set out in regulation 38.8.1 of MARPOL Annex I;

2 ENCOURAGES Member Governments, industry groups and other stakeholders to comply immediately on a voluntary basis with the Special Area requirements for the Red Sea and the Gulf of Aden Special Areas;

3 REQUESTS the Secretary-General to notify, in conformity with regulation 38.8.1 of MARPOL Annex I, all Parties to MARPOL of the aforementioned decision by 31 December 2023;

4 ALSO REQUESTS the Secretary-General to notify all Members of the Organization of the aforementioned decision.

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ANNEX 22

RESOLUTION MEPC.382(80)
(adopted on 7 July 2023)

ESTABLISHMENT OF THE DATE ON WHICH REGULATION 6 OF MARPOL ANNEX V, IN RESPECT OF THE RED SEA SPECIAL AREA, SHALL TAKE EFFECT

THE MARINE ENVIRONMENT PROTECTION COMMITTEE,

RECALLING Article 38(a) of the Convention on the International Maritime Organization concerning the functions of the Marine Environment Protection Committee (the Committee) conferred upon it by international conventions for the prevention and control of marine pollution from ships,

NOTING regulation 1.14.4 of Annex V of the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto (MARPOL), defines the Red Sea area as a Special Area under the said Annex,

NOTING ALSO the definition of the Special Area under MARPOL Annex V, i.e. a sea area where for recognized technical reasons in relation to its oceanographical and ecological condition and to the particular character of its traffic the adoption of special mandatory methods for the prevention of pollution of the sea by garbage, is required,

NOTING FURTHER the information provided to the Committee, at its eightieth session, by Parties including Djibouti, Egypt, Jordan, Israel, Saudi Arabia, Somalia and the Sudan, the coastlines of which border the Red Sea Special Area that adequate reception facilities are provided in all ports and terminals within the said Special Area, in accordance with the provisions of regulation 8.2 of MARPOL Annex V,

HAVING CONSIDERED the matter to establish the date on which the discharge requirements of regulation 6 of MARPOL Annex V in respect of the Red Sea Special Area shall take effect,

1 DECIDES that the discharge requirements of regulation 6 of MARPOL Annex V in respect to the Red Sea Special Area shall take effect on 1 January 2025, in accordance with the requirements set out in regulation 8.2 of MARPOL Annex V;

2 ENCOURAGES Member Governments, industry groups and other stakeholders to comply immediately on a voluntary basis with the Special Area requirements for the Red Sea Special Area;

3 REQUESTS the Secretary-General to notify, in conformity with regulation 8.2 of MARPOL Annex V, all Parties to MARPOL of the aforementioned decision by 31 December 2023;

4 ALSO REQUESTS the Secretary-General to notify all Members of the Organization of the aforementioned decision.

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ANNEX 23

BIENNIAL AGENDA OF THE PPR SUB-COMMITTEE FOR THE 2024-2025 BIENNIUM[1]

Reference to SD, if applicable	Output number	Description	Parent organ(s)	Associated organ(s)	Coordinating organ	Target completion year
1. Improve implementation	1.3	Validated model training courses	MSC / MEPC	III/PPR/CCC/ SDC/SSE/NCSR	HTW	Continuous
1. Improve implementation	1.11	Measures to harmonize port State control (PSC) activities and procedures worldwide	MSC / MEPC	HTW/PPR/NCSR	III	Continuous
1.Improve implementation	1.21	**Development of guidance on matters relating to in-water cleaning**	MEPC	PPR		2025
1. Improve implementation	1.23	**Evaluation and harmonization of rules and guidance on the discharge of discharge water from EGCS into the aquatic environment, including conditions and areas**	MEPC	PPR		2025
1. Improve implementation	1.26	**Revision of MARPOL Annex IV and associated guidelines**	MEPC	III/HTW	PPR	2025
2. Integrate new and advancing technologies in the regulatory framework	2.3	Amendments to the IGF Code and development of guidelines for low-flashpoint fuels	MSC	HTW/PPR/ SDC/SSE	CCC	Continuous
2. Integrate new and advancing technologies in the regulatory framework	2.13	**Review of the IBTS Guidelines and amendments to the IOPP Certificate and Oil Record Book**	MEPC	PPR		2025

[1] Outputs shown in bold font have been selected for the provisional agenda for PPR 11 set out in annex 24.

Reference to SD, if applicable	Output number	Description	Parent organ(s)	Associated organ(s)	Coordinating organ	Target completion year
2. Integrate new and advancing technologies in the regulatory framework	2.15	**Development of amendments to MARPOL Annex VI and the NO_x Technical Code on the use of multiple engine operational profiles for a marine diesel engine including clarifying engine test cycles**	MEPC	PPR		2025
3. Respond to climate change	3.3	**Reduction of the impact on the Arctic of Black Carbon emissions from international shipping**	MEPC	PPR		2025
4. Engage in ocean governance	4.3	**Follow-up work emanating from the Action Plan to address marine plastic litter from ships**	MEPC	PPR/III/HTW		2025
6. Address the human element	6.1	Role of the human element	MSC / MEPC	III/PPR/CCC/ SDC/SSE/NCSR	HTW	Continuous
6. Address the human element	6.2	Validated model training courses	MSC / MEPC	III/PPR/CCC/ SDC/SSE/NCSR	HTW	Continuous
7. Ensure regulatory effectiveness	7.1	**Unified interpretation of provisions of IMO safety, security and environment-related conventions**	MSC / MEPC	III/PPR/CCC/ SDC/SSE/NCSR		Continuous
7. Ensure regulatory effectiveness	7.3	**Safety and pollution hazards of chemicals and preparation of consequential amendments to the IBC Code**	MEPC	PPR		Continuous
7. Ensure regulatory effectiveness	7.11	**Development of measures to reduce risks of use and carriage of heavy fuel oil as fuel by ships in Arctic waters**	MEPC	PPR		2024

Reference to SD, if applicable	Output number	Description	Parent organ(s)	Associated organ(s)	Coordinating organ	Target completion year
7. Ensure regulatory effectiveness	7…[2]	**Development of a guide compiling best practices to develop local-level marine spill contingency plans to aid States, particularly local governments and key institutions, in implementing the OPRC Convention and OPRC-HNS Protocol**	MEPC	PPR		2025
7. Ensure regulatory effectiveness	7…[2]	**Amendments to MARPOL Annex II in order to improve the effectiveness of cargo tank stripping, tank washing operations and prewash procedures for products with a high melting point and/or high viscosity**	MEPC	PPR		2025

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[2] Moved to the biennial agenda of the Sub-Committee from the post-biennial agenda of MEPC.

ANNEX 24

PROVISIONAL AGENDA FOR PPR 11

Opening of the session

1 Adoption of the agenda

2 Decisions of other IMO bodies

3 Safety and pollution hazards of chemicals and preparation of consequential amendments to the IBC Code

4 Amendments to MARPOL Annex II in order to improve the effectiveness of cargo tank stripping, tank washing operations and prewash procedures for products with a high melting point and/or high viscosity

5 Development of guidance on matters relating to in-water cleaning

6 Reduction of the impact on the Arctic of Black Carbon emissions from international shipping

7 Evaluation and harmonization of rules and guidance on the discharge of discharge water from EGCS into the aquatic environment, including conditions and areas

8 Development of amendments to MARPOL Annex VI and the NO_x Technical Code on the use of multiple engine operational profiles for a marine diesel engine including clarifying engine test cycles

9 Development of a guide compiling best practices to develop local-level marine spill contingency plans to aid States, particularly local governments and key institutions, in implementing the OPRC Convention and OPRC-HNS Protocol

10 Development of measures to reduce risks of use and carriage of heavy fuel oil as fuel by ships in Arctic waters

11 Review of the IBTS Guidelines and amendments to the IOPP Certificate and Oil Record Book

12 Revision of MARPOL Annex IV and associated guidelines

13 Follow-up work emanating from the Action Plan to address marine plastic litter from ships

14 Unified interpretation of provisions of IMO environment-related conventions

15 Biennial agenda and provisional agenda for PPR 12

16 Election of Chair and Vice-Chair for 2025

17 Any other business

18 Report to the Marine Environment Protection Committee

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ANNEX 25

STATUS REPORT OF THE OUTPUTS OF MEPC FOR THE 2022-2023 BIENNIUM

MARINE ENVIRONMENT PROTECTION COMMITTEE (MEPC)									
Reference to SD, if applicable	Output number	Description	Target completion year	Parent organ(s)	Associated organ(s)	Coordinating organ	Status of output for Year 1	Status of output for Year 2	References
1. Improve implementation	1.2	Input on identifying emerging needs of developing countries, in particular SIDS and LDCs to be included in the ITCP	Continuous	TCC	MSC / MEPC / FAL / LEG		Ongoing	Ongoing	MEPC 78/17, section 12; MEPC 79/15, section 7; MEPC 80/17, section 12
1. Improve implementation	1.4	Analysis of consolidated audit summary reports	Annual	Assembly	MSC / MEPC / LEG / TCC / III	Council	Completed	Completed	MEPC 78/17, paras. 10.7 to 10.11; MEPC 79/15, para. 9.3
1. Improve implementation	1.5	Non-exhaustive list of obligations under instruments relevant to the IMO Instruments Implementation Code (III Code)	Annual	MSC / MEPC	III		Completed	Completed	MEPC 77/16, paras. 10.8 and 10.9; MEPC 79/15, para. 9.13
1. Improve implementation	1.7	Identify thematic priorities within the area of maritime safety and security, marine environmental protection, facilitation of maritime traffic and maritime legislation	Annual	TCC	MSC / MEPC / FAL / LEG		Completed	Completed	MEPC 78/17, section 12; MEPC 80/17, section 12

MARINE ENVIRONMENT PROTECTION COMMITTEE (MEPC)									
Reference to SD, if applicable	Output number	Description	Target completion year	Parent organ(s)	Associated organ(s)	Coordinating organ	Status of output for Year 1	Status of output for Year 2	References
1. Improve implementation	1.9	Report on activities within the ITCP related to the OPRC Convention and the OPRC-HNS Protocol	Annual	TCC	MEPC		Completed	Completed	MEPC 78/17, section 12; MEPC 80/17, section 12
1. Improve implementation	1.11	Measures to harmonize port State control (PSC) activities and procedures worldwide	Continuous	MSC / MEPC	HTW / PPR / NCSR	III	Ongoing	Ongoing	MEPC 78/17, paras.7.73 and 9.8; MEPC 79/15, paras. 9.5 and 9.6; MEPC 80/17, para. 4.36
1. Improve implementation	1.13	Review of mandatory requirements in the SOLAS, MARPOL and Load Line Conventions and the IBC and IGC Codes regarding watertight doors on cargo ships	2022	MSC / MEPC	CCC	SDC	Completed		MSC 104/18, paras. 3.19 to 3.21; MEPC 78/17, section 3
1. Improve implementation	1.14	Development of guidance in relation to Mandatory IMO Member State Audit Scheme (IMSAS) to assist in the implementation of the III Code by Member States	2023	MSC / MEPC	III		In progress	In progress	MEPC 76/15, paragraphs 10.2 and 12.5; MEPC 79/15, para. 9.3
Note: To be considered by III 10 in August 2023.									
1. Improve implementation	1.15	Revised guidance on methodologies that may be used for enumerating viable organisms	2022	MEPC	PPR		Completed		MEPC 78/17 para. 4.8

MARINE ENVIRONMENT PROTECTION COMMITTEE (MEPC)									
Reference to SD, if applicable	Output number	Description	Target completion year	Parent organ(s)	Associated organ(s)	Coordinating organ	Status of output for Year 1	Status of output for Year 2	References
1. Improve implementation	1.16	Review of the 2014 Guidelines for the reduction of underwater noise from commercial shipping to address adverse impacts on marine life (MEPC.1/Circ.833) (2014 Guidelines) and identification of next steps	~~2023~~ 2024	MEPC	SDC		In progress	Extended	MEPC 78/17 para. 10.3; SDC 9/16, para.5.17.2; MEPC 80/17, paras. 10.2 to 10.9
Note: MEPC 80 endorsed the updated work plan for the continued work on underwater radiated noise, as set out in annex 2 to document SDC 9/16/Add.1, and agreed to extend the target completion year for output 1.16 from 2023 to 2024.									
1. Improve implementation	1.18	Development of guidance on assessments and applications of remote surveys, ISM Code audits and ISPS Code verifications	2024	MSC/ MEPC	III		In progress	In progress	MSC 105/20, para. 18.52; MEPC 79/15, para. 9.13
Note: To be considered by III 10 in August 2023.									
1. Improve implementation	1.21	Review of the 2011 Guidelines for the control and management of ships' biofouling to minimize the transfer of invasive aquatic species (resolution MEPC.207(62))	~~2023~~ 2025	MEPC	PPR		In progress	Extended	PPR 9/21, section 7; MEPC 78/17, para. 9.1; MEPC 80/17, paras. 9.12 to 9.16
Note: Following the adoption of the 2023 Biofouling Guidelines, MEPC 80 agreed to change the title of output 1.21 from "Review of the 2011 Guidelines for the control and management of ships' biofouling to minimize the transfer of invasive aquatic species (resolution MEPC.207(62))" to "Development of guidance on matters relating to in-water cleaning" and to set the target completion year of the renamed output to 2025.									

MARINE ENVIRONMENT PROTECTION COMMITTEE (MEPC)									
Reference to SD, if applicable	Output number	Description	Target completion year	Parent organ(s)	Associated organ(s)	Coordinating organ	Status of output for Year 1	Status of output for Year 2	References
1. Improve implementation	1.23	Evaluation and harmonization of rules and guidance on the discharge of discharge water from EGCS into the aquatic environment, including conditions and areas	2025	MEPC	PPR		Extended	In progress	PPR 9/21, section 10; MEPC 78/17, paras. 5.9 to 5.18 and 14.14; MEPC 79/15, paras. 5.3 to 5.15; MEPC 80/17, paras. 5.2 to 5.13
Note: MEPC 78 agreed to: extend the target completion year to 2025; not to include the output in the provisional agenda for PPR 10; and consider reinstating the output in the provisional agenda of a future session of the Sub-Committee (after PPR 10) subject to further proposals to the Committee on part 3 (regulatory matters) and part 4 (database of substances) of the scope of work of the output by interested Member States and international organizations. PPR 10 had agreed to re-instate this agenda item in the provisional agenda for PPR 11, which MEPC 80 approved.									
1. Improve implementation	1.24	Review of the BWM Convention based on data gathered in the experience-building phase	~~2023~~ 2026	MEPC			In progress	Extended	MEPC 78/17, section 4; MEPC 79/15, section 4; MEPC 80/17, paras. 4.20 to 4.24
Note: In accordance with timeline in the *Convention Review Plan under the experience-building phase associated with the BWM Convention* (BWM.2/Circ.79), which was approved by MEPC 80, the review is expected to be completed in 2026. Consequently, the target completion year for output 1.24 has been extended from 2023 to 2025.									

1. Improve implementation	1.25	Urgent measures emanating from issues identified during the experience-building phase of the BWM Convention	~~2023~~ 2025	MEPC			In progress	Extended	MEPC 78/17, section 4; MEPC 79/15, section 4; MEPC 80/17, paras. 4.20, 4.25 to 4.27, 4.33 to 4.34
Note: MEPC 80 encouraged delegations to work together with the broadest possible participation, using document MEPC 80/4/8 as the starting point, with a view to the finalization of guidance on the application of the BWM Convention to ships operating in challenging water quality at the next session. MEPC 80 also invited concrete proposals to the next session for guidance on the temporary storage of grey water or treated sewage in ballast tanks. Consequently, the target completion year for output 1.25 has been extended from 2023 to 2025.									
1. Improve implementation	1.26	Revision of MARPOL Annex IV and associated guidelines	2025	MEPC	III / HTW	PPR	In progress	In progress	PPR 9/21, section 14; MEPC 78/17, paras. 14.7 to 14.11; MEPC 80/17, para. 9.19
Note: MEPC 78 agreed to amend the title of the existing output 1.26 to "Revision of MARPOL Annex IV and associated guidelines", and that specific work to be carried out be captured in the scope of work, i.e. (1) introduce provisions for record-keeping and measures to confirm the lifetime performance of sewage treatment plants; (2) consider amending the definition of "person" as provided in regulation 1 of MARPOL Annex IV, taking into account persons other than crew and passengers; and (3) prohibit fitting comminuting and disinfecting systems (CDS) on new ships. MEPC 80 agreed to further extend the scope of the output so as to introduce the provisions of a sewage management plan and record-keeping for all ships (i.e. not only for ships installed with a Sewage Treatment Plant) under MARPOL Annex IV. MEPC 80 also approved the request by PPR 10 to extend the TCY to 2025.									
1. Improve implementation	1.30	Review of the 2014 Standard specification for shipboard incinerators (resolution MEPC.244(66)) regarding fire protection requirements for incinerators and waste stowage spaces	2022	MEPC	SSE		Completed		SSE 8/22, section 19; MEPC 79/15, para. 9.2
Note: SSE agreed to a draft MEPC resolution on amendments to the 2014 Standard specification for shipboard incinerators (resolution MEPC.244(66)), as set out in annex 17, which was adopted by MEPC 79.									

2. Integrate new and advancing technologies in the regulatory framework	2.2	Approved ballast water management systems which make use of Active Substances, taking into account recommendations of the GESAMP-BWWG	Annual	MEPC			Completed	Completed	MEPC 78/17, para. 4.7; MEPC 79/15, paras. 4.9 to 4.14
2. Integrate new and advancing technologies in the regulatory framework	2.13	Review of the IBTS Guidelines and amendments to the IOPP Certificate and Oil Record Book	~~2023~~ 2025	MEPC	PPR		In progress	Extended	MEPC 78/17, paras. 9.11 to 9.19; MEPC 80/17, para. 14.6
Note: MEPC 80 noted the biennial status report of the PPR Sub-Committee for the 2022-2023 biennium. Consequently, the target completion year for output 2.13 has been extended to 2025, as per the request by PPR 10. .									
2. Integrate new and advancing technologies in the regulatory framework	2.15	Development of amendments to MARPOL Annex VI and the NOx Technical Code on the use of multiple engine operational profiles for a marine diesel engine	~~2023~~ 2025	MEPC	PPR		In progress	Extended	PPR 9/21, section 11; MEPC 78/17, paras. 5.5 to 5.8; MEPC 80/17, paras. 5.19 and 14.5
Note: MEPC 80 agreed to change the title of output 2.15 to "Development of amendments to MARPOL Annex VI and the NOx Technical Code on the use of multiple engine operational profiles for a marine diesel engine and on the clarification of test cycles". MEPC 80 also noted the biennial status report of the PPR Sub-Committee for the 2022-2023 biennium. Consequently, the target completion year for output 2.15 has been extended to 2025, as per the request by PPR 10. .									
2. Integrate new and advancing technologies in the regulatory framework	2.17	Consideration of development of goal-based ship construction standards for all ship types	2023	MSC / MEPC			No work requested by MSC	No work requested by MSC	
Note: MSC 107agreed to delete the output as no document has been submitted for a number of sessions.									

2. Integrate new and advancing technologies in the regulatory framework	2.18	Standards for shipboard gasification of waste systems and associated amendments to regulation 16 of MARPOL Annex VI	2023	MEPC	PPR		In progress	Completed	PPR 9/21, section 9; MEPC 80/17, paras. 5.17 to 5.18
2. Integrate new and advancing technologies in the regulatory framework	2.19	Revision of guidelines associated with the AFS Convention as a consequence of the introduction of controls on cybutryne	2022	MEPC	PPR		Completed		PPR 9/21, section 6; MEPC 78/17, paras. 9.7 and 9.8
3. Respond to climate change	3.1	Treatment of ozone-depleting substances used by ships	Annual	MEPC			Completed	Completed	MEPC 74/18, paras. 5.75 and 5.76
3. Respond to climate change	3.2	Further development of mechanisms needed to achieve the reduction of GHG emissions from international shipping	Annual	MEPC			Completed	Completed	MEPC 78/17, sections 6 and 7; MEPC 79/15, sections 6 and 7; MEPC 80/17, sections 6 and 7
3. Respond to climate change	3.3	Reduction of the impact on the Arctic of emissions of Black Carbon from international shipping	~~2023~~ 2025	MEPC	PPR		In progress	Extended	PPR 9/21, section 8; MEPC 79/15, paras. 5.16 to 5.22; MEPC 80/17, paras. 5.14 to 5.16 and 14.6
Note: MEPC 80 noted the biennial status report of the PPR Sub-Committee for the 2022-2023 biennium. Consequently, the target completion year for output 3.3 has been extended to 2025, as per the request by PPR 10.									
3. Respond to climate change	3.4	Promotion of technical cooperation and transfer of technology relating to the reduction of GHG emissions from ships	~~2023~~ 2025	MEPC			In progress	Extended	MEPC 78/17, sections 7 and 12; MEPC 79/15, section 7; MEPC 80/17, section 7

Note: As the Committee reviews the issue on a regular basis, this output is quasi-continuous and the target completion year is extended from 2023 to 2025.									
3. Respond to climate change	3.5	Revision of guidelines concerning chapter 4 of MARPOL Annex VI	~~2023~~ 2025	MEPC			In progress	Extended	MEPC 78/17, section 6; MEPC 79/15, section 6; MEPC 80/17, section 6
Note: As the Committee reviews the issue on a regular basis, this output is quasi-continuous and the target completion year is extended from 2023 to 2025.									
3. Respond to climate change	3.6	EEDI reviews required under regulation 21.6 of MARPOL Annex VI	~~2023~~ 2025	MEPC			In progress	Extended	MEPC 78/17, section 6; MEPC 79/15, section 6; MEPC 80/17, section 6
Note: The target completion year is set to 2025 in accordance with MARPOL Annex VI, regulation 21.6.									
3. Respond to climate change	3.7	Further technical and operational measures for enhancing the energy efficiency of international shipping	~~2023~~ 2025	MEPC			In progress	Extended	MEPC 78/17, section 6; MEPC 80/17, section 6MEPC 79/15, section 6
Note: As the Committee reviews the issue on a regular basis, this output is quasi-continuous and the target completion year is extended from 2023 to 2025.									
4. Engage in ocean governance	4.1	Identification and protection of Special Areas, ECAs and PSSAs and associated protective measures	Continuous	MEPC	NCSR		Ongoing	Ongoing	MEPC 78/17, section 11; MEPC 79/15, section 10; MEPC 80/17, section 11
4. Engage in ocean governance	4.2	Input to the ITCP on emerging issues relating to sustainable development and achievement of the SDGs	Continuous	TCC	MSC / MEPC /FAL / LEG		Ongoing	Ongoing	MEPC 78/17, section 12; MEPC 80/17, section 12

4. Engage in ocean governance	4.3	Follow-up work emanating from the Action Plan to address marine plastic litter from ships	~~2023~~ 2025	MEPC	PPR / III / HTW		In progress	Extended	MEPC 78/17, section 8; MEPC 79/15, section 8; MEPC 80/17, section 8
Note: As the Committee reviews the issue on a regular basis, this output is quasi-continuous and the target completion year is extended from 2023 to 2025.									
6. Address the human element	6.1	Role of the human element	Continuous	MSC / MEPC	III / PPR / CCC / SDC / SSE / NCSR	HTW	Ongoing	Ongoing	MEPC 78/17, paras. 10.4 and 13.1
6. Address the human element	6.2	Validated model training courses	Continuous	MSC / MEPC	III / PPR / CCC / SDC / SSE / NCSR	HTW	Ongoing	Ongoing	PPR 9/21, section 12; MEPC 79/15, paras. 9.1, 9.14 to 9.15; MEPC 80/17, paras. 10.10 and 10.11
6. Address the human element	6.10	Development of an entrant training manual for PSC personnel	~~2023~~ 2025	MSC / MEPC	III		In progress	Extended	MEPC 76/15, paras. 10.1, 10.2 and 12.5; MEPC 79/15, para. 9.3
Note: III 8 agreed that the output on development of an entrant training manual for PSC personnel should be developed after the finalization of the IMO Model Course 3.09 on port State control. III 9 to complete the work to be reported to the Committees in 2024.									
6. Address the human element	6.11	Development of training provisions for seafarers related to the BWM Convention	2023	MEPC	HTW		Extended	Extended	MSC 105/20, para. 18.51; MEPC 78/17, para.10.6; MEPC 80/17, para. 10.12
Note: MEPC 80 agreed with the inclusion of the work under this output in output 6.17 on "Comprehensive review of the 1978 STCW Convention and Code" and consequently agreed to delete the former from its biennial agenda. In addition to output 6.11, MSC 107 integrated outputs 1.32, 6.5 and 6.6 into output 6.17.									

6. Address the human element	6.16	Development of an operational guide on the response to spills of Hazardous and Noxious Substances (HNS)	2023	MEPC	PPR		Extended	Completed	PPR 9/21, section 4; MEPC 78/17, para. 14.13; MEPC 80/17, para. 9.11
7. Ensure regulatory effectiveness	7.1	Unified interpretation of provisions of IMO safety, security, environment, facilitation, liability and compensation-related conventions	Continuous	MSC / MEPC / FAL / LEG	III / PPR / CCC / SDC / SSE / NCSR		Ongoing	Ongoing	MEPC 78/17, section 4, and paras. 5.6 and 5.7; MEPC 79/15, paras. 4.8, 4.26, 4.27, 6.26 to 6.29; MEPC 80/17, paras. 4.11 and 5.24
7. Ensure regulatory effectiveness	7.3	Safety and pollution hazards of chemicals and preparation of consequential amendments to the IBC Code	Continuous	MEPC	PPR		Ongoing	Ongoing	PPR 9/21, section 3; MEPC 78/17, MEPC 80/17, para. 9.3; paras. 9.3 to 9.10
7. Ensure regulatory effectiveness	7.4	Lessons learned and safety issues identified from the analysis of marine safety investigation reports	Annual	MSC / MEPC	III		Completed	Completed	III 7/17, section 4; III 8/19, section 4; MEPC 79/15, para. 9.3
7. Ensure regulatory effectiveness	7.5	Identified issues relating to the implementation of IMO instruments from the analysis of PSC data	Annual	MSC / MEPC	III		Completed	Completed	III 7/17, section 6; MEPC 79/15, paras. 12.13 and 12.14
Note: MEPC 79 agreed to rename output 7.5 as "Identified issues relating to the implementation of IMO instruments from the analysis of data", extending the scope of the output.									
7. Ensure regulatory effectiveness	7.7	Consideration and analysis of reports on alleged inadequacy of port reception facilities	Annual	MEPC	III		Completed	Completed	III 7/17, section 3; MEPC 79/15, paras. 9.3 and 9.4

7. Ensure regulatory effectiveness	7.8	Monitoring the worldwide average sulphur content of fuel oils supplied for use on board ships	Annual	MEPC			Completed	Completed	MEPC 78/17, paras. 5.3 and 5.4; MEPC 80/17, para. 5.2
7. Ensure regulatory effectiveness	7.11	Development of measures to reduce risks of use and carriage of heavy fuel oil as fuel by ships in Arctic waters	~~2023~~ 2024	MEPC	PPR		Extended	Extended	PPR 9/21, section 12; MEPC 78/17, paras. 14.3 to 14.6; MEPC80/17, para. 9.17
Note: MEPC 80 noted the biennial status report of the PPR Sub-Committee for the 2022-2023 biennium. Consequently, the target completion year for output 7.11 has been extended to 2025, as per the request by PPR 10.									
7. Ensure regulatory effectiveness	7.16	Development of necessary amendments to MARPOL Annexes I, II, IV, V and VI to allow States with ports in the Arctic region to enter into regional arrangements for port reception facilities (PRFs)	2023	MEPC	PPR		Completed		PPR 9/21, section 13; MEPC 78/17, paras.9.9 and 9.10; MEPC 79/15, section 3
7. Ensure regulatory effectiveness	7.27	Updated Survey Guidelines under the Harmonized System of Survey and Certification (HSSC)	Annual	MSC / MEPC	III		Completed	Completed	III 7/17, section 8; MEPC 77/16, para.10.7; MEPC 79/15, paras. 9.7 to 9.9
7. Ensure regulatory effectiveness	7.28	Consideration of reports of incidents involving dangerous goods or marine pollutants in packaged form on board ships or in port areas	Annual	MSC / MEPC	III	CCC	No work requested	No work requested	CCC 8/18, section 9

7. Ensure regulatory effectiveness	7.43	Revision of regulation 13.2.2 of MARPOL Annex VI to clarify that a marine diesel engine replacing a boiler shall be considered a replacement engine.	~~2023~~ 2024	MEPC		PPR	No work requested	Extended	MEPC 78/17, paragraph 14.13; MEPC 80/17, paras. 5.20 to 5.23
Note: The draft amendments to MARPOL Annex VI will be considered for adoption by MEPC 81 in 2024. Consequently, the target completion year for output 7.43 has been extended to 2024.									
8. Ensure organizational effectiveness	8.1	Endorsed proposals for the development, maintenance and enhancement of information systems and related guidance (GISIS, websites, etc.)	Continuous	Council	MSC / MEPC / FAL / LEG / TCC		Ongoing	Ongoing	MEPC 78/17, para. 4.45; MEPC 79/15, paras. 6.1 to 6.5 and 9.4; MEPC 80/17, paras. 6.11 to 6.13
8. Ensure organizational effectiveness	8.3	Analysis and consideration of reports on partnership arrangements for, and implementation of, environmental programmes	Annual	TCC	MEPC		Completed	Completed	MEPC 78/17, section 12; MEPC 80/17, section 12
8. Ensure organizational effectiveness	8.9	Revised documents on organization and method of work, as appropriate	2023	Council	MSC / FAL / LEG / TCC / MEPC		In progress	Completed	MEPC 78/17, section 13; MEPC 79/15, section 11; MEPC 80/17, section 13
OW. Other work	OW.3	Endorsed proposals for new outputs for the 2022-2023 biennium as accepted by the Committees	Annual	Council	MSC / MEPC / FAL / LEG / TCC		Completed	Completed	MEPC 78/17, section 14; MEPC 79/15, section 12; MEPC 80/17, section 14

OW. Other work	OW.8	Cooperate with the United Nations on matters of mutual interest, as well as provide relevant input/guidance	2023	Assembly	MSC / MEPC / FAL / LEG / TCC	Council	In progress	Completed	MEPC 78/17, para. 7.6 and section 8; MEPC 79/15, paras. 7.3 to 7.5; MEPC 80/17, paras. 7.2 to 7.4
OW. Other work	OW.9	Cooperate with other international bodies on matters of mutual interest, as well as provide relevant input/guidance	2023	Assembly	MSC / MEPC / FAL / LEG / TCC	Council	In progress	Completed	MEPC 78/17, sections 7 and 8; MEPC 79/15, sections 7 and 8; MEPC 80/17, sections 7 and 8

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ANNEX 26

PROPOSED OUTPUTS OF MEPC FOR THE 2024-2025 BIENNIUM

Marine Environment Protection Committee (MEPC)						
Reference to SD, if applicable	Output number	Description	Target completion year	Parent organ(s)	Associated organ(s)	Coordinating organ
1. Improve implementation	1.2	Input on identifying emerging needs of developing countries, in particular SIDS and LDCs to be included in the ITCP	Continuous	TCC	MSC / MEPC / FAL / LEG	
1. Improve implementation	1.4	Analysis of consolidated audit summary reports	Annual	Assembly	MSC / MEPC / LEG / TCC / III	Council
1. Improve implementation	1.5	Non-exhaustive list of obligations under instruments relevant to the IMO Instruments Implementation Code (III Code)	Annual	MSC / MEPC	III	
1. Improve implementation	1.7	Identify thematic priorities within the area of maritime safety and security, marine environmental protection, facilitation of maritime traffic and maritime legislation	Annual	TCC	MSC / MEPC / FAL / LEG	
1. Improve implementation	1.9	Report on activities within the ITCP related to the OPRC Convention and the OPRC-HNS Protocol	Annual	TCC	MEPC	
1. Improve implementation	1.11	Measures to harmonize port State control (PSC) activities and procedures worldwide	Continuous	MSC / MEPC	HTW / PPR / NCSR	III
1. Improve implementation	1.14	[Development of guidance in relation to Mandatory IMO Member State Audit Scheme (IMSAS) to assist in the implementation of the III Code by Member States]	[2023]	MSC / MEPC	III	
Note: To be considered by III 9 in August 2023.						
1. Improve implementation	1.16	Review of the 2014 Guidelines for the reduction of underwater noise from commercial shipping to address adverse impacts on marine life (MEPC.1/Circ.833) (2014 Guidelines) and identification of next steps	2024	MEPC	SDC	
1. Improve implementation	1.18	Development of guidance on assessments and applications of remote surveys, ISM Code audits and ISPS Code verifications	2024	MSC/ MEPC	III	

Marine Environment Protection Committee (MEPC)						
Reference to SD, if applicable	Output number	Description	Target completion year	Parent organ(s)	Associated organ(s)	Coordinating organ
1. Improve implementation	1.21	Development of guidance on matters relating to in-water cleaning	2025	MEPC	PPR	
1. Improve implementation	1.23	Evaluation and harmonization of rules and guidance on the discharge of discharge water from EGCS into the aquatic environment, including conditions and areas	2025	MEPC	PPR	
1. Improve implementation	1.24	Review of the BWM Convention based on data gathered in the experience-building phase	2025	MEPC		
1. Improve implementation	1.25	Urgent measures emanating from issues identified during the experience-building phase of the BWM Convention	2025	MEPC		
1. Improve implementation	1.26	Revision of MARPOL Annex IV and associated guidelines	2025	MEPC	III / HTW	PPR
2. Integrate new and advancing technologies in the regulatory framework	2.2	Approved ballast water management systems which make use of Active Substances, taking into account recommendations of the GESAMP-BWWG	Annual	MEPC		
2. Integrate new and advancing technologies in the regulatory framework	2.13	Review of the IBTS Guidelines and amendments to the IOPP Certificate and Oil Record Book	2025	MEPC	PPR	
2. Integrate new and advancing technologies in the regulatory framework	2.15	Development of amendments to MARPOL Annex VI and the NOx Technical Code on the use of multiple engine operational profiles for a marine diesel engine and on the clarification of test cycles	2025	MEPC	PPR	
3. Respond to climate change	3.1	Treatment of ozone-depleting substances used by ships	Annual	MEPC		

Marine Environment Protection Committee (MEPC)						
Reference to SD, if applicable	Output number	Description	Target completion year	Parent organ(s)	Associated organ(s)	Coordinating organ
3. Respond to climate change	3.2	Further development of mechanisms needed to achieve the reduction of GHG emissions from international shipping	Annual	MEPC		
3. Respond to climate change	3.3	Reduction of the impact on the Arctic of emissions of Black Carbon from international shipping	2025	MEPC	PPR	
3. Respond to climate change	3.4	Promotion of technical cooperation and transfer of technology relating to the reduction of GHG emissions from ships	2025	MEPC		
3. Respond to climate change	3.5	Revision of guidelines concerning chapter 4 of MARPOL Annex VI	2025	MEPC		
3. Respond to climate change	3.6	EEDI reviews required under regulation 21.6 of MARPOL Annex VI	2025	MEPC		
3. Respond to climate change	3.7	Further technical and operational measures for enhancing the energy efficiency of international shipping	2025	MEPC		
3. Respond to climate change	3.[…]	Development of a safety regulatory framework to support the reduction of GHG emissions from ships using new technologies and alternative fuels	Continuous	MSC	MEPC / CCC / HTW / III / SSE / SDC	
4. Engage in ocean governance	4.1	Identification and protection of Special Areas, ECAs and PSSAs and associated protective measures	Continuous	MEPC	NCSR	
4. Engage in ocean governance	4.2	Input to the ITCP on emerging issues relating to sustainable development and achievement of the SDGs	Continuous	TCC	MSC / MEPC /FAL / LEG	
4. Engage in ocean governance	4.3	Follow-up work emanating from the Action Plan to Address Marine Plastic Litter from Ships	2025	MEPC	PPR / III / HTW	
6. Address the human element	6.1	Role of the human element	Continuous	MSC / MEPC	III / PPR / CCC / SDC / SSE / NCSR	HTW

Marine Environment Protection Committee (MEPC)						
Reference to SD, if applicable	Output number	Description	Target completion year	Parent organ(s)	Associated organ(s)	Coordinating organ
6. Address the human element	6.2	Validated model training courses	Continuous	MSC / MEPC	III / PPR / CCC / SDC / SSE / NCSR	HTW
6. Address the human element	6.10	Development of an entrant training manual for PSC personnel	2025	MSC / MEPC	III	
7. Ensure regulatory effectiveness	7.1	Unified interpretation of provisions of IMO safety, security, environment, facilitation, liability and compensation-related conventions	Continuous	MSC / MEPC / FAL / LEG	III / PPR / CCC / SDC / SSE / NCSR	
7. Ensure regulatory effectiveness	7.3	Safety and pollution hazards of chemicals and preparation of consequential amendments to the IBC Code	Continuous	MEPC	PPR	
7. Ensure regulatory effectiveness	7.4	Lessons learned and safety issues identified from the analysis of marine safety investigation reports	Annual	MSC / MEPC	III	
7. Ensure regulatory effectiveness	7.5	Identified issues relating to the implementation of IMO instruments from the analysis of data	Annual	MSC / MEPC	III	
7. Ensure regulatory effectiveness	7.7	Consideration and analysis of reports on alleged inadequacy of port reception facilities	Annual	MEPC	III	
7. Ensure regulatory effectiveness	7.8	Monitoring the worldwide average sulphur content of fuel oils supplied for use on board ships	Annual	MEPC		
7. Ensure regulatory effectiveness	7.11	Development of measures to reduce risks of use and carriage of heavy fuel oil as fuel by ships in Arctic waters	2024	MEPC	PPR	

Marine Environment Protection Committee (MEPC)						
Reference to SD, if applicable	Output number	Description	Target completion year	Parent organ(s)	Associated organ(s)	Coordinating organ
7. Ensure regulatory effectiveness	7.27	Updated Survey Guidelines under the Harmonized System of Survey and Certification (HSSC)	Annual	MSC / MEPC	III	
7. Ensure regulatory effectiveness	7.28	Consideration of reports of incidents involving dangerous goods or marine pollutants in packaged form on board ships or in port areas	Annual	MSC / MEPC	III	CCC
7. Ensure regulatory effectiveness	7.43	Revision of regulation 13.2.2 of MARPOL Annex VI to clarify that a marine diesel engine replacing a boiler shall be considered a replacement engine.	2024	MEPC		PPR
7. Ensure regulatory effectiveness	7.[…]	Development of a guide compiling best practices to develop local-level marine spill contingency plans to aid States, particularly local governments and key institutions, in implementing the OPRC Convention and OPRC-HNS Protocol	2025	MEPC	PPR	
7. Ensure regulatory effectiveness	7.[…]	Amendments to MARPOL Annex II in order to improve the effectiveness of cargo tank stripping, tank washing operations and prewash procedures for products with a high melting point and/or high viscosity	2025	MEPC	PPR	
8. Ensure organizational effectiveness	8.1	Endorsed proposals for the development, maintenance and enhancement of information systems and related guidance (GISIS, websites, etc.)	Continuous	Council	MSC / MEPC / FAL / LEG / TCC	
8. Ensure organizational effectiveness	8.3	Analysis and consideration of reports on partnership arrangements for, and implementation of, environmental programmes	Annual	TCC	MEPC	
8. Ensure organizational effectiveness	8.9	Revised documents on organization and method of work, as appropriate	Annual	Council	MSC / FAL / LEG / TCC / MEPC	

Marine Environment Protection Committee (MEPC)						
Reference to SD, if applicable	Output number	Description	Target completion year	Parent organ(s)	Associated organ(s)	Coordinating organ
OW. Other work	OW.3	Endorsed proposals for new outputs for the 2022-2023 biennium as accepted by the Committees	Annual	Council	MSC / MEPC / FAL / LEG / TCC	
OW. Other work	OW.8	Cooperate with the United Nations on matters of mutual interest, as well as provide relevant input/guidance	Continuous	Assembly	MSC / MEPC / FAL / LEG / TCC	Council
OW. Other work	OW.9	Cooperate with other international bodies on matters of mutual interest, as well as provide relevant input/guidance	Continuous	Assembly	MSC / MEPC / FAL / LEG / TCC	Council

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ANNEX 27

POST-BIENNIAL AGENDA OF MEPC

MARINE ENVIRONMENT PROTECTION COMMITTEE (MEPC)								
No.	**Biennium***	**Reference to strategic direction, if applicable**	**Description**	**Parent organ(s)**	**Associated organ(s)**	**Coordinating organ**	**Timescale (sessions)**	**Reference**
1	2016-2017	7. Ensure regulatory effectiveness	Development of amendments to regulation 19 of MARPOL Annex VI and development of an associated Exemption Certificate for the exemption of ships not normally engaged on international voyages	MEPC	III		2	MEPC 71/17, para. 14.15
2	2022-2023	7. Ensure regulatory effectiveness	Revision of the *Revised guidelines and specifications for pollution prevention equipment for machinery space bilges of ships* (resolution MEPC.107(49))	MEPC	PPR		2	MEPC 79/16, para. 12.8
3	2022-2023	7. Ensure regulatory effectiveness (New)	Amendments to the *2017 Guidelines addressing additional aspects of the NO_X Technical Code 2008 with regard to particular requirements related to marine diesel engines fitted with Selective Catalytic Reduction (SCR) systems* (resolution MEPC.291(71), as amended by resolution MEPC.313(74)	MEPC	PPR		1	MEPC 80/17, para. 14.2
4	2022-2023	7. Ensure regulatory effectiveness (New)	Amendments to the NO_X Technical Code 2008 with regard to re-certification procedures of existing marine diesel engines onboard of ships	MEPC	PPR		1	MEPC 80/17, para. 14.2

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* Biennium when the output was placed on the post-biennial agenda.

ANNEX 28

ITEMS TO BE INCLUDED IN THE AGENDA OF MEPC 81

No.	Item
1	Adoption of the agenda
2	Decisions of other bodies
3	Consideration and adoption of amendments to mandatory instruments
4	Harmful aquatic organisms in ballast water
5	Air pollution prevention
6	Energy efficiency of ships
7	Reduction of GHG emissions from ships
8	Follow-up work emanating from the Action Plan to Address Marine Plastic Litter from Ships
9	Pollution prevention and response
10	Reports of other sub-committees
11	Identification and protection of Special Areas, ECAs and PSSAs
12	Technical cooperation activities for the protection of the marine environment
13	Application of the Committees' method of work
14	Work programme of the Committee and subsidiary bodies
15	Any other business
16	Consideration of the report of the Committee

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ANNEX 29

STATEMENT BY THE UNITED NATIONS SECRETARY-GENERAL

Excellencies, friends.

Humanity is in dangerous waters on climate.

But the decisions you take over the coming days could help us chart a safer course.

Science tells us it is still possible to limit global temperature rise to 1.5 degrees Celsius.

But it requires an immense and immediate global effort.

And shipping, which accounts for almost three percent of global emissions, will be vital.

The industry has seen some progress.

But it must move much faster to get on track and drive investment and innovation.

I urge you to leave London having agreed a Greenhouse Gas Strategy that commits the sector to net zero emissions by 2050 at the latest.

And that includes ambitious science-based targets starting in 2030 – both on absolute emissions reductions and the use of clean fuels.

These must include all greenhouse gas emissions and cover the whole value chain.

Such targets will provide the certainty that the industry and investors need.

I also urge you to commit to developing technical and economic policies and regulations to deliver on these targets and support a just, equitable transition.

Measures such as carbon pricing will push the industry in the right direction by making zero-emission fuels more competitive.

While the finance generated can support the just transition in developing countries and address the needs of those most vulnerable to the climate crisis.

I look forward to welcoming leaders from government and business, including shipping, to the Climate Ambition Summit I am holding in September. To present credible, concrete action to keep 1.5 degrees alive.

Excellencies, friends,

This meeting of the Marine Environment Protection Committee is a chance to steer us towards a clean, prosperous future for the industry – and a safer future for humanity.

I urge you to take it.

Thank you.

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ANNEX 30

STATEMENTS BY DELEGATIONS AND OBSERVERS*

ITEM 1

Statement by the delegation of Japan

"Japan sincerely welcomes the deposit of ratification instruments by Bangladesh and Liberia, which results in fulfilment of the conditions for the entry into force of the Hong Kong Convention on 26 June 2025.

Throughout the long history of the work in IMO to address the ship recycling, from the initial discussions on consideration and drafting of the Hong Kong Convention to the present day, many countries have made significant efforts to realize this Convention. Japan expresses its deep appreciation for the contributions and endeavors made by all countries involved in this Convention towards its establishment and entry into force.

Japan together with our full commitment to this Convention, has been working and cooperating closely with India and Bangladesh, the world's major ship recycling countries, in ensuring environmental protection and labor safety at ship recycling facilities, resulting in a certain level of success.

Our hope is that the Hong Kong Convention, as an internationally standardized regulation, will promote safe and environmentally friendly ship recycling worldwide.

We would also like to stress that safe and environmentally sound ship recycling, through implementation of the Hong Kong Convention plays a vital role in achieving phasing out the greenhouse gas from international shipping, by ensuring the smooth replacement of vessels with greener ships.

We believe that the two-year period leading up to the Convention's entry into force will be crucial for each country's preparation. Japan is committed to working closely with the concerned countries to ensure the smooth implementation of the Hong Kong Convention worldwide.

Once again, we extend our congratulations on the entry into force of the Hong Kong Convention."

ITEM 2

Statement by the delegation of Ukraine

"Mr. Chair,

On the night of 6 June 2023, the armed forces of the Russian Federation committed a large-scale act of state terrorism - the deliberate blowing up of the Kakhovka Hydroelectric Power Plant (HPP), which this delegation immediately reported at MSC 107.

* Statements have been included in this annex as provided by delegations/observers, in the order in which they were given, sorted by agenda item, and in the language of submission (including translation into any other language if such translation was provided). Statements are accessible in all official languages on audio file at: http://docs.imo.org/Meetings/Media.aspx

This man-made disaster caused the destruction of the upper part of the dam, which had been the last step of the Dnipro cascade of hydroelectric plants and held a Reservoir with a volume of 18.2 cubic kilometres of water. As a result of uncontrolled dumping of water, during the first 5 days from the catastrophe almost 75% of the fresh water was lost.

This created a mortal danger for people and all living things on both banks of the Dnipro River below the Kakhovka Reservoir.

Hundreds of people are reported dead, thousands became homeless and required evacuation. Irreversible damage has been caused to the surrounding natural resources and environment in general.

Due to the critically low water level in the Kakhovka Reservoir, hundreds of thousands of Ukrainians already have problems with safe access to drinking water, in particular 600,000 residents of the city of Kryvyi Rih, as well as other settlements, who are directly affected by this disaster, not to mention those living in Crimea temporarily occupied by the Russian Federation.

At the same time, this disaster destroyed agricultural land with crops in large areas and made it impossible to conduct agricultural production in the Kherson, Zaporizhzhia, and Dnipropetrovsk regions, which used water from the Kakhovka Reservoir for melioration systems. This will lead to a significant deterioration of soil quality, and a decrease in agricultural production, which will inevitably affect food security around the world and may cause uncontrolled migration processes. According to the preliminary assessment, the damage caused to Ukraine's irrigation system by Russia's destruction of the Kakhovka HPP reached more than 4 bin USD.

This undeniable and unprecedented act is a part of Russia's broader strategy of ecocide and war crimes, which includes the infringements of the inviolability of the Chornobyl NPP exclusion zone, seizure and threat to the security of the Zaporizhzhia NPP, hostilities at chemical enterprises in the Donbas, the recent blowing-up of the Togliatti-Odesa ammonia pipeline that has already caused severe damage to the environment.

Mr. Chair,
The flooding of the lower reaches of the Dnipro River caused irreparable damage to shipping. A significant number of explosive objects, including mines and other unexploded ordnance, has entered the river and sea waters. This endangers the navigation, complicates the export of grain and food, in particular the implementation of the Black Sea Grain Initiative, thus being a threat to global food security in the world.

The infrastructure of river ports and terminals, and related transport infrastructure in the entire region is ruined or disabled. The destroyed waterway lock allowed more than 3,000 ships a year before the war unleashed by the Kremlin terrorist gang. It was the last link of the logistics system, in which the Dnipro River connects 11 regions of Ukraine with seaports. It ensured the circulation of goods, in particular, the export of tens of millions of tons of agricultural products per year. 3 port grain elevators with over 50 thousand tons of combined storage and, and the largest vegetable storage "Green-Team" (with 50 thousand tons capacity) were flooded.

Due to the change in the water level, rapids in the lower reaches of the Dnipro River will be exposed, making the navigation impossible for about 5 years from now. River vessels and sea-river vessels will not be able to sail above Kakhovka.

The scale of the losses of the Ukrainian river fleet is also difficult to estimate now. We are talking about dozens of self-propelled vessels and cargo barges, the construction of which has grown rapidly in Ukraine in recent years.

Such an international crime should not go unpunished. The Russian Federation and its terrorist leadership should bear responsibility and provide full compensation for the damages caused as a result of its armed aggression against Ukraine.

Mr. Chair,

Blowing up of the Kakhovka dam by Russian occupiers is a global catastrophe with a transnational impact because of the serious threat of pollution of the Black Sea waters, which brings harm to aquatic habitats, fish populations, and wetland ecosystems.

Because of the dam's destruction millions of cubic meters of fresh water were released into the Black Sea. The sudden change in salinity levels impacted the viability of certain marine species, including those adapted to brackish or saline water conditions. Some species may be negatively affected or displaced, while others that are more tolerant of freshwater conditions may thrive. These changes can have cascading effects on the food web and biodiversity of the Black Sea with implications for the fishing industry in the region, potentially leading to changes in catch composition or reduced fish stocks.

Water flows along with toxic substances, sewage effluents, oil products, household garbage and biological waste, corpses of animals and humans that fall victim to the flood, as well as the remains of burials in washed-out cemeteries and other wastes reached the seacoast. This has significantly increased the ecological disaster's scale consequences, which can lead to outbreaks of mass infectious diseases and deterioration of living conditions in general. Only due to the ruination of the engine room of the destroyed Kakhovka HPP held about 450 tons of fuel oil that leaked into the river.

The flooding and washing away of dozens of human and cattle cemeteries can have implications for ballast water management for ships operating in the affected area. The release of remains into the water can introduce potential contaminants, including microorganisms or pathogens, into the surrounding aquatic environment. If ships in the area take up ballast water from these contaminated area, there is a risk that such organisms or pathogens could be carried to other regions. This raises concerns about the introduction of invasive species or the spread of diseases.

Thus, relevant measures should be put in place to prevent the transfer of potentially invasive species and pathogens by requiring ships to treat or exchange their ballast water in designated areas before discharging it. The presence of human remains in the water can complicate the implementation of these measures and necessitate additional precautions or alternative approaches to maintain biosecurity.

Another important factor in the aspect of water ballast is the rising vulnerability of the Black Sea ecosystem to the introduction of exotic organisms. According to the assessment carried out by the Ukrainian Institute of Marine Biology, in connection with salvo desalination of seawater, the biological habitats of Odesa and Dniester banks (the area of the most intensive work of sea bulkers loading agricultural products in the ports of Great Odesa and Mykolaiv) will be in danger for several years.

We will also need to conduct a thorough environmental impact assessment that would help evaluate the risks associated with ballast water management and determine appropriate measures to prevent biological pollution.

Probably, the Russian delegation, which is always very annoyed when the discussion goes beyond the Committee's mandate, will explain to us today why, being a party to the 2004 International Convention for the Control and Management of Ships' Ballast Water and Sediments, it chose such a way to instigate the implementation of the Article 6 "Scientific and Technical Research and Monitoring", or Article 13 "Technical Assistance, Cooperation and Regional Cooperation"?

Mr. Chair,

The delegation of Ukraine calls upon the Committee to:

.1 reiterate its strong condemnation of the Russian Federation's invasion of Ukraine that had started on 24 February 2022, and express grave concern regarding its impact on global shipping, safety and security of navigation in the Black Sea and the Sea of Azov and on the marine ecosystem;

.2 reaffirm in this regard its strong commitment to the full implementation of the Sustainable Development Goals (SDGs) to ensure the sustainable use of the oceans and seas and the protection of marine and coastal ecosystems;

.3 resolutely condemn the Russian Federation's premeditated destruction of the Kakhovka Hydroelectric Power Plant and express grave concern of its consequences, which led to the contamination of the Black Sea with substances harmful to the marine environment;

.4 stress in this regard the critical importance of protecting the environment in times of war, including in compliance with the relevant international obligations under international humanitarian law;

.5 urge the Russian Federation to refrain from attacks aimed at works or installations containing dangerous forces, which may lead to severe losses among the civilian population and consequent damage, including to the marine environment; and

.6 resolve to keep this matter under review and invite Member States concerned, in particular Black Sea coastal states, to provide relevant reports to the Committee.

I thank you, Mr. Chair, and request that this statement is reflected in the Committee's report and attached to its annex."

Statement by the delegation of the Russian Federation

"Российская делегация решительно отвергает все безосновательные обвинения, сделанные в адрес России делегацией Украины и другими, в особенности, что касается намеренного разрушения гражданских объектов и загрязнения окружающей среды. В этой связи хотелось бы также отметить неприкрытое манипулирование фактами выступившими делегациями.

Хотелось бы информировать и напомнить всем присутствующим, что это именно вооруженные силы Украины с постоянством обстреливают гражданские объекты, включая объекты критической инфраструктуры, разрушение которых приводит к плачевным последствиям для окружающей среды и всей экосистемы региона в целом.

В этой связи необходимо упомянуть атаки на российские буровые платформы в прошлом году, минирование украинскими властями морских портов Украины, а также разрушение вследствие постоянных атак вооруженными силами Украины Каховской ГЭС, имевшее место в начале июня сего года. Это удручающее событие (разрушение Каховской ГЭС) повлекло серьезнейшие последствия для всей экосистемы региона, а также многочисленные жертвы среди мирного населения. При этом следует отметить,что украинские власти сами официально подтверждали осуществление ими обстрелов Каховской ГЭС. Российская же сторона, в свою очередь, заранее неоднократно предупреждала о последствиях таких необдуманных действий. Еще в октябре прошлого года на полях ООН Постоянным представительством Российской Федерации было распространенно соответствующее письмо с предупреждением, о готовящемся Украиной теракте на Каховской ГЭС, однако это не остановило киевский режим и, в результате, ГЭС была разрушена. Очевидно, что если постоянно обстреливать какой-то объект, в результате попадешь в него, и этот объект будет разрушен.

Впоследствии, сразу после того, как Каховская ГЭС была уничтожена, Министерство иностранных дел Российской Федерации выпустило официальное заявление по этому поводу, в котором, среди прочего, международное сообщество призывается осудить преступные действия украинских властей, которые становятся все более бесчеловечными и представляют серьезную угрозу региональной и глобальной безопасности. Вся эта информация была распространена нашей делегацией среди государств-членов ИМО посредством Циркулярного письма № 4728 от 8 июня сего года.

Далее необходимо упомянуть еще один критический объект, к которому приковано сейчас всеобщее внимание. В последние дни распространяются многочисленные заявления, которые нельзя назвать иначе как безосновательные обвинения, официальных представителей украинских властей о том, что Российская Федерация якобы могла преднамеренно заминировать, с целью уничтожения, подконтрольную ей Запорожскую АЭС, расположенную на территории одного из ее субъектов. Абсурдность подобных утверждений превосходит абсурдность обвинений киевским режимом, что Запорожская АЭС обстреливается Вооруженными Силами Российской Федерации.

Также, в этой связи, инспекторы МАГАТЭ официально подтвердили, что они не зафиксировали никаких признаков минирования Запорожской АЭС российской стороной, как об этом было ранее заявлено украинскими властями.

Единственная угроза Запорожской атомной электростанции исходит от постоянных безрассудных обстрелов этого критического объекта киевским режимом.

Постоянное представительство Российской Федерации при ООН распространило на прошлой неделе письмо с предупреждением об опасности, которую несет в себе постоянный обстрел Запорожской атомной электростанции со стороны киевского режима и готовящейся провокации с их стороны. Это письмо также предупреждает все государства, что очевидная неспособность украинских властей опомниться и перестать подвергать АЭС опасности вызывает крайнюю обеспокоенность тем, что их провокационные обвинения в адрес Российской Федерации являются не чем иным, как дымовой завесой, прикрывающей подготовку к реальной аварии на АЭС. Очевидно, что в случае возможного разрушения/повреждения атомной электростанции последствия будут абсолютно катастрофическими и поистине глобального масштаба.

The Russian Federation delegation strongly rejects all baseless allegations made against Russia by the Ukrainian delegation and others, especially with regard to the deliberate destruction of civilian objects and environmental pollution. In this regard, we would also like to note the blatant manipulation of facts by the delegations that took the floor.

We would like to inform and remind everyone present that it is the armed forces of Ukraine that constantly shell civilian objects, including critical infrastructure, the destruction of which leads to disastrous consequences for the environment and the entire ecosystem of the region as a whole.

In this regard, it is necessary to mention the attacks on Russian drilling platforms last year, the mining by the Ukrainian authorities of the seaports of Ukraine, as well as the destruction of the Kakhovskaya Hydroelectric Power Plant due to constant attacks by the armed forces of Ukraine, which took place in early June of this year. This depressing event (the destruction of the Kakhovskaya Hydroelectric Power Plant) caused very serious consequences for the entire ecosystem of the region, as well as numerous casualties among the civilian population. At the same time it should be noted, that the Ukrainian authorities themselves officially confirmed their shelling of the Kakhovskaya Hydroelectric Power Plant. The Russian side, in turn, repeatedly warned in advance about the consequences of such rash actions. Back in October last year, the Permanent Mission of the Russian Federation to the UN distributed a corresponding letter with the notification regarding a terrorist attack being prepared by Ukraine at the Kakhovskaya Hydroelectric Power Plant, but this did not stop the Kiev regime and, as a result, the Hydroelectric Power Plant was destroyed. Obviously, if you constantly shoot at some object, as a result you will hit it, and this object will be destroyed.

Subsequently, right after the Kakhovskaya HPP was destroyed, the Ministry of Foreign Affairs of the Russian Federation issued an official statement on this matter, which, among other things, calls on the international community to condemn the criminal actions of the Ukrainian authorities, which are becoming more inhumane and pose a serious threat to regional and global safety. All this information was distributed by our delegation to the IMO Member States through Circular Letter No.4728 of June 8 this year.

Further, it is necessary to mention one more critical object, on which everyone's attention is focused nowadays. In recent days, numerous statements have been circulating, which can only be called baseless accusations, by the official representatives of the Ukrainian authorities that the Russian Federation allegedly could deliberately mine, in order to destroy, the Zaporozhskaya Nuclear Power Plant controlled by it and located on the territory of one of its subjects. The absurdity of such statements exceeds the absurdity of the accusations by the Kiev regime that the Zaporozhskaya NPP is being shelled by the Armed Forces of the Russian Federation.

Furthermore, in this regard, the inspectors of the IAEA have officially confirmed that they had not identified any signs of mining at the Zaporozhskaya NPP by the Russian side, as previously stated by the Ukrainian authorities.

The only threat to the Zaporozhskaya Nuclear Power Plant comes from the constant reckless shelling of this critical facility by the Kiev regime.

The official letter regarding the danger posed by the constant shelling of the Zaporozhskaya Nuclear Power Plant by the Kiev regime and the impending provocation from the Ukrainian side was circulated last week by the Permanent Mission of the Russian Federation to the UN. This letter also warns all states that the apparent inability of the Ukrainian authorities to come to their senses and stop endangering NPP raises extreme concern that their provocative accusations against the Russian Federation are nothing more than a smokescreen covering preparations for a real accident at the NPP. Obviously, in the event of a possible destruction / damage to the Nuclear Power Plant, the consequences will be absolutely catastrophic and truly global."

Statement by the delegation of Canada

"Thank you chair.

And thank you to the delegate from Ukraine for explaining so clearly the real impact that this war and the recent destruction of the Kahkovka dam is having on their people, and on the marine environment. Canada wishes to align with the statements of Spain, US, UK and others. The destruction of the Kahkovka dam is just the latest example of the devastating consequences that Russia's illegal unprovoked war on Ukraine is having on the marine environment.

We reiterate our support for Ukraine and condemn in the strongest possible terms Russia's unjust war, which is a flagrant violation of international law and continues to pose a serious threat to the safety and security of seafarers, marine shipping and the marine environment. We call on Russia to immediately end its war of aggression and withdraw from Ukrainian territory.

We kindly ask that our statement be included in the final report"

Statement by the delegation of France

"Monsieur le Président,

La France apporte son entier soutien aux interventions qui ont été faites par les délégués de l'Espagne, du Japon, des Etats-Unis et du Royaume-Uni en appui aux déclarations du délégué de l'Ukraine.

La destruction partielle du barrage de Kakhovka est un acte particulièrement grave. Elle illustre une nouvelle fois les conséquences tragiques d'une agression dont la Russie porte seule la responsabilité.

La France a exprimé ses vives préoccupations quant à l'impact humanitaire et environnemental de cette destruction, qui menace aussi la sûreté de la centrale nucléaire de Zaporijjia. Elle a immédiatement porté assistance aux autorités ukrainiennes pour répondre aux conséquences de la destruction partielle du barrage.

La France continuera de dénoncer et de condamner la guerre d'agression illégale menée par la Russie contre l'Ukraine en violation flagrante du droit international et d'appeler au retrait complet, immédiat et inconditionnel des forces armées russes de l'ensemble du territoire ukrainien.

Je souhaite que cette intervention soit annexée au rapport de notre comité.

Merci Monsieur le Président."

Statement by the delegation of Georgia

"At the outset, we would like to express our solidarity to Ukraine and the Ukrainian people.

Also, we would like to thank Ukrainian delegation for the information provided in its statement.

Georgia supports the points raised by Ukraine and expresses grave concern regarding the destruction of the Kakhovka Hydroelectric Power Plant and its consequences for the Black Sea environment.

I wish to kindly ask the secretariat to reflect this short statement to the final report of the committee.

Thank You"

Statement by the delegation of Iceland

"Thank you Chair and good day to all.

Iceland stands in full solidarity with Ukraine and it's people and we condemn Russia's unprovoked and unjustified aggression against Ukraine in the strongest possible terms.

To be brief, we fully align ourselves with the statements made by Spain, United States, Japan and the United Kingdom.

We kindly ask that our support be reflected in the final report of the committee. "

Statement by the delegation of Ireland

"Thank you Chair.

Ireland wishes to align our-selves with the statement made by Spain and others, and to also commend the IMO Secretary General and the Secretariat for their work in supporting the safety of shipping, seafarers welfare, and the maritime environment in the Black Sea and Sea of Azov.

Shockingly, over one and a half years has passed since this brutal conflict was undertaken and waged by the Russian Federation against Ukraine, and Ireland wishes to offer our sincere condolences to the people of Ukraine for the losses they have suffered and regrettably, continue to suffer.

It continues to remain critical, that vital cargos including food, fuel and medicines are allowed to flow safely and unimpeded in-to Ukraine.

The continuing Russian military action against Ukraine is illegal and immoral, involving the utterly unacceptable targeting of civilians and civilian infrastructure, with cruel and indiscriminate attacks continuing through-out the Country. In addition, the damage caused to Ports, the surrounding infrastructure and the maritime environment is massive in scale and will have long reaching consequence's for the region.

A full and comprehensive cessation of hostilities and the withdrawal of the Russian military from Ukrainian territory, including its territorial waters, is immediately required to ensure the safety and welfare of its civilians, and the protection of the Marine environment. Ireland is unwavering in our solidarity with the people of Ukraine and in our support for Ukraine's sovereignty and territorial integrity.

We would request that Irelands statement is included in the report of this Committee.

Thank you, Sir."

Statement by the delegation of Italy

"Thank you Mr. Chair,

Italy - in line with the statement already made by the distinguished delegation of Spain on behalf of the Member States of the European Union - strongly condemns the bombing of the Kakhovka dam in the Kherson region, which is putting thousands of people at risk and causing an ecological disaster, further aggravating the ongoing humanitarian emergency.

Our delegation expresses the greatest sympathy to the Ukrainian people affected by the criminal damage to the Nova Kakhovka dam.

As the distinguished colleague from the Ukrainian delegation just stated and I quote "the blow-up of the Kakhovka dam by Russian occupiers is a global catastrophe with a transnational impact because of the serious threat of pollution of the Black Sea waters harming aquatic habitats, fish populations, and wetland ecosystems".

Therefore Mr. Chair, we reiterate today, our strong condemnation of the Russian Federation's invasion of Ukraine, highlighting the grave concern regarding its impact on global shipping, safety, and security of navigation in the Black Sea and the Sea of Azov and on the marine ecosystem.

We stress, as well, the fundamental importance of protecting the marine environment in times of war in compliance with the relevant international obligations under international humanitarian law.
Finally, Mr. Chair. We urge the Russian Federation to refrain from attacks aimed at installations containing dangerous forces, which may lead to severe losses among the civilian population and consequent damage, including to the marine environment.

I thank you, Mr. Chair, and request that this statement is reflected in the Committee's report and included in its annex."

Statement by the delegation of Japan

"Japan would like to express our concern on potential negative consequences caused by Russia's aggression on marine environment, in addition to the ongoing direct threats to the safety of navigation and seafarers.

Russia's aggression against Ukraine is an attempt of unilateral change of the status quo by force and an infringement of Ukraine's sovereignty and territorial integrity, which constitutes a clear violation of international law, and is a grave breach of the United Nations Charter.

All these actions that shake the very foundation of international order are absolutely unacceptable, and Japan condemns Russia's actions in the strongest terms.

Japan urges Russia to cease its ongoing aggression and to withdraw its troops and military equipment immediately, completely and unconditionally from the entire internationally recognized territory of Ukraine.

We kindly ask you to annex our full statement to the report."

Statement by the delegation of Lithuania

"Thank you, Mr. Chair and good day to all of you.

Lithuania continues standing united with Ukraine and condemns in the strongest possible terms Russian Federation’s unprovoked and unjustified war against Ukraine and its people.

Mr. Chair, this delegation fully aligns itself with the statements made by Spain and others and we would like our statement to be included in the report.

Thank you."

Statement by the delegation of Luxembourg

"Merci Monsieur le Président et bonjour à tous,

Pour être bref, Monsieur le Président, la délégation du Luxembourg affirme toute sa solidarité vers le peuple de l’Ukraine et voudrait bien s’associer à la déclaration de l’Espagne, suivi par le Japan, les États-Unis, le Royaume Uni, la France, l’Allemagne aussi bien que d’autres délégations de l’Union Européenne.

Nous vous saurions gré de bien mentionner notre intervention dans le rapport final de la présente session de notre comité et nous ne manquerons pas de l’envoyer au Secrétariat.

Je vous remercie Monsieur le Président."

Statement by the delegation of the Kingdom of the Netherlands

"Thank you, Chair,

The delegation of the Netherlands wishes to express its full solidarity with Ukraine and the Ukrainian people. This delegation fully aligns itself with the statement made by Spain, and supported by many other delegations.

As we have done at other occasions, The Netherlands condemns the Russian invasion of Ukraine in the strongest possible terms, as a serious violation of the UN Charter, which prohibits the threat or use of force against the territorial integrity or political independence of any State.

We have seen the impact of this (unprovoked act of) aggression on the safety and welfare of seafarers, on the need to preserve worldwide supply chains, and the dire consequences of this situation on daily life for the people of Ukraine. And once again, as a result of the destruction of the Khakovka dam, we see the devastating impact of this aggression on the marine environment and the living conditions for the people involved. We therefore stress, once again, the critical importance of protecting the marine environment also in times of war, including compliance with the relevant international conventions. We call upon the Russian Federation to stop its aggression, withdraw its troops and respect the territorial integrity of Ukraine within internationally recognized borders.

(and we would like to have this statement attached to the final report)

Thank you, Chair"

Statement by the delegation of Portugal

"Thank you, Mr. Chair,

Portugal thanks Ukraine for bringing the destruction of the Nova Kakhovka dam and its adverse effects including on the marine environment and on maritime transport to the attention of this Committee meeting.

We condemn this deliberate destruction of civilian infrastructures, which caused a devastating humanitarian, economic and environmental impact in Ukraine.

The Nova Kakhovka dam breach is yet another example of the consequences of the armed aggression by the Russian Federation against Ukraine.

Mr. Chair,

Let us not forget that on 24 February 2022, the Russian leadership decided to start a full-scale invasion against an independent and sovereign country, which we strongly condemn. Russia's brutal actions must cease.

After 497 days since then, Portugal reaffirms its resolute support for Ukraine's sovereignty and territorial integrity within its internationally recognized borders, as well as its unwavering solidarity with the Ukrainian people.

Finally, Portugal fully supports the intervention made by Spain. We kindly request that our intervention be reflected in the Committee's report.

Thank you. "

Statement by the delegation of Romania

"As the previous speakers, Romania fully condemns the aggression of the Russian Federation in Ukraine and is deeply concerned about the evolution of the events.

We hope for a solution to the conflict as soon as possible and continue to support the right to self-determination and independence of all countries of the world.

Chair please include this statement in the final report."

Statement by the delegation of Spain

"En nombre de los Estados Miembros de la Unión Europea, que además son todos ellos miembros de la OMI, España desea expresar la plena solidaridad de la UE y de sus Estados Miembros con Ucrania y el pueblo ucraniano.

Condenamos en los términos más enérgicos posibles la agresión no provocada e injustificada de la Federación de Rusia contra Ucrania, que viola gravemente el derecho internacional y la Carta de las Naciones Unidas, y socava la seguridad y la estabilidad internacional.

Exigimos que la Federación de Rusia cese inmediatamente sus acciones militares, retire todas sus tropas de todo el territorio de Ucrania y respete plenamente la integridad territorial, la soberanía y la independencia de Ucrania dentro de sus fronteras internacionalmente reconocidas, y acate la resolución de la Asamblea General de la ONU titulada "Agresión contra Ucrania", respaldada por 141 Estados en su undécimo periodo extraordinario de sesiones de emergencia.

Apoyamos con determinación el derecho inherente de Ucrania a la autodefensa y los esfuerzos de las fuerzas armadas ucranianas por defender la integridad territorial y la población de Ucrania, de conformidad con el artículo 51 de la Carta de las Naciones Unidas.

La Federación de Rusia debe respetar en todo momento las obligaciones que le incumben en virtud del derecho internacional, incluido el derecho internacional humanitario y de los derechos humanos, en lo que respecta a la protección de los civiles, las mujeres y los niños.

Además, rechazamos enérgicamente y condenamos de manera inequívoca el intento de anexión ilegal de las regiones ucranianas de Donetsk, Luhansk, Zaporizhzhia y Kherson por parte de la federación de Rusia.

España agradece a Ucrania su intervención y condena en los términos más enérgicos la destrucción deliberada de la presa de la central hidroeléctrica de Kakhovka, que tiene repercusiones humanitarias, ecológicas, agrícolas y económicas devastadoras y pone en peligro la seguridad de la central nuclear de Zaporizhzhia.

La Unión Europea y sus Estados miembros están dispuestos a proporcionar más ayuda a Ucrania, además de la ayuda de emergencia para las labores de asistencia proporcionada a través del Mecanismo de Protección Civil de la Unión.

Tal y como ha manifestado claramente Ucrania durante su intervención, la amenaza y los daños al medio marino como consecuencia de la agresión de la Federación Rusa contra Ucrania son de gran consideración, por lo que España apoya que el Comité mantenga este asunto bajo revisión.

Solicitamos que esta intervención figure como anexo en el informe final del Comité.
Muchas gracias"

Statement by the delegation of Türkiye

"The ongoing war in Ukraine continues to pose a serious threat to maritime security and safety of navigation, as well as the marine environment in the Black Sea.

We condemn the attack that breached the Nova Kakhovka dam in southern Ukraine.

The attack targeted civilian infrastructure and caused severe humanitarian and environmental devastations for the entire Black Sea region.

In this respect, President Erdoğan suggested the establishment of a commission with the participation of the international community, including the Russian and Ukrainian experts, the United Nations, and Türkiye.

The destruction of the Kakhovka dam serves as the recent stark reminder of the multifaceted, devastating consequences of the war in Ukraine.

Türkiye, emphasizing on every occasion the risks posed by the prolongation of the war and the necessity of a diplomatic solution, is ready to contribute to international efforts to contain the humanitarian effects of the disaster.

We strongly support Ukraine's struggle to restore its territorial integrity, sovereignty, and independence.

We are also convinced that to end this war, we should also use diplomatic avenues at our behest.

The Black Sea Initiative has proved that war and diplomacy are not mutually exclusive.

Thanks to the Initiative, more than 32 million tons of grain products have reached the world markets. It helped to stabilize global food prices and to avert a significant food shortage.

We ensured another rollover until 17 July.

Currently, the odds are against securing an extension beyond 17 July. However, we must redouble our efforts to make sure that grain keeps reaching those in need.

We must remember the global good that the Black Sea Initiative continues to serve by maintaining the stability of the commodity markets."

Statement by the delegation of the United Kingdom

"Thank you, Chair .

The United Kingdom aligns with the statements of the distinguished delegations of Spain, the US and others.

The United Kingdom continue to stand united with our international partners in condemning, in the strongest possible terms, the Russian government's reprehensible actions, which are an egregious violation of international law and the UN Charter.

We will continue to support the Ukrainian government in the face of this assault on their sovereignty and territorial integrity. The UK and the international community stand against this naked aggression and for freedom, democracy and the sovereignty of nations around the world.

The destruction of the Kakhovka dam is a major catastrophe with wide-reaching ecological and humanitarian consequences that extend far beyond the flooded area. This disaster has had an unquantifiable impact on Ukraine's environment as well as severely disrupting access to basic services such as water and food for more than 37 settlements in the area.

We once again call upon Russia to de-escalate and withdraw its troops. It must be held accountable and stop undermining democracy, global stability, and international law.

We kindly ask that this statement is attached to the final report.

Thank you, Chair"

Statement by the delegation of the United States

"Thank you Chair. The United States aligns with the statement delivered by the distinguished delegation of Spain.

The United States condemns in the strongest possible terms the Russian Federation's unprovoked and illegal war against Ukraine. We deplore this war and the Russian Federation's attacks on commercial vessels, ports and other civilian infrastructure that continue to threaten the safety and welfare of seafarers, the people of Ukraine, and the marine environment. As the distinguished delegation of Ukraine has made abundantly clear in its intervention, the mounting damage to the marine environment and the environment more broadly resulting from Russia's unjust war – including damage resulting from the destruction of the Kakhovka dam - is severe.

We support all efforts to ensure the protection of the marine environment and the safety of seafarers and commercial vessels in the Black Sea and Sea of Azov. The swiftest and surest way to accomplish all of this is for the Russian Federation to immediately end its war of aggression against Ukraine and withdraw all its forces from Ukrainian territory, including its territorial waters. We thank the distinguished delegation of Ukraine for its intervention and agree that the committee should keep this matter under review.

Thank you, Chair."

Additional statement by the delegation of Ukraine

Thank you, Mr. Chair.

The only feeling that may overwhelm everyone while listening to the recent statement of the Russian Federation – what a blatant example of hypocrisy.

The only thing that one should clearly know about Russian Federation – it does not intend to keep Ukraine prosperous and successful, as the Kremlin regime professes the principle of "the scorched-earth" in its war with Ukraine. The most vivid proof of this is the situation in the occupied territories since 2014.

Well, you couldn't expect anything else from this terrorist State:

.1 it invades Ukraine under false pretext, abducts, tortures, rapes its civilian population and at the same time accuses the victims for not taking it for granted;

.2 it launches the full-scale offensives at land and at sea, raises cities to the ground, destroys energy and critical civilian infrastructure and complains about Ukraine's ability to punch Kremlin's teeth whiles exercises its sovereign right of self-defence;

.3 it brings hundreds of fresh meat on a Slava-class warship to feed the starving population of the Black Sea goby and at once launches the pollution of the marine ecosystem by striking at commercial vessels, which releases tons of fuel into the waters;

.4 it places missiles at Ukrainian gas rigs at sea, occupied in 2014, just to prevent the liberation of the Snake Island and the restoration of free shipping in the region, and on the other hand whines when these legitimate targets are being hit;

.5 it sabotages the Kakhovka HPP, mines and blows up the dam to stop Ukraine counteroffensive and says it has nothing to do with it, while not allowing civilians to evacuate from the affected area and blocks the access of humanitarian missions willing to assist persons in distress; and

.6 this time tries to manipulate the international community by putting blame on Ukraine for Russian Federation attempts to provoke the nuclear catastrophe, having mined the station and placed military equipment and ammunitions there.

The only source of danger for the Zaporizhzhia Nuclear Power Plant is the occupying power – the Russian Federation.

And the only guarantee of nuclear safety is the complete withdrawal of the Russian Federation occupation troops from the territory of the Zaporizhzhia NPP, the demilitarization of the facility and creation of a safety zone around the power plant.

The Ukrainian Defence Forces do not violate the norms of International Humanitarian Law. We continue to monitor and control the situation and are ready to act under any conditions.

I thank you, Mr. Chair, and request that this statement is included in the Committee’s report.

Additional statement by the delegation of France

Monsieur le Président,

La Fédération de Russie a mentionné, dans son intervention, notre déclaration sous le point 11 relative au document INF/26 de l’île Maurice présentait un projet de ZMPV dans l’océan indien. J'avais appelé l’attention du comité sur le fait que la carte annexée au document qui intègre l'ïle de Tromelin dans les eaux sous juridiction de l'ïle Maurice. Or l’île de Tromelin est un territoire sur lequel la France exerce une pleine souveraineté.

Monsieur le Président,

Cette déclaration ne saurait être rapprochée de la situation en Ukraine, car il s'agit de deux questions totalement différentes. Dans le premier cas, la délimitation de la zone de souveraineté française revêt un caractère technique susceptible d’avoir un impact sur la mise en ouvre d'un éventuelle ZMPV.

La guerre d'agression illégale menée par la Russie contre l'Ukraine relève en revanche d'une décision politique d'attenter par la force à la souveraineté d'un Etat indépendant.

Merci Monsieur le Président

Mr President,

In its intervention, the Russian Federation mentioned our statement under point 11 relating to document INF/26 from Mauritius, which presented a project for an PSSA in the Indian Ocean. I drew the Committee's attention to the fact that the map annexed to the document included the island of Tromelin in the waters under the jurisdiction of Mauritius. However, the island of Tromelin is a territory over which France exercises full sovereignty.

Mr President,

This statement should not be compared with the situation in Ukraine, as these are two completely different issues. In the first case, the delimitation of the zone of French sovereignty is of a technical nature likely to have an impact on the implementation of a possible PSSA.

Russia's illegal war of aggression against Ukraine, on the other hand, is a political decision to violate the sovereignty of an independent state by force.

Thank you Mr President

ITEM 5

Statement by the delegation of Portugal

"Thank you, Mr. Chair,

As co-sponsor of document MEPC 80/INF.35, Portugal is pleased to inform that a potential future Emissions Control Area in the North-East Atlantic Ocean, for sulphur oxides and particulate matter emissions and nitrogen oxides emissions under MARPOL Annex VI would constitute a fundamental step towards tackling air pollution from international shipping and would also ensure consistent and uniform regulation across sea areas with high-density traffic with a geographical scope covering the most important parts of the North-East Atlantic Ocean.

A future ECA in the North-East Atlantic Ocean will link the existing ECAs in the Baltic Sea, North Sea and the English Channel with the recently adopted Mediterranean Sea ECA

Under the coordination of Portugal, maritime administrations from North-East Atlantic Ocean littoral States started preliminary discussions on the potential feasibility of designating an ECA in their waters at the end of 2022. So far, the initiative has received support from several countries and organisations.

In support of this process, some analytical work will have to be undertaken to assess the costs and benefits linked to the initiative. The International Council on Clean Transportation (ICCT) is carrying out a technical and feasibility study that will take into account, inter alia, the analytic requirements and criteria set out in appendix III of MARPOL Annex VI.

Socio-economic impacts on States and those in the ecosystem will also be also assessed by Porto University.

Depending on the outcome of this process, a joint coordinated proposal for the designation of an ECA in the North-East Atlantic Ocean could be submitted by the littoral states, as appropriate, to MEPC 81 or MEPC 82, scheduled for 2024.

We thank all the delegations who have co-sponsored this document with us.

We kindly ask that this statement be annexed to the Committee’s report.

Thank you."

Statement by the delegation of Republic of Marshall Islands

"Thank you Chair,

Firstly, please allow me to express my sincere appreciation to the Chair of the PPR Sub-Committee, Dr. Flavio da Costa Fernandez, as well as the Chair of the Working Group on Prevention of Air Pollution from Ships, Mr. Wayne Lundy, for their dedication and efforts in this work. The sheer number of action items produced from the last session of PPR speaks for itself.

Chair, regarding action item 20, we planned to make a lengthy intervention detailing our concerns noted in paragraph 9.8 of the Sub-Committee’s report. However, in the interest of time, we would like to make the following statement, and would be grateful if this could be reflected in the report of the Committee:

The Marshall Islands remains concerned with the introduction of a new reporting requirement to regulation 13.2.2 of MARPOL Annex VI in all instances where a Tier II rather than a Tier III replacement engine has been installed. This broadly applies to all replacements under this regulation retrospectively and is not limited only to instances where there is a boiler preplacement, as per the Terms of Reference given to the Working Group at PPR. Further, when approving Output Number 7.43 at MEPC 77, the Committee noted the output should also include development of consequential amendments to associated guidelines. There was no instruction to the Sub-Committee to consider the need for notification aspects.

Chair, we understand the time constraints faced by the PPR Sub-Committee, when all documents were referred directly to the Working Group without discussion in plenary. While the intent of this practice is well appreciated, we wish to highlight the importance of maintaining established methods of work and ensuring that expediency does not undermine the integrity of those methods."

Statement by the observer from FOEI

"Thank you Chair,

I want to talk briefly about urgency. In the last few weeks we have begun to see excessive and unusual heating in the oceans, and scientists are now saying that we could see the first blue ocean events in the Arctic as soon as the 2030s. This Committee has met 17 times since it was decided that action to reduce Black Carbon emissions from ships that have an impact on the Arctic was needed! So far, the only decision on reductions has been a recommendatory resolution which encourages a fuel switch to reduce Black Carbon emissions. This is a good step, but on its own, it will not be enough.

We urge Member States to bring forward concrete proposals which will deliver action on Black Carbon emissions quickly to PPR 11. As the UNFCCC urged us earlier this week, we must do whatever we can now! The latest analysis shows that meaningful action to reduce Black Carbon is needed across the whole Arctic (and not just the area of the Arctic where ships can be expected to encounter ice and where safety of sailing in ice is paramount). We must address Black Carbon being transported into the Arctic as well as from ships in the Arctic. In order to complete output 3.3 under the Strategic Direction on responding to climate change, it is necessary for this Committee to reduce the impact on the Arctic of emissions of Black Carbon from international shipping - and this requires action across the whole Arctic as well as beyond the Arctic. In this day and age, in the face of the global climate crisis, it is a travesty that these emissions remain unregulated.

Thank you"

Statement by the observer from WWF

"Thank you Chair. In document MEPC 79/5/3 WWF urged this Committee to develop a prohibition on the use of scrubbers as a means of alternative compliance under MARPOL, which we believe would be inconsistent with State obligations under UNCLOS. We welcome efforts by Member States to ban scrubber discharges within their jurisdiction and urge Members to consider prohibiting exhaust gas cleaning systems as a means of alternative compliance. We will contribute further on this issue to PPR 11.

Thank you Chair."

Statement by the observer from CSC

"Thank you Chair,

We are meeting this week to agree measures to cut shipping's climate impact dramatically by 2030. This must include action on short-lived climate forcers of which Black Carbon, on a 20-year time scale, accounts for over 20% of the sector's climate impact. As recognized by MEPC back in 2011, action on ship Black Carbon emissions on the Arctic needs to be prioritized. Yet 12 years later no such measures to do so have been agreed by the IMO.

This meeting is being urged by PPR 10 to work intersessionally and for states, finally, to submit concrete proposals for action to PPR 11 next February. Resolution MEPC.342(77) recognized that a switch to distillates or other cleaner fuels by ships operating in and near the Arctic would represent a significant first step in delivering substantial reductions in ship BC there.

So let's use the time at this meeting and in the coming months to deliver a mandatory requirement under MARPOL Annex VI to do this. And it's imperative to agree on a suitable geographic scope for such a measure that ensures that BC emitted from all ships sailing in and near the Arctic will be required to comply and not merely those operating in traditionally ice-covered waters, which will only address less than 25% of the problem. After 11 years of inaction, IMO's credibility is now clearly on the line."

Statement by the observer from Inuit Circumpolar Council

"Thank you Chair,

It is urgent and imperative to mandate the reduction of Black Carbon emissions from shipping in and near the Arctic and our homeland of Inuit Nunaat. Inuit are an international community sharing common language, culture, and a common land along the Arctic coast of Russia, Alaska, Canada and Greenland.

- Black Carbon is 20% of the shipping industry's climate impact,
- its emissions in the Arctic have doubled from 2015 to 2021 and are 5 times more potent a climate disruptor when emitted in the Arctic,
- Black Carbon melts snow and ice resulting in habitat loss and disruptions in Inuit harvesting, culture and mobility,
- rapid changes to the Arctic environment have major implications for the global climate system contributing to severe weather events around the world,
- particulate matter and Black Carbon can have health impacts on Indigenous coastal communities increasing the risk of premature mortality from respiratory ailments,
- Arctic shipping has increased in the past years at a significant rate.

The list of reasons to urgently mandate emissions reductions is long and convincing and will become even more urgent as shipping traffic increases further; yet there continue to be delays and a lack of will to develop clear, concrete, and effective next steps for mandating Black Carbon emission reductions.

This isn't a theoretical issue for Inuit, our homeland is rapidly changing before our eyes yet very little is being done about it. Inuit didn't cause the climate crisis, but we are the ones on the front lines dealing with the consequences.

We urge IMO members to submit concrete proposals to PPR 11 to quickly mandate and eliminate Black Carbon emissions. We also encourage the geographic scope for these proposals to be as broad as possible to ensure that all of Inuit Nunaat and near Arctic areas are included.

As the IMO revises its GHG reduction Strategy and targets, we must urgently deal with one fifth of the sector's climate pollutants so as to ensure shipping is on a path below 1.5 degrees and to protect our Inuit homeland from severe impacts."

ITEM 7

Opening statements

Statement by the Executive Secretary of the United Nations Framework Convention on Climate Change (UNFCCC)

"Colleagues,

Five years ago, IMO ironed out the Initial GHG Strategy that sent a historic signal to the world that international shipping will at least halve emissions by 2050.

Two years ago, IMO agreed to initiate the revision of the Initial Strategy by increasing its ambitions.

And now we are here to adopt the revised Strategy: with the ambition of a just, equitable and inclusive transition to the decarbonization of the shipping sector. This is good progress.

However, three months ago, IPCC's AR6 and UNFCCC's National Determined Contributions synthesis report added more clarity and details to the simple truth – this body has to do more on climate change now.

With the latest NDCs submitted and current ICAO's and IMO's commitments, the carbon budget for 1.5°C will soon be exhausted. And by soon I really mean soon, by the early 2030s.

Let's work this backwards, net zero by 2050, means delivering reductions by 2040 and 2030 – meaning, we need a timeline to bring measures into force now.

This sector is abatable – the technology exists to do what is needed. The IMO, as the global regulator, can set the path of how we take advantage of that fact.

By setting absolute emissions reductions targets and shepherding the corresponding transition to a booming clean energy and renewables-based sector, the IMO's leadership will support the transition of other critical sectors.

Colleagues,

This year's global stock-take – a process under which countries assess the progress towards the Paris Agreement and how we take the steps to adjust and better meet those commitments, needs engagement from all.

Therefore, I encourage the IMO's strong participation in the political phase of the 1st global stock-take.

Given our location and the time of the year we find ourselves in, I want to leave you with a few words from Arthur Ashe, who was the first black tennis player to win Wimbledon.

He said "Start where you are. Use what you have. Do all that you can."

Let us take this opportunity to land a decisive win towards meeting our Paris Agreement commitments.

We know we can.

I thank you."

Statement by the delegation of Australia

"Australia recognizes the hard work of the GHG Working Group last week and their efforts to progress the revision of the Strategy for adoption this Friday - including of course by our own delegation. However, if adoption this week is our aim, Australia is surprised and disappointed that the document before us (in annex 1 to document MEPC 80.WP.7) has presented such low ambitions as the starting point for our discussions.

With a climate crisis on our hands, and an industry demanding certainty and a clear signal for investment so that they can embark on the needed transition, we need a clear date for decarbonization, not 'around' 2050 - but 2050.

We also need to be unequivocal in our message to industry and the world, that we are fully committed to responding to this crisis with real urgency, and that should be central to the revised Strategy's Vision.

We need to be clear on the pathway aligned with the 1.5-degree Paris goals that will get us there, which is not an ambition of 20% reduction by 2030. While we understand that a lot of collaboration occurred to present us with this Working Paper, we need to do better, we must do better. The world is watching the IMO like it never has before and for the first time in the history of this organisation we are at serious risk of failing to deliver; in this the 50th year of MARPOL protecting the environment.

We thank the Pacific Islands for their submission, which addresses these issues while also highlighting the need for an equitable, fair and just transition. We need to consider this submission along with any other text being discussed this week. We can decarbonize by 2050 - so let's get on with it."

Statements by the delegation of Argentina

"Señor Presidente, la Argentina sigue comprometida con la revisión de la Estrategia Inicial, para que pueda ser adoptada, mejorada, en el MEPC 80.

Todos estamos preocupados por los impactos del cambio climático en todos nuestros países, y eso incluye a mi país, que ha sufrido inundaciones y notables sequías en los últimos años. La Argentina cree que la industria naviera debe reducir las emisiones de GEI de buques para que ésta haga su contribución a la lucha contra el cambio climático.

Ahora bien, que el sector del transporte marítimo es responsable de menos del 3% de las emisiones globales totales, pero transporta más del 80% de el comercio mundial. Estamos listos para establecer niveles de ambición adecuados, pero al mismo tiempo, cabe no olvidar que fuera de ese menos del 3%, el resto de la contribución al cambio climático está fuera del ámbito de la OMI.

Señor, vemos en muchas partes del mundo, incluso en Estados Partes del Anexo I en la Convención Marco sobre el Cambio Climático, que compromisos nacionales se retrasan de muchas maneras, en parte porque implica costos para sus poblaciones. Y nos preocupa mucho que se busque que el transporte marítimo compense los incumplimientos fuera del sector, y que los países en desarrollo asuman los costos de las medidas.

Según el último informe del IPCC, algunas emisiones de gases efecto invernadero son "difíciles de reducir", y se incluye entre otros sectores al transporte marítimo. Deberíamos entonces tener en cuenta que el transporte marítimo es vital para el comercio mundial y es la herramienta para garantizar la seguridad alimentaria global y para que los países geográficamente remotos alcancen sus legítimos objetivos de desarrollo.

Así es que la Argentina cree que los niveles de ambición están indisolublemente ligados a los elementos de la canasta de medidas de mediano y largo plazo, porque ellos darán lugar a las medidas. Los niveles de ambición de la Estrategia deberían buscar el objetivo de reducción de una manera realista, y evitando generar distorsiones al comercio, menoscabar la seguridad alimentaria, y penalizar, causando perjuicios económicos a los países en desarrollo, en particular aquellos con alta proporción de su comercio por vía marítima y que están geográficamente distantes de sus mercados, que dependen de él para lograr sus legítimos objetivos de desarrollo sostenible. Por ello, mi país aboga porque la OMI tenga debidamente en cuenta el principio CBDR-RC de una manera apropiada, en particular de una manera que evite el impacto negativo sobre los Estados.

Señor, como otros, creemos que no será posible llegar a mitad de siglo u otra fecha cercana sin una producción a escala necesaria de nuevos combustibles no fósiles, y que ello conlleva no sólo inversión en investigación y desarrollo que incluya a países en desarrollo, sino también acceso a las invenciones, que les permita participar en la producción que se necesitará para satisfacer la alta demanda. Además, una "transición justa" a los nuevos combustibles no sólo debería consistir en evitar o minimizar el impacto negativo de las medidas adoptadas y asimismo subsanarlo cuando se produzca, sino también prever financiamiento para la adaptación, especialmente las transformaciones de infraestructura en puertos, a la que será necesario hacer frente.

En cuanto a las medidas, la Argentina apoyará el desarrollo de la denominada "canasta", compuesta por un elemento técnico y uno económico. Este último no ha sido definido por el Grupo de Trabajo y muy posiblemente tampoco lo será por este Comité. Señor debemos ser conscientes de que las medidas de mediano y largo plazo tiene un potencial mucho mayor que las de corto plazo de afectar el comercio internacional e impactar negativamente a los países en desarrollo distantes de sus mercados. En cuanto a ello, mi delegación desea hacer dos comentarios:

El primero es que mi delegación rechaza, como muchos países en desarrollo, el concepto de un gravamen universal obligatorio. Una medida de "shock" de ese tipo llevará a un aumento del precio del combustible fósil que, en una alta proporción, lejos de ser absorbido por la industria naviera, será traspasado al importador y al exportador. Así, los países cuyas exportaciones tienen menor valor agregado y van a destinos lejanos se verán más negativamente afectados (entre los que, evidentemente, se encuentran la mayoría de los países de América del Sur y África), porque impactará negativamente mucho más a los productos de menor valor agregado, como las commodities. Así, estos productos verán reducir su participación en el comercio mundial, perjudicando a numerosos países en desarrollo que exportan commodities. Además, el retroceso de los países en desarrollo distantes beneficiará relativamente a países desarrollados del hemisferio Norte, y la recaudación se destinará a otros países en desarrollo, sin ninguna contribución financiera de quienes son los responsables históricos del cambio climático. Una organización que habla de “transición justa” no puede acordar la injusticia de que los países en desarrollo medianos sean los únicos que corran con el costo de las medidas.

El segundo es que, como no se ha seleccionado aun el elemento económico, no se debería iniciar la Fase III del Programa de Trabajo, que presupone que la selección ha tenido lugar. La Argentina puede aceptar su inicio, siempre y cuando criterios específicos en la Evaluación Comprensiva del impacto sobre los Estados permitan seleccionar qué elemento económico sería el más conveniente para desarrollar conjuntamente con el elemento técnico.

Señor, la Argentina aboga porque la Estrategia y las medidas de la OMI sean capaces de lograr los niveles de ambición que esperamos, y que a la vez eviten o minimicen lo más posible el impacto negativo sobre los países en desarrollo distantes de sus mercados, no conlleven distorsiones al comercio y eviten menoscabar la seguridad alimentaria.

Señor Presidente, mi delegación participará activamente del desarrollo de la revisión de la Estrategia Inicial y de la selección de las medidas de mediano y largo plazo para la canasta de medidas que adoptará la OMI. Estamos abiertos a discutir con otras delegaciones para encontrar un resultado consensuado.

Muchas gracias"

Statement by the delegation of Belgium

"Thank you Chair and good afternoon to all, good morning and good evening for some of those following remotely.

Since the adoption of IMO’s Initial GHG Strategy, multiple science reports, including the repeated conclusions of the IPCC, have called for immediate actions towards reducing GHG emissions to zero, also in the shipping sector, and to align the transition with the 1.5 degrees temperature goal from the Paris Agreement.

Besides scientific climate evidence, economic considerations are also at the heart of our discussions. As the latest studies show, costs due to inaction in the face of climate change, and more particularly in the maritime transport sector, could in the end lead to the most significant negative impacts.

In the past year, the shipping industry has increasingly expressed their readiness and willingness to invest, to commit and to contribute to make the transition happen. Now industry is calling upon us, at the IMO, to give a clear signal.

Belgium supports phasing out GHG emissions from shipping by 2050 on a life cycle basis to contribute staying below 1.5° temperature increase on a global level. Considering the lifetime of ships, an unambiguous and ambitious target for 2040 is crucial to avoid delays in the needed investments and to drive the transition at the right course. Ambitious 2030 targets are needed to incentivize first movers and should include an ambitious intermediate checkpoint in reducing absolute GHG emissions as well as a minimum fuel uptake checkpoint from zero or near-zero GHG fuels.

Pilot projects from industry are showing that cooperation between countries, north and south, east and west, is possible and creates new opportunities. Whilst considering this, it is equally important that those most vulnerable and impacted the most, especially SIDS and LDCs, are not left behind and are taken on board in a just and equitable transition.

This should be taken forward in the discussion on the mid-term measures, including the comprehensive impact assessment, which we support to be initiated at this session. Belgium supports the combination of technical and economic measures, as already presented last week during ISWG in the form of the GHG fuel standard, including the flexibility mechanism, and a levy. Responding to the call for urgent action seems to correspond to the adoption of the measures in 2025 to enter into effect on 1 January 2027.

Chair, we have made progress in last week's Intersessional Working Group and are fully committed to continue the constructive deliberations. Expectations towards IMO are significant, and we are ready to cooperate with other delegations, we firmly believe that together we can deliver on what is expected from IMO."

Statement by the delegation of Brazil

"Good day to all,

Coming in today, many of us were surprised to see giant jellyfish in front the IMO building. They were very friendly jellyfish, luckily for us, occupied in handing out fliers to remind us of our task here. They were reminding us of the urgency in that the international shipping sector takes responsibility and does its fair share to avoid climate change to reach unbearable levels.

And that, colleagues, we must do.

Now, as in many situations, when it comes to regulatory policy and economic incentives, there are a number of ways to address the issues. The different measures under consideration would each certainly produce different consequences. And these consequences may entail the reshaping of trade routes, the redesign of import and export contracts, the redefinition of opportunities and challenges for countries and regions. And such transformations are very likely to change significantly a sector that responds for more than 80% of all trade, a sector that truly connects the world and ensures that food, medicines, and other essential goods make it to where they are needed. These changes, colleagues, will have a direct impact on the lives and livelihoods of many. This is why we would like to remind you of yet another aspect of our task: yes, detaining climate change is urgent, but how we do it matters. It matters, because we don´t want to address one urgency by creating or aggravating others.

Throughout last week, we have been very vocal against the adoption of a universal levy to be applied on shipping. Being against a levy does not mean to be against an ambitious approach. Also, it is not a guess, nor a position adopted lightly. We have applied science and modelled the possible outcomes, and they do not look good, particularly for many of the most vulnerable countries.

A universal levy on every emission is a tax on distance, until zero emissions fuels are widely available – and we know it will take some time until that happens. By then, for many in the regions far apart from their most dynamic trade partners, it may be too late.
Now, if parts of the world, notably in Latin America and Africa, are far from the major trade hubs, that is not an accident, nor a coincidence. It is a direct consequence of history, a legacy of the colonial past of these regions. A levy would be likely reinforcing that nefarious legacy, pushing those regions that are already marginalized further away from the paths of development. And such potential damages, structural ones, are hardly predictable, and in all

evidence impossible to be compensated by the sheer distribution of the revenue collected. How to compensate for jobs lost? How to compensate for the lasting severe loss in competitiveness? Are we to depend on the transfer of such resources, for how long? And what happens when the sector is decarbonized, and there are no more compensation funds to go round?

Unfortunately, colleagues, this discussion goes beyond reducing emissions in shipping. It touches on the very important theme of climate financing. As we know, in the last 30 years the world has been witnessing promises made by the very countries that caused the climate emergency, as they developed and industrialized, throwing in the atmosphere tons of greenhouse gases. These countries have recognized their historical responsibilities and promised to help the vulnerable in their transition. Colleagues, these promises were never kept. Funds were never made available. And now, many of our countries need it more than ever, especially the Small Island Developing States and the Least Developed Countries. They need it and they ask for it with all legitimacy, for they are under a real existential threat. And some of the very countries that have not kept their promises, many of which are now also largely failing in meeting their domestic decarbonization targets, some of these very countries now see in the IMO an opportunity for generating the very funds they could not provide, thus alleviating the pressure coming from the developing world.

Colleagues, the measures we adopt now are supposed to promote a transition in the maritime sector, not make up for the revenues developed countries failed to deliver. Decisive action with regards to climate financing must be urgently undertook, but we believe the IMO is not the place.

But the bright side is that the levy is not the only way to reduce emissions in the shipping sector, it is not the only measure capable of putting a price on carbon. There are others, there are ways. This time at least, colleagues, we are not forced to make a binary decision, a bad decision, so let´s not make one.

I started by referring to the jellyfish out there. They are here to remind us of the climate urgency, and for that, we thank them. Let us be ambitious, as ambitious as possible. And if we chose a damaging measure, I can´t help but wonder who will be dressed up, and where, to remind us that we should have paid attention to food security, that we should have protected trade, so as to give the developing world a chance to stand on their own feet. I wonder if anybody will be dressed up at all, since the only ones who bother to do it, Chair, are the ones who care. So I guess the question could be formulated in a simpler way and directed not to one or another country, but to all decision makers and influencer in the world. The question is: do you care?

I hope everyone here is able to say I care, and mean it. I wish us all to be able to meet our collective goal of reducing GHG emissions from shipping in alignment with Paris Agreement goals, at the same time minimizing structural damage to developing countries. We know we can do it together. Brazil is ready to engage with all the parties and work constructively towards that end. I wish us all a great week and thank you."

Statement by the delegation of Canada

"Thank you Chair.

Good day Ministers, excellencies, distinguished delegates.

Scientific models have long told us that global warming increases the likelihood of extreme wildfire risk and longer fire seasons in Canada. A week ago, we reported that more than 60,000 square kilometres of forest have burned in Canada so far this year. That number has since been updated to 80,000 square kilometres - roughly the size of the United Arab Emirates - and officially our worst year on record. We would reiterate our thanks to the many countries who have sent firefighters to support the efforts to address this situation, including Australia, Chile, Costa Rica, France, Mexico, New Zealand, Portugal, South Africa, Spain, and the United States.

For Canada, it is critical that the 2023 Greenhouse Gas Strategy clearly align its ambition with the 1.5°C temperature goal of the Paris Agreement.

We have heard clearly from the shipping and fuels industries that they are ready to transform the shipping energy system but need a clear long-term policy signal from this Organization to get the transformation underway. Improving policy certainty will help de-risk investments, thereby minimizing costs and maximizing benefits of this much-needed transformation.

We have heard concerns about potential impacts on States from the measures that we will select for further development. As a country with the longest coastline in the world, with dozens - if not hundreds - of communities accessible only by air or sea, we can empathize with these concerns. We are committed to moving forward with a Comprehensive Impact Assessment, so we can better understand these dynamics.

We are also mindful of the latest scientific evidence from the Intergovernmental Panel on Climate Change, confirmed by Canada's own domestic experience, that putting a price on climate pollution is economically less costly than non-pricing measures, and that the benefits of achieving the Paris temperature goal outweigh the cost of mitigation.

We made significant progress last week during the ISWG meeting and we hope we can continue to work in this collaborative spirit to finalize a Revised Strategy by the end of this week that puts us all on a 1.5°C-aligned pathway that leaves no one behind.

Thank you."

Statement by the delegation of Chile

"Muchas gracias Señor Presidente, muy buenos días a todas las distinguidas delegaciones que hoy nos acompañan presencialmente y también virtualmente. A diferencia del largo de mi país, mi intervensión intentatá ser corta.

Quisiera partir indicando el permanente compromiso de nuestro país para combatir el cambio climático y hacer frente a sus cada vez más evidences consecuencias. Chile ha sido ambicioso no solo a nivel nacional, donde , ya contamos con una ley que establece que nuestra economía será carbono neutral para el 2050, también hemos mostrado nuestro comprmiso en diversos foros internacionales como lo son la Conferencia de Cambio Climático, la OACI y foros también regionales. La OMI no es la excepción. Nuestro país considera que el transporte marítimo debe reducir sus emisiones de gases efecto invernadero y con ello contribuir a la transición hacia economías bajas en carbono en la que estamos todos trabajando. De hecho, nuestro país está, ya trabajando desde la adopción de la Declaración de Clydebank en los corredores marítimos verdes y estamos impulsando el desarrollo del hidrógeno verde como una posibilidad para el desarrollo de combustibles más limpios.

En esa línea, consideramos importante adoptar – esta semana – una estrategia revisada de reducción de emisiones que esté en línea con el Acuerdo de Paris, de manera que esta estrategia guíe las medidas que deban adoptarse en los próximos años, no solo sean efectivas en la reducción de emisiones sino también sean las que menos impacten a los Estados.

Chile, está preparado para trabajar en una canasta de medidas que contenga elementos técnicos y económicos. Sin embargo, quisiéramos reiterar nuestra preocupación por el posible impacto que un impuesto puede generar a una economía pequeña y lejana como la de nuestro país; porque un impuesto – al ser un instrumento económico que tiene como función principal recaudar dinero – no necesariamente será efectivo en la reducción de emisiones.

Creemos que, se debe realizar un análisis de los posibles elementos económicos para seleccionar de manera informada, abordando los eventuales impactos desproporcionados en los Estados.

Señor Presidente, nuestro país seguirá trabajando activamente, como lo ha hecho hasta ahora en este Comité para avanzar en las importantes tareas que tenemos por delante, y en el espíritu que caracteriza a esta Organización esperamos lograr un resultado consensuado.

Muchas gracias."

Statement by the delegation of China

"Thank you Chair!

First of all, climate change is a severe challenge facing the world, which requires the cooperation of all countries in dealing with it. In an open, cooperative and constructive manner, China has always been promoting the IMO to reach the scientific, practical and reasonable GHG Emission Reduction Strategy on the basis of consensus. This delegation has made great efforts and shown the greatest sincerity, the purpose of which is to have all members onboard.

Second, we understand that coping with climate change is a survival issue for many countries, among which international shipping accounts for about 3% of global emissions; at the same time, international trade and economic development are also survival issues for many countries, and shipping supports more than 80% of them. In addition, only when international trade increases and the world economy recovers can more resources be made available to deal with climate change. Therefore, the healthy and sustainable development of the shipping industry brought about by reasonable and feasible goals and measures, will make greater contributions to the survival and development of countries and the response to climate change.

Third, all measures to achieve the goals of emission reduction from ships should be scientifically based and step by step. While ensuring the response to climate change, efforts should also be made to ensure the sustainable development of the shipping industry, and should not have serious negative effects on the sustainable development of economic and trade in developing countries. Addressing climate change should not be used as a tool or an excuse to raise trade costs for developing countries and enable some countries to gain their competitive advantage.

Finally, the Paris Agreement clearly specify the global temperature control goals of well below 2°C and pursuing efforts to 1.5°C, as well as the principles to be followed and the financial and technical implementation measures in order to achieve these goals. Therefore, we should fully fulfil the obligations of the Paris Agreement, rather than just cherry pick some of the terms.

Therefore, in order to maintain the healthy and sustainable development of the shipping industry and the fair operation of international trade, and to fully comply with the Paris Agreement, this delegation is of the view that in terms of levels of ambition, the expressions of "to reach net-zero GHG emissions by or around mid-century, taking into account different national circumstances "which is stated by the related decisions under the UNFCCC framework, is more in line with actual situation and more practical in implementation. We are also of the view that the 2030, 2040 checkpoints and alternative fuel uptake percentage goals, as well as specific measures, should be practical, reasonable and feasible, with scientific base and data evidence, and has undergone sufficient impact assessment." "

Statement by the delegation of Colombia

"Gracias Señor presidente,

Para Colombia la reducción de emisiones de Gases de efecto Invernadero procedentes del transporte marítimo es un asunto de gran importancia por la necesidad de alinear lo que se acuerde en la OMI, con la posición de Colombia como país ambicioso en materia de acción climática reconocido ampliamente a nivel multilateral.

La lucha contra el cambio climático es una de las prioridades del gobierno de Colombia, en la que se busca un abordaje colectivo en el nivel regional y global, posicionando a Colombia como líder de cara a la transición económica requerida para alcanzar la carbono neutralidad, consolidar territorios resilientes al clima y garantizar la supervivencia de nuestra especie.

Colombia ha mantenido siempre la posición de apoyar aquellas propuestas que estén alineadas con los objetivos del Acuerdo de París y que apunten a la carbono neutralidad ó cero emisiones netas para 2050 y a limitar el aumento de la temperatura por debajo de 1.5°C respecto a niveles preindustriales.

Teniendo en cuenta que como el sector de transporte marítimo internacional no está cubierto por las medidas en el marco de la Convención Marco de las Naciones Unidas sobre el Cambio Climático, la expectativa de Colombia es que bajo la OMI se puedan adoptar decisiones rigurosas que permitan la descarbonización del sector marítimo.

La descarbonización del transporte marítimo a más tardar en el 2050 es una de las metas de mayor ambición sobre la mesa, y la cual Colombia apoya en este Comité. Alcanzar el cero neto brinda la flexibilidad para que se permita el uso de nuevas tecnologías para que este objetivo sea factible.

Es importante indicar que esto se podrá hacer siempre y cuando se tengan en cuenta las repercusiones y la importancia, la necesidad y los requerimientos en materia de transferencia de tecnología y el desarrollo de capacidades para los países en desarrollo.

Desde que se iniciaron las discusiones, Colombia ha insistido en la importancia de evaluar el impacto de las diferentes alternativas, sus repercusiones para diferentes países y la importancia, necesidad y requerimientos en materia de transferencia de tecnología y desarrollo de capacidades para países en desarrollo. Por esta razón, el país evalúa todas las posibles medidas a la luz de sus méritos e impactos, no solo en la meta de reducción de emisiones, sino en el desarrollo económico y social de los países en desarrollo y la seguridad alimentaria, que podrían verse en riesgo si las medidas generan significativas alzas en los precios de los alimentos o pérdida de competitividad en sus mercados."

Our climate Strategy is the result of years of intensive deliberations and of negotiations, which has required everybody to compromise, give and take. We would like to thank all parties for their listening, understanding and willingness to find common solutions.

We would also like to thank the Chair of the Working Group Mr. Sveinung Oftedal and the GHG team in the Secretariat for their tremendous efforts and their tireless work.

Moving forward we stand committed to work with all parties to deliver on the promised targets so we will achieve zero GHG shipping and do so in a just and equitable way.

Thank you."

Statement by the delegation of Cook Islands

"Many of today's most pressing global problems will not be solved without international trade. We cannot overcome the climate crisis and get to net-zero greenhouse gas emissions within 2050 without trade. We need trade to get low-carbon technology and services to where they are needed and for that we are reliant on shipping.

As a collective, our Pacific region contributes less than 0.03 percent to global emissions. Our emissions are the equivalent of a burning matchstick in a forest fire. While we are doing our bit on mitigation efforts and reducing our emissions, there is only so much impact our national and regional actions can have. It is to the developed world, not the least the G20 nations, most of whom serve on the IMO Council, and who are responsible for over 80% of global emissions, that we look for our survival.

While we continue to use our best efforts and ingenuity to protect ourselves and to protect our ocean, we urgently need developed countries to consistently deliver on their climate finance commitments first made in Cancun in 2010. That finance must be directed to the most climate vulnerable countries, of which many are Small Island Developing States in the Pacific who continue to face the ongoing onslaught of global climate change - a phenomenon that they did little to contribute to but whose impacts they suffer from the most.

At the same time, we must not lose sight of the fact that we are almost totally dependent on ships and shipping to facilitate the import of all the essential goods and services to remote Island states; the food, medicines, building materials that we rely on to sustain our island societies and their cultures. We have limited shipping services available to us, and if we are to ensure a just and equitable transition in which no one is left behind, the impact on our fragile economies of the measures, both operational and fiscal, must be assessed and any disproportionate impacts addressed before the approval and subsequent adoption of any medium or long- term measures. The IMO's Initial Strategy on the reduction of GHG emissions from ships provides fundamental guidance on how to address disproportionately negative impacts, especially for Small Island Developing States. However, that guidance has not yet been followed and we now await the outcome of the 2026 review mandated under MARPOL Annex VI to address any such impacts and take remedial action before being in a position to adopt the medium-term measures that are so important to us all.

To be clear, our position remains that a just, equitable and people-centred transition away from fossil fuels is one which does not place additional burdens on the people of the Pacific on top of the existing cost of living and other crises. The Pacific Islands Forum, of which the Cook Islands currently holds the Chair, is committed to keeping the Paris Agreement's target of 1.5°C alive, but the reality is that other than taking the moral lead, what we do in reducing our emissions from 0.03% is insignificant. It is from the wider developed world that rapid and sustained emission reductions are needed - and indeed from whom climate finance should be funded.

In short, the imposition of an economic measure on shipping, such as the punitive levy currently under consideration here at the IMO, must not come at a cost to the SIDS. If, as it seems inevitable, the costs of any such a levy are passed down the supply chain to the end user through significant freight increases, this in a region already suffering extremely high transport costs due to distance and diseconomies of scale, then we must be compensated up front or through shipping subsidies, as we and others proposed to the IMO at MEPC 76. Without this we could not be confident that the process would be fair, that it would be just or that it would indeed lead to an equitable transition.

We have been consistent that if there were to be an economic measure using shipping as a source of revenue, the Pacific would need to see a commitment for the allocation of significant monies into the Pacific Resilience Fund to support maritime related actions in the Pacific region while helping to alleviate the burden of the climate crisis caused by the developed world.

Chair, we commend our comments to the Committee. Who knows - the plight and needs of SIDS like ours may actually be taken onto account in this process with no one having been left behind we shall have to wait and see!"

Statement by the delegation of El Salvador

"Señor presidente:

Agradecemos su complacencia por otorgarnos al cierre del debate general, en mi calidad de nueva representante permanente que acaba de presentar sus credenciales ante este organismo, deseo expresar la voz de El Salvador y de la nueva Autoridad Nacional Marítima a cargo del Ministro de Defensa para reiterar el compromiso de mi país con los objetivos y agenda de la OMI.

Esta comprometido con la prevención de la contaminación, y como país miembro de la OMI acompañamos todas las iniciativas encaminadas a la reducción de los gases de efecto invernadero (GEI) a cero emisiones para el año 2050, estamos seguros que la descarbonización de los combustibles nos ayudara a disminuir los devastadores efectos del cambio climático.

Sin embargo, estos esfuerzos no deben poner en riesgo la seguridad alimentaria de nuestros pueblos, por cuanto por ahora expresamos cierta reserva para poder acompañar la iniciativa de aplicar a los combustibles un gravamen de compensación, ya que esto afectaría a los países en desarrollo, beneficiando a unos y afectando a otros.

Debemos adoptar medidas científicas que garanticen la resiliencia al cambio climático y fortalecer las capacidades de los estados miembro para garantizar el éxito en la implementación de dichas medidas y alcanzar los objetivos planteados en la estrategia.

Agradecemos nuestra intervención al informe de este Comité"

Statement by the delegation of Estonia

"Honourable Secretary-General, dear colleagues and distinguished delegates,

On behalf of the Estonian delegation, I would like to notify this Committee, that in terms of the greenhouse gas reduction in the maritime transport sector Estonia expects an ambitious and decisive approach with clear targets to be concluded during this meeting.

Decarbonization and effective reduction of CO_2 emissions are among key priorities of the Estonian government.

We are stepping up to make changes happen as a country. For this reason the Estonian government established the Ministry of Climate, which started its work 4 days ago on the 1st of July 2023. 90 % of all climate and decarbonization policy making across all the sectors will be now in this new Ministry.

The main reason behind this is to accelerate decarbonization in all sectors including the maritime sector. There is no avoiding taking decisive action, with the new consolidated ministry we have to deliver the climate strategies and there is nobody else to delegate the responsibility.

From 1st of July Estonian State Fleet Agency also started its work, which consolidates technical management and development of all government owned ships. Newly founded organization is going to be the competency centre for green shipping technologies and shall lead the building of low emissions ships for the government. Also the aim of the new agency is to increase efficiency and reduce environmental footprint of government owned ships.

Every small step each country makes across the world, counts, in our path to a climate neutral world and shipping. But without global agreements those steps are not enough.

In this room and working groups, we have power to make changes happen in maritime.

Estonia hopes that by the end of this week we will be successful in fixing the 2050 and other midterm targets. They should be supported with global measures, which give a clear message to the maritime sector around the world.

We wish for everyone to have productive time at the working groups. Congratulation to US colleagues on this independence day "

Statement by the delegation of Fiji

"Bula Vinaka - Good Morning, Good Afternoon and Good Evening to all of you present here today and those joining us virtually.

At the outset I wish to first acknowledge those who have made it possible for our delegation and the delegations from the Pacific region to physically be here this week in this very important meeting.

As you may be aware, to get to IMO, we have to travel long hours, through one or two continents and adapt to time changes. This is how important it is for our region to be represented at this auspicious meeting.

I thank the Chairman, Secretariat and IMO for giving me the opportunity this morning to address the 80th session of the Marine Environment Protection Committee (MEPC) and share Fiji's perspective and our regions concerns on the pressing issues affecting us, if we do not take stringent measures to reducing greenhouse gas (GHG) emissions in the maritime industry.

In his address at the COP 27, the UN Secretary-General Antonio Guterres, stated that more still needs to be done to drastically reduce emissions now and stated (I quote) “The world still needs a giant leap on climate ambition.” I would like to reiterate the same sentiments in this plenary today. The IMO must be the leap required to ensuring the reduction of greenhouse gas emissions. The time to take action is now, the time to be ambitious is now.

As an industry that is important in providing 90% of the world's trade, it is also noted that Shipping contributes 2% of emissions to Global emissions. Being an important industry, it must also make its mark as one of the leading agencies committed to reducing greenhouse gas emissions from ships.

Fiji like our Pacific neighbours is a Small Island Developing State (SID) with a large ocean, consisting of more than 300 islands and an Exclusive Economic Zone (EEZ) which covers more than 1.3 million square kilometres of the Pacific Ocean. Our islands are scattered over an area of more than 18,000km.

As a Small Island Developing State (SIDS) highly vulnerable to the impacts of climate change, Fiji understands the urgency of taking bold action to combat this global crisis. Our islands, our people, and our cultural heritage face significant threats from rising sea levels, extreme weather events, and the degradation of our marine ecosystems. The maritime industry, a vital part of our economy and lifeline for our connectivity, plays a crucial role in addressing climate change.

Currently our people have acknowledged that there is climate change, it is here to stay and will continue to cause detrimental effects to our homes. It is causing the relocation of coastal villages to move inland and villages on small islands to relocate to the mainland. The relocation is incumbent for the protection of Human Rights from rising sea level, tidal waves and devastating Category 4 and 5, Tropical Cyclones.

Prior to relocation, Villagers woke up in the morning during high tide to sea water splashing in and around their houses, children wading in seawater on their way to school, their ability to plant and grow root crops were affected causing food security issues and their livelihoods were affected. The only way to address this was to relocate villages of a minimum of 150 people to 700 people. Fiji has either relocated or plans to relocate a further six villages due to the impact of climate change.

Sciences and reports like that provided by the Intergovernmental panel on Climate Change (IPCC) have argued and reiterated that keeping below 1.5 degree Celsius is safer for the world.

Therefore, Fiji strongly emphasizes the need for 1.5-degree alignment in our collective efforts. The Paris Agreement's goal to limit global temperature rise to 1.5 degrees Celsius above pre-industrial levels should guide our actions.

The maritime industry, responsible for a significant share of global emissions, cannot be exempted from this responsibility. Let us unite in our commitment to align our strategies, policies, and actions with this critical temperature target.

Furthermore Mr. Chairman, this delegation supports the proposal to set ambitious reduction targets that pave the way for a sustainable maritime sector.

We propose three targets for consideration: a 37% reduction in GHG emissions by 2030, a 96% reduction by 2040, and complete decarbonization by 2050. These targets are ambitious yet necessary to address the magnitude of the impacts of climate challenge we face. They require concerted efforts, technological innovation, and global cooperation, but we must not shy away from these ambitious milestones.

To accelerate progress towards these targets, Fiji advocates for the implementation of a GHG Levy and Global Fuel Standard. A GHG Levy on maritime transport can provide the necessary financial resources to support the mitigation and adaptation needs as we address climate change for our region and for all those affected. It will support research and development of low-carbon technologies, facilitate the transition to zero-emission fuels, and promote sustainable practices. We must harness innovative financing mechanisms to mobilize resources and incentivize emission reductions within the industry.

Simultaneously, a Global Fuel Standard can drive the availability and widespread adoption of low-carbon and zero-emission fuels. By phasing out high-emission fossil fuels and encouraging the development of alternative fuels like hydrogen, ammonia, and biofuels, we can create a pathway towards sustainable shipping.

This standard should consider the unique challenges faced by SIDS and ensure equitable access to cleaner fuels, enabling our islands to transition towards a greener maritime future. This transition should be just, equitable and fair to ensure that no one is left behind.

In conclusion, we must acknowledge that the maritime industry has a crucial role to play in addressing climate change. Fiji calls upon IMO and all MEPC delegates to seize this moment and take decisive action. Let us stand together, united in our commitment to 1.5-degree alignment, setting ambitious reduction targets, and supporting the implementation of a GHG Levy and Global Fuel Standard.

Through our collective efforts, we can forge a path towards a sustainable, resilient, and low-carbon maritime future. We owe it to our people, our oceans, and our future generations who will inherit the legacy of our actions.

Let us not falter in our resolve. Together, let us navigate the seas of change, charting a course towards a brighter and more sustainable future for all.

Vinaka vakalevu. Thank you "

Statement by the delegation of Germany

"Thank you, Mr. Chair. Ministers, Excellencies, fellow delegates, good morning, good day or good evening to everyone in this room and to those attending virtually.

The alarm bells are deafening, and the evidence is irrefutable: greenhouse gas emissions are choking our planet and putting billions of people at immediate risk. The internationally agreed threshold of 1.5 degrees Celsius is perilously close.

The only way to prevent exceeding this threshold is by urgently stepping up our efforts, and pursuing the most ambitious path. Some of you may remember that this delegation some time ago referred to an African proverb – If you want to go fast, go alone. If you want to go far, go together.

Actually, we have set out together. We listened to each other, we have been able to better understand each other positions and we have made progress on our way.

In this context, also we would like to thank the Chair of the ISWG on GHG and the Secretariat for their hard work last week and also previous sessions in guiding us on partly difficult paths. But we also want to thank all other delegations for the spirit of cooperation on the tramp.

An important milestone on our way is the finalization of the LCA guidelines which will set a common framework for the life-cycle assessment of the GHG intensity of marine fuels, covering both the upstream and the downstream emissions.

Now we are at a crossroads. As said by the UN Secretary-General, we must act decisively now to keep 1.5 alive. Now it’s time to deliver.

For us this includes a clear commitment to achieve net-zero emissions from international shipping by 2050 at the latest as well as a credible pathway that ensures that shipping is on the right track, including an ambitious fuel target. And we need to ensure a just and equitable transition which leaves no one behind.

And however great the effort may be to agree on strategic goals, they mean nothing if we don’t have measures to put the goals into practice. These measures should achieve the levels of ambition and checkpoints which we hopefully will agree upon.

We cannot rest we have to have to work on the development of effective mid-term measures, which from our point of view should include a GHG Fuel Standard with a FCM ensuring the environmental integrity of the measure as well as a levy. And we need a target date for the adoption of these measures. The first step is to start the Comprehensive Impact Assessment at this session. We are ready to work on the terms of reference for that task, so that we can start the process this week. Because we do care!

Change will happen anyway. If we combine forces now, we can be the masters of our change, let’s optimize route and speed profiles, and set the course to zero."

Statement by the delegation of India

"Thank You Chair. Greetings from India.

Mr. Chair, this delegation comes from India, a country that accounts for a meagre 2.4 percent of the world surface area, yet supports and sustains 17.7 percent of the world population, while falling in the “extreme risk” category of the Climate Change Vulnerability Index. We are therefore fully aware of the climate change emergencies of this decade and hence whole heartedly support any initiative from this organization for the control of emissions from the maritime sector.

However, Mr. Chair, when the industry is going through a disruptive state with high uncertainties particularly on the technologies and the future fuel, the responsibilities and leadership role on this Organization are unprecedently critical to provide them with regulatory frameworks that could stand tests of the time and develop policy frame works that could facilitate a stable, predictable and competitive business environment, and thereby encourage and maintain confidence in the prospective investors in this high risk, cyclical industry.

Hence, when this Organization promulgate any ambition, target, or checkpoint – whatever names may we call it- we should not get carried away by mere global calls, but reassure scientific evidence to back our decisions and project achievable solutions to attain the same. Any unrealistic target will place undue pressure on the governments to resort to flawed policies, industry to make haste and unsustainable investments and the researchers to push through half-cooked and immature technological solutions- all of them will have long term irreparable repercussions on this industry, which is the lifeline of global trade.

It is against this background that India had submitted the document MEPC 80/7/14, proposing a way forward for the reduction Strategy to be phased-in progressively, while ensuring that the transition is smooth, achievable, and inclusive without leaving anyone behind, while focusing on a realistic target to ensure that net-zero carbon fuels occupy 5% of the fuel mix by 2030. We do not see the need of any additional checkpoints, particularly during this explorative and take-off period up to 2030, as it can only encourage unsustainable business practices merely to meet short term targets.

Coming to the economic measures discussed in ISWG15, this delegation feels that we must have a clarity on its objective- whether such measures are to penalise the industry or to encourage transition to green energy. If green transition is the primary objective, the economic proposals should necessarily explore options to generate appropriate funds to meet not only R&D in maritime sector, but also for production of alternate fuels and development of infrastructure for its supply network in ports across the globe. We would like to alert all our distinguished delegates that any economic measure alone or as part of basket of measures may not achieve the Paris Agreement goals without severe impact on trade, unless the availability of affordable future fuels, cost-effective future fuelled engines, and trained manpower to operate such ships are ensured through promising revenue generation proposals and strategic distribution of revenues so generated to deserving sectors.

Further, any economic measure if established under the aegis of this Organization, it should be simple, transparent, easy to administer and with lesser burden to the industry, while also ensuring a definitive funding source to undertake the much-needed research and capacity building initiatives in the developing world that holds the key for future emission control. We see that many of the economic proposals currently on the table directly or indirectly advocate for GHG pricing and trading, in one form or other and, such variable, volatile and speculative proposals that are complex and less transparent would make future investment decisions in new zero-carbon technologies uncertain, making it far more difficult and unattractive, particularly for developing economies.

Having said this, we thank the co-sponsors of various economic elements, including China, Norway, Japan, and ICS and see merit in all of them, though need further fine tuning and collation. Our delegation, therefore, would suggest that all such proposals on economic elements should be taken onboard at this point of ongoing discussions, without precluding and excluding any, to be followed by in-depth deliberations in coming sessions to come up with a more meaningful and inclusive proposal prior its adoption on a future date.

Distinguished delegates, let us be reminded that this Organization is to ensure a safe and sustainable shipping industry and not to build roadblocks to it. If the industry does not sustain, there is no relevance for this forum or for the regulations that we develop; no matter how noble our intentions could be.

Thank you Chair, request this statement be made part of the report"

Statement by the delegation of Italy

"Mr. Chair, firstly we wish to congratulate the US on their independence day.

We thank the Secretariat for the outstanding work done, and in particular, we wish to congratulate the Chair of the Inter-sessional WG for his tireless attempt to bring all the expected results; However, at this stage, our delegation wishes to express also some concerns about the apparent lack of concrete results obtained last week and the difficulties that seem so far to hinder the work.

Despite the great expectations, good intentions, and strong positions expressed by most delegations in order to reach a shared result on the decarbonizing, the distances, different points of view, and different sensitivities have highlighted the gaps among the regional areas of the world, as well as the measures by which the IMO wants to achieve a revised strategy.

All Member States are working together in a genuine attempt to achieve a shared result. But now is the time to make a further effort to agree on shared measures to reach the undeferrable common goal: cutting greenhouse gas emissions in the fight against climate change. The shipping sector and the industry need clear and bold choices as well as a long-term strategy to make investments in this direction for accompanying a just transition and we think that the maritime sector cannot risk a fragmented patchwork of global and regional regulations which could create confusion, conflicting incentives, and ultimately, delay.

So far, too many square brackets divide us, particularly at the economic level. The goal is clear, but it appears to us we still have to find a shared right path. This week we have the unique opportunity to find a consensus and all of us have the responsibility to act towards a shared goal. (the game is not over yet)

The effects of the climate crisis are clearly visible in all parts of the world, keeping in mind that the costs for no actions will be more expensive than applying measures on decarbonization. We are absolutely certain that, any attempt to negotiate among us, the member states, must be led in the most determined way.

Italy remains strongly committed to this process to define the revised Strategy with ambition, keeping in mind the Paris Agreement and the 1,5° as a target; at the same time, we maintain a flexible approach able to listen to the needs of other countries, especially the SIDS and LDCs, considering a comprehensive impact assessment, but with the clear view to reaching the 0 emission goal by 2050, which is crucial for the future of all."

Statement by the delegation of Nicaragua

"Gracias Señor Presidente. Buenas tardes a todos.

Esta semana marcará un hito para el transporte marítimo internacional. Nicaragua espera que, bajo su liderazgo, el arduo trabajo de la Secretaría y buena voluntad de los Estados Miembros, la revisión de la estrategia inicial sea adoptada por consenso.

Como país vulnerable que sufre gravemente los efectos de la crisis climática, Nicaragua está comprometida con la defensa de la madre tierra y sus océanos, y el cumplimiento de los compromisos adquiridos en la Convención Marco de las Naciones Unidas sobre Cambio Climático, el Protocolo de Kioto y el Acuerdo de Paris, que son parte integral de las Políticas del Gobierno de Reconciliación y Unidad Nacional . A nivel internacional estamos en la primera línea de la lucha contra el cambio climático y por la justicia climática.

Creemos que las ambiciones de reducción de GEI procedente de los buques, es una indispensable acción colectiva del sector contra la crisis climática, sin perder de vista que el transporte marítimo mueve el 80% del comercio mundial, representando menos del 3% de las emisiones globales totales y es en este % que debemos centrarnos y no el ciclo de vida de las emisiones.

El 97% de emisiones restantes, provenientes de otros sectores y fundamentalmente de los Estados Parte del Anexo I, de la Convención Marco sobre el Cambio Climático, muchos de los cuales continúan invirtiendo miles de millones en la industria del petróleo y el gas, desarrollando nuevas minas de carbón y combustibles fósiles, posponen el cumplimiento de sus ambiciones nacionales, faltando a compromisos climáticos y financieros asumidos en la misma Convención, el Protocolo de Kyoto y el Acuerdo de París, deben abordarse en esos ámbitos.

Debemos mantener la integridad ambiental de los niveles de ambición y medidas, evitando transferir la responsabilidad y costos a los países en desarrollo que agrave la injusticia climática, especialmente los que se encuentran lejos de sus mercados.

Para Nicaragua y muchas naciones del Sur Global, que tenemos el desafío de erradicar la pobreza, asegurar el desarrollo sostenible y la seguridad alimentaria, mientras enfrentamos el terrible hecho de estar entre las naciones más vulnerables del planeta afectadas por la crisis climática, estamos comprometidos a tomar pasos decisivos y ambiciosos para lograr la descarbonización del transporte marítimo, con:

- Ambiciones y medidas científicas y realistas, que considere la naturaleza de la industria marítima

- basadas en los principios de reducción y procesos de las Convenciones y Acuerdos climáticos, así como el Principio de Responsabilidad Compartida y Diferenciada y respectivas capacidades, ya acordados por los Estados aquí presentantes.

- que no procuren no interrupir las operaciones y el comercio marítimo, por un lado, y por el otro apoyen la prosperidad de los Estados Miembros en Desarrollo, pequeños Estados insulares y los países menos adelantados, contribuyendo así la OMI, como parte del Sistema de las Naciones Unidas, a los Objetivos Sostenibles de las Naciones Unidas.

Nicaragua apoya una “transición justa e inclusiva”, asegurando que los países en desarrollo también participen en la investigación y producción de los nuevos combustible y previendo el financiamiento para adaptación del sector marítimo y portuario en estos países, para que nadie se quede atrás.

Apoyamos el desarrollo de una “canasta de medidas”, con elementos técnicos y económicos, que causen el menor daño socioeconómico por un lado y contribuyan a reducir emisiones en línea con la Estrategia por el otro.

Por ello, Nicaragua, igual que muchos países en desarrollo, sensibles a medidas económica individual, nos oponemos a un impuesto universal obligatorio que, según la información a nuestra disposición, agravará nuestros desafíos, socavará nuestras perspectivas de fututo sostenible, profundizará diferencias entre países, dará lugar a efectos sistémicos generando incentivos perversos de dependencia, que transferirá la carga tributaria a consumidores finales de productos transportados por mar y hará retroceder la lucha contra el hambre y la pobreza.

Señor Presidente, Nicaragua, está lista para unirse al consenso requerido para la revisión de la Estrategia Inicial y en la selección de las medidas de mediano y largo plazo."

Statement by the delegation of Pakistan

"Chair, and distinguished delegates Very good morning, happy Independence Day to our US friends

Pakistan, would like to congratulate the Chair, Secretariat and delegates for their excellent work during current and last week’s sessions.

Climate change is our common challenge, Pakistan faces some of the highest disaster risk levels in the world, ranked 18th out of 191 countries.

Pakistan commits for constructive dialogue during the proceedings. We support revision of GHG Strategy but flat universal Levy without due consideration of ground realities and mitigation measures need to be revisited.

Measures considered, need to be just and equitable keeping in mind challenges faced by countries.

We believe in Combined But Differentiated Responsibilities (CBDR) principle.

We support basket of measures; both Technical and Economic.

We should go for just and equitable green transition leaving no one behind."

Statement by the delegation of Panama

"Muchas gracias Señor Presidente,

Buenos tardes distinguidos Ministros, Embajadores, delegados y observadores presente en este plenario y buenas noches y buenos días a los que nos siguen de manera virtual.

La República de Panamá es consciente de los devastadores efectos que trae consigo el calentamiento global y siendo uno de los 3 países que son carbono negativo de los 193 Estados miembros de las Naciones Unidas, está firmemente comprometida con implementar políticas de reducción de emisiones de gases de efecto invernadero para hacerle frente a la emergencia climática y alcanzar los objetivos de temperatura mundial acordados en el Acuerdo de Paris, incluyendo el de limitar el aumento de la temperatura global a 1.5 grados centígrados por encima de los niveles preindustriales.

La República de Panamá está impulsando acciones para cumplir con los compromisos de la Agenda 2030 y los Objetivos de Desarrollo Sostenible de las Naciones Unidas que incluyen medidas para proteger los océanos, prevenir la contaminación marina, entre otras. Como muestra de ello, la República de Panamá fue el Estado anfitrión de la octava edición de la Conferencia Our Ocean organizada por los Estados Unidos celebrada los días 2 y 3 de marzo del presente año en la ciudad de Panamá, bajo el lema "Our Ocean, Our Connection" con la participación de más de 1200 personas de todas partes del mundo entre ellos, jefes de estado, representantes del sector privado, la sociedad civil y las instituciones académicas quienes debatieron acciones encaminadas a garantizar una gestión responsable de los recursos marinos. Nos complace compartir con el Comité que Our Ocean 2023 concluyó con el anuncio de 361 nuevos compromisos por un valor de más de 22 mil millones de dólares para proteger y conservar el océano.

Como una muestra más del compromiso de la República de Panamá con el medio ambiente y el océano, Panamá estará conservando el 54.33% de su zona económica exclusiva con la inclusión de una nueva área protegida en el Caribe panameño. Es menester mencionar que Panamá ha sido reconocida como "Líder Azul" en el 2021, cuando Panamá logró la protección de más del 30% de su océano, cumpliendo anticipadamente la meta de la iniciativa 30x30 que promueve la protección de al menos un 30 por ciento de las aguas territoriales de los países firmantes antes de 2030, para frenar el impacto del cambio climático y la pérdida de biodiversidad.

Panamá, como Estado Miembro de esta Organización y por su activa participación en el sector marítimo que tiene una de las rutas marítimas más transitadas en el mundo que sirve a un total de 180 rutas marítimas que conectan con 1,920 puertos en 170 países, está comprometida con adoptar medidas de mitigación para reducir las emisiones de gases de efecto invernadero procedentes del transporte marítimo internacional y promover la utilización de combustibles alternativos y tecnologías más limpias con miras a mejorar la eficiencia energética de los buques. Somos conscientes que hoy en día todos los países están sintiendo las consecuencias del cambio climático y Panamá no es la excepción. En Panamá tenemos 7 grupos indígenas y muchos de ellos están siendo gravemente afectados por la subida del nivel del mar y uno de ellos tuvo que ser reubicado. Actualmente, mil trescientos siete (1,307) habitantes deben ser reubicados. Es por ello, que reconocemos la importancia de adoptar una Estrategia revisada ambiciosa, inclusiva y realista que nos coloque en el camino correcto para lograr la descarbonización completa del sector marítimo para el 2050 que incluya medidas para garantizar una transición justa y equitativa y que envié una señal clara al sector, productores de combustibles y otras partes interesadas para incentivar la producción y uso de combustibles alternativos e incentivar las inversiones en el desarrollo de tecnologías de cero emisiones.

La semana pasada fue una semana productiva y un paso más hacia adelante para adoptar objetivos de reducción claros y reafirmar el compromiso de esta Organización para frenar el calentamiento global, es por ello que Panamá respalda los avances logrados por el grupo de trabajo intersesional 15 y apoya que el proyecto de Estrategia revisada que figura en el anexo del documento MEPC 80/WP.7 sea remitido al grupo de trabajo sobre la reducción de las emisiones de GEI procedentes de los buques para que sea utilizado como base con miras a finalizarla y adoptarla en esta sesión

Para finalizar, Señor Presidente, quisiéramos hacer un llamado a la comunidad marítima en general para alentarlos a la adopción de políticas tanto públicas como privadas para reducir significativamente las emisiones de gases de efecto invernadero procedentes de la flota marítima internacional y de las actividades portuarias con miras a lograr alcanzar un sector marítimo sostenible libre de emisiones para el 2050.

Señor Presidente solicitamos que se adjunte nuestra declaración al informe final del Comité.

Muchas gracias Señor Presidente."

Statement by the delegation of the Philippines

"Seafarers are at the heart of the shipping industry. In the pandemic, they kept the global supply chain open with the world heavily reliant on more than 80% of trade by volume, including food, vaccines, medical supplies and raw materials being transported by sea. They remained an invisible workforce and their massive contribution to the global trade has been largely overlooked and unrecognized.

As we recover from the pandemic and shape a sustainable future, let us not forget this invisible people. They are also key to the success of the decarbonization goals of the IMO. We may talk vision, objective, levels of ambition and measures to reduce greenhouse gas emissions from shipping; but at the end of the day the seafarers will be operating and managing the ships. They have a vital role in adopting and carrying out sustainable shipping practices. And yet, as we gather this week to revise the IMO Initial Strategy, it is appalling that there is scant mention of seafarers in the draft document. Some are even reluctant to include mention of human element in the Guiding Principles. It is ironic that we talk about a just and equitable transition of the shipping industry to a green economy, leaving no country behind, when we leave seafarers, in the lurch.

Perhaps in the future there will be no places but for a few seafarers. But we beg the industry to consider that, but for the grace of God and seafarers, the maritime industry would not stand on the brink of that future as it does today let alone achieve the greenhouse goals the IMO is boldly adopting. Seafaring may one day bid a final farewell to the noblest human occupation; without which the world would never be connected and we would not be here considering these measures. But until then consider they are not disposable tissue. In our time and the foreseeable future, they are indispensable. Treat them accordingly. We therefore appeal for the reinstatement of paragraph 5.5 concerning human element to 3.5 in the Working Paper.

We hope for the adoption of a revised IMO Strategy to reduce emissions; but in a balanced, feasible, pragmatic, and grateful way. One that would enable developing countries to balance commitments in the Paris Agreement with the imperative of sustainable development.

We will comply with the IMO's decarbonization goals. But it will not be easy. Reduction measures will disproportionately affect most but a comparatively few states who advanced by carbon. So, let us start where we are and with whom – the seafarers. And do what we can with them and not as if they were not around anymore.

Thank you"

Statement by the delegation of Republic of Korea

"Thank you, Mr. Chair, and Good day to all.

The Republic of Korea would like to start by expressing my sincere appreciation to the distinguished delegates for their constructive contribution to the critical and pressing agenda items at the ISWG-GHG 15 and also thank the Secretariat and Working Group's Chair for summarizing the Working Group's results well under the short time pressure.

Distinguished delegates, we all clearly recognize the immediate urgency of the climate crisis, which poses a direct threat to humanity, and the importance of active action to achieve global decarbonization. So, this delegation believes that it's time to do it now.

Therefore, We expect to reach a meaningful agreement showing the world the strong will in international shipping to reduce GHG emissions by revising and adopting the IMO strategy at the MEPC 80.

In this regard, the Republic of Korea would like to make three considerations.

First, we must recognize that upgrading the ambition of the "2023 IMO Strategy" to "net-zero GHG emissions by 2050 at the latest" is not an option but a must in the Strategy.

The 2050 ambition is a sufficiently feasible and achievable goal if all Member States solve their immediate challenges, such as technology development and infrastructure construction, step by step. Now is the right time for international shipping to respond to the climate crisis responsibly.

Second, We believe that the 2030 and 2040 indicative checkpoints must be set to achieve net zero by 2050. And, In order to achieve the indicative checkpoint, the combination of measures with technical and economic elements should be considered a priority of mid-term measures.

We are confident that indicative checkpoints can provide a clear signal to stakeholders that they need to transition to zero-emission fuels in the maritime industry. change the industrial structure to zero-emission fuels.

Furthermore, productive discussions and the introduction of mid-term measures combining technical and economic elements as action plans provided by the Organization will serve as the basis for financing to ensure a just and equitable transition while promoting the achievement of our goal.

Third, for the journey towards net zero in shipping, the whole world must join in a spirit of solidarity, "Leave no one behind" and "Voyage together."

The Republic of Korea, with IMO, has been implementing the GHG-SMART program every year since 2021 to support the reduction of GHG emissions from ships in LDCs and SIDS. We are happy to have those who completed this program at today's meeting as representatives of the GHG discussion.

Starting this year, we will invest an additional $2 million for new training program on port and hinterland transport-related GHG emission reduction. We would like to take this opportunity to thank all MED and DPP's Secretariats who have worked hard to make the GHG-SMART program successful.

The Republic of Korea will play a leading role in overcoming global warming and, in particular, will fulfil its role and responsibility with the IMO Member States to reduce GHG emissions from ships.

We will submit this statement to the Secretariat for inclusion in the final report of this Committee."

Statement by the delegation of Saudi Arabia

We acknowledge the ongoing discussions surrounding climate change and the critical importance of addressing this global challenge.

From the Saudi perspective we have been in the forefront of addressing the climate challenge. Saudi green initiative was launched with over 60 local initiatives including to produce 50% of electricity through Renewables by 2030.

On the regional cooperation and collaboration Middle East green initiative was launched to support climate action beyond Saudi borders.

Science is clear, the IPCC AR6th reports (both the WG3 and syntheses report), states that Shipping is a hard-to-abate sector, we must accept science in a holistic and comprehensive matter, and we shouldn’t be picking and choosing. IPCC, in its mandates, provides all possible options to deal with mitigation of GHG emissions.

We acknowledge that the current discussions have extended beyond the original scope of the Paris Agreement. It is crucial to ensure that these discussions remain within the context of article 2 that sets the long-term temperature goals in PA, ‘’to well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels.’’ and article 4.1 on achieving these goals on the basis of equity, and in the context of sustainable development and poverty eradication. Taking into account the principles of just transitions and CBDR.

Mr. Chair, we understand that each country faces unique challenges and opportunities in addressing climate change. Therefore, we support a flexible and adaptable approach that considers the diverse national circumstances and priorities of each nation. We align ourselves with the sentiments expressed by many previous speakers before us, including:

.1 The negative impact of levy on developing countries and that it is hard to accept as one of the measures to be utilized;

.2 On the GHG price measures that are included as economic measures are complex and less transparent making it far difficult therefore, not feasible. That would end up with increase burden to developing countries;

.3 To be aligned with Glasgow climate pact, we should aim to reach net zero by or around mid-century taking into account national circumstances; and

.4 The check point must be realistic and achievable.

In conclusion, we are committed to continue our work with others to finalize the Strategy that is equitable and achievable by all.

Thank you, Mr. Chair."

Statement by the delegation of Slovenia

"Distinguished fellow delegates,

Let us firstly congratulate the United States of America for their Independence Day.

Global warming is the single biggest threat in modern human history and GHG emissions are in the heart of it.

That is why urgent action is needed and this generation of decision makers, our generation of decision makers has the historic duty, and also an opportunity to set the shipping sector on the path of decarbonization.

UNCTAD is very clear in its report that the costs of decarbonization will be significantly lower than the costs of higher global temperature rise than the 1.5 degrees Celsius agreed temperature goal under the Paris Agreement framework.

Slovenia is a firm advocate of an ambitious Revised IMO Strategy on reduction of GHG emissions from ships.

This is why we aspire to phase out GHG emissions from shipping by 2050 at the latest. Intermediate checkpoints are also necessary, and the emission reductions required for a 1.5 degrees Celsius aligned pathway are at least 29 % by 2030 and 83 % by 2040. We also support a basket of measures that includes a combination of a technical element in the form of GHG Fuel Standard on a well-to-wake basis and an economic element in the form of a levy. In the context of climate urgency, time is not an ally. Therefore, we are in favour of adoption of a basket of measures no later than 2025 and entry into force in 2027 at the latest.

Let us find strength, courage and wisdom in the spirit of mutual cooperation to find common ground and adopt an ambitious revised IMO Strategy, which will enable a just and equitable transition of the Maritime sector, will leave no country behind and will preserve our planet also for the generations to come.

Thank you very much Mr. Chair."

Statement by the delegation of Spain

"Muchas gracias señor presidente y saludos a todas las delegaciones.

Nadie es ajeno a los cambios e impactos observados tanto en el uso de la tierra como en los océanos como consecuencia del cambio climático, así como de las proyecciones de dichos cambios físicos y los riesgos inherentes a los mismos; aumento del nivel del mar y su impacto en las comunidades costeras, olas de calor, incendios devastadores, eventos meteorológicos extremos, sequia, desertificación y un largo etc.

Para alcanzar el objetivo a largo plazo establecido en el artículo 2 del Acuerdo de París, se requieren instrumentos políticos que aceleren el cambio de conducta y la innovación tecnológica.

La implementación de políticas para limitar el calentamiento implica, entre otras cuestiones, la cooperación internacional y el refuerzo de las capacidades institucionales de las autoridades nacionales, así como de la sociedad civil y el sector privado.

Nada de lo que anterior es nuevo para los que estamos en esta sala ni está fuera de lo que esta Organización es capaz de conseguir.

Demos por tanto el paso definitivo y cumplimos con el último hito de la hoja de ruta establecida por el MEPC 70 para elaborar una estrategia detallada de la OMI sobre la reducción de las emisiones del GEI procedentes de buques.

Para conseguirlo, España aboga por mantener el espíritu constructivo que nos acompañó la semana pasada e incorporar a todas las delegaciones al consenso.

Debemos ser capaces de acordar una Estrategia revisada a 2023 con niveles de ambición alineados con los objetivos del acuerdo de Paris, que promueva la transición energética del sector marítimo contribuyendo al mismo tiempo a la igualdad de condiciones y a una transición justa y equitativa.

Solo de esta manera lograremos mantener el impulso a la labor de la OMI como órgano internacional competente para hacer frente a las emisiones de gases de efecto invernadero procedentes del transporte marítimo internacional.

Quisiéramos aprovechar esta oportunidad para felicitar a todo el grupo de trabajo por la excelente labor desempeñada en las dos últimas sesiones, y en especial, a su presidente el señor Oftedal de Noruega por su magnífico liderazgo, así como a la Secretaría por la excelente labor desempeñada, tanto por parte de la División del Medio Marino como parte de la División de Conferencia que ha hecho posible que dispongamos en tiempo récord el documento MEPC 80/WP.7 en los tres idiomas de trabajo.

En lo que a la revisión de la estrategia se refiere, España toma nota del progreso alcanzado en estas dos sesiones, especialmente la semana pasada, que nos permite disponer de un borrador de estrategia de 2023 para continuar con nuestras deliberaciones.

Tenemos que seguir examinando el proyecto de texto y finalizar las cuestiones que están entre corchetes, además de considerar como avanzar en el lapso interperiodos antes del MEPC 81, y de manera particular, sobre los criterios o parámetros para que se observarían a la hora de evaluar los posibles elementos económicos, así como sobre la iniciación de la evaluación amplia de las repercusiones.

Nuestro deseo es contribuir constructivamente para solventar con éxito estas cuestiones y poder así presentar a final de la semana un texto de la estrategia de 2023 para que se adoptado por el Comité.

Solicitamos por último que nuestra declaración figure adjunta como anexo al informe final de Comité.

Muchas gracias"

Statement by the delegation of Ukraine

"Mr. Chair,

This delegation would like to align itself with other delegations in thanking the Chair of ISWG and the Secretariat for their tireless efforts last week aiming to bring us closer to the finalization of the IMO GHG Strategy review.

Because of the continued Russian invasion that brought vast destruction to our infrastructure, including maritime one, Ukraine has to mobilize resources to build everything back. Our determination is to prioritize a more modern, innovative, green economy, especially in shipping sector, accelerating the use and production of affordable low-carbon and biofuels, as wells further developing energy-efficient ports.

In this vein, we support an overwhelming majority of those who spoke before us in demanding the setting of an ambitious target to warrant net-zero emissions by 2050 at the latest, because the ability to maintain limits on warming to 1.5 degrees Celsius is shrinking rapidly.

We can't change physical laws - the more greenhouse gas we put in the atmosphere, the more the planet warms. But we can change the laws of our human life towards a climate-resilient future.

Thus, detailed and robust measures should warrant the maximum possible reduction of GHG emissions by interim deadlines of 2030 and 2040, while ensuring that the transition is environmentally effective, procedurally fair, socially just, globally equitable, and technologically inclusive. This should be combined with the introduction of a GHG standard for fuel and the introduction of corresponding market-based measures as levy- to be used for the support of developing or vulnerable states.

Robust mechanisms for transparency, monitoring, and accountability to guarantee the effective implementation of the IMO GHG Strategy should also be put in place. Regular assessment of progress under established clear targets and indicators, as well as identification of gaps, and the adjustment of measures, will enable this IMO's Strategy to remain aligned with the UN climate change commitments. In the meantime, our joint efforts should be focused on providing a motivation for strengthening international cooperation to foster information sharing, enabling the exchange of technical expertise and capacity building, as well as promoting research and development efforts to accelerate the availability of innovative low-carbon technologies for the maritime sector. The industry sector and academia has already pledged its readiness to join this process, as well as employ greener technologies and convert to alternative fuel types.

Mr. Chair,

By adopting an ambitious outcome of the IMO GHG Strategy review, which cements our honest desire to reach the zero-emissions goal and includes the above-mentioned elements, we will advance a sustainable maritime future. This will also be an encouraging signal for the Climate Action Summit to be held this September as announced by UN Secretary-General And let us not allow few delegations to water down the efforts of the overwhelming majority. Concessions in favour of these strike-breakers are contrary to our obligations to make everything possible to prevent disastrous impacts of climate change.

I thank you, Mr. Chair, and request that this statement is appended to the report."

Statement by the delegation of the United Kingdom

"Thank you, Chair

The United Kingdom extends its thanks to the Chair of the Intersessional Working Group and all delegates that worked tirelessly last week to find common ground and bring us closer to a text we can all be proud of.

Mr. Oftedal thank you for your leadership of the Group in its discussions and offering delegates time for informal discussions. We hope to see more of this, during this pivotal session of MEPC.

Chair, since the Initial Strategy was adopted in 2018, the international community has received robust and comprehensive climate science and meteorological reports demonstrating, unequivocally, the need for action to ensure the continued survivability of humanity. Civil society has seen in real terms the effects of climate change including droughts, poor food harvests and flooding. These effects do not respect national boundaries or socioeconomic status. For the most vulnerable States, including our friends from the Pacific Islands, these consequences are exponentially worse, with devastating and fatal events which irradicate entire communities and ways of life. The case for action is clear.

In international transport, we saw a milestone event last year when the ICAO Assembly, took responsibility and adopted a collective goal of reaching net-zero carbon emissions by 2050 for air transport. It is now shipping's turn to set an ambitious target signalling to industry the transition ahead of us, and we believe this Organization is very close to achieving this.

We must also meet the calls from industry to give certainty on the levels of ambition international shipping will be expected to meet, and in turn what will be the backbone of future regulation from this Organization. This ambition must be crystal clear in our 2023 IMO GHG Strategy that we will adopt later this week to allow investment decisions that see ships utilising near-zero and zero emissions fuel and technology on the water in the 2030s and beyond.

To that end, the United Kingdom firmly supports, and urges our colleagues from across the membership to secure, an end target for GHG emissions by 2050 at the absolute latest, on a 1.5 degree C pathway, in terms that cannot be misunderstood. This target must ensure that emissions from shipping are not transferred to other sectors and do not allow for emissions offsetting outside the shipping energy system. To do anything else would be seen by industry and civil society as a failing of the international regulator and will not give market certainty that the industry craves.

We believe text in MEPC 80/WP.7, annex 1 can be built on to achieve the targets necessary and we commend the Intersessional Working Group for its efforts. We look forward to all members working together to deliver the right outcome that we can stand proudly behind.

Thank you, Chair "

Statement by the delegation of the United States

"Thank you, Chair. Good morning.

The Paris Agreement commits Parties to pursue efforts to limit global temperature rise to 1.5 degrees C. We know that 1.5 will require "rapid, deep, and sustained reductions" in greenhouse gas emissions – and we also know that these reductions must happen across sectors, including the "hard-to-abate" sectors. International shipping has a key role to play in keeping the temperature goal of the Paris Agreement within reach.

The United States therefore has submitted proposals for the Revised Strategy that include a goal of zero emissions from international shipping no later than 2050. We also have proposed emissions reduction figures for 2030 and 2040, to articulate a clear and credible emissions reduction pathway. This is because a 2050 goal alone is insufficient to ensure 1.5-alignment. These proposals are ambitious – responding to the latest science – and they are also feasible, given that they are reachable with operational efficiencies, with the initial uptake of zero emission fuels and technologies, and with broader uptake toward 2040. It is essential for us to send a clear signal that shipping is part of the clean energy future.

Last week, our discussions made progress towards landing zones for the Revised Strategy. We appreciate the work of the Chair and the Secretariat, and we appreciate the willingness of member states to be constructive – and to consider options for compromise – no matter the time of day or night. Looking ahead for this week, the United States underlines that the ultimate package must be 1.5-aligned. For our work to be defensible – and for the Organization to remain credible on the world stage – we need a long-term goal and also intermediate figures that create a Paris-aligned trajectory.

Sending this message to markets is necessary – but of course it is not sufficient. This week we must also advance the discussion on the basket of measures, with a view to adopt the measures no later than 2025, following a comprehensive impact assessment, so we can assess and address disproportionately negative impacts, as appropriate. Although many contentious discussions remain ahead, we are confident that we can come together to craft a Revised Strategy that Member States can support.

Thank you, Chair."

Statement by the delegation of Venezuela (Bolivarian Republic of)

"Gracias Señor Presidente.

Buenos días y mejor semana. Mi Delegación espera que bajo su liderazgo, con el apoyo de la Secretaría, y la buena voluntad de todos los presentes, podamos avanzar en la revisión de la Estrategia Inicial, en este Comité y culminarla mediante el consenso.

Presidente. La industria naviera debe reducir las emisiones de GEI procedentes de buques para revertir la crisis climática, pero hay que estar claros: El transporte marítimo, responsable de más del 80% del comercio mundial, representa menos del 3% de las emisiones globales totales de GEI. Más allá de ese menos del 3%, el resto de la contribución al cambio climático está fuera del ámbito de la OMI y ello hay que tenerlo en cuenta para adecuar los niveles de ambición.

A Venezuela le preocupa que se busque que el transporte marítimo compense los incumplimientos fuera del sector, y que sean los países en desarrollo los que asuman los mayores costos, cuando en muchos países, entre ellos los Estados Parte del Anexo I en la Convención Marco sobre el Cambio Climático, se retrasan los compromisos nacionales asumidos.

Si se reconoce que el transporte marítimo internacional es una herramienta que garantiza la seguridad alimentaria global e impulsa los legítimos objetivos de desarrollo de todos los países, entonces tenemos que reconocer también que los niveles de ambición están vinculados directamente con los elementos de la "canasta de medidas" de mediano y largo plazos y deben orientarse a una reducción realista, evitando impactos que distorsionen el comercio, afecten la seguridad alimentaria y penalicen a los países en desarrollo, en particular aquellos con alta proporción de su comercio por vía marítima y que están geográficamente distantes de sus mercados.

Tengamos debidamente en cuenta el Principio CBDR-RC de una manera apropiada para evitar el impacto negativo sobre los Estados. Para llegar a la mitad del siglo XXI con el nivel necesario de producción de nuevos combustibles no fósiles, hay que garantizar inversión para que los países en desarrollo tengan acceso y participen en la investigación y en la producción a la escala requerida para satisfacer esa demanda. La transición hacia nuevos combustibles debe minimizar el impacto negativo de las medidas que adoptemos y al mismo tiempo subsanarlo, cuando se produzca, previendo financiamiento para la adaptación, especialmente en la infraestructura portuaria.

Finalmente Señor Presidente, con relación a las medidas, Venezuela ha apoyado en este foro, el desarrollo de la canasta compuesta por un elemento técnico y uno económico. En cuanto al segundo, el elemento económico, este no ha sido definido por el grupo de trabajo sobre de gases de efecto invernadero y, en tal sentido, mi país se une a muchos países para rechazar el concepto del gravamen universal obligatorio, porque el costo será en una alta proporción traspasado al importador y al exportador y los países con exportaciones con menor valor agregado y mercados distantes, verán reducida su participación en el comercio mundial. Este retroceso no puede ser la base de una transición justa adoptada por esta Organización.

Presidente Venezuela está comprometida con el logro de un consenso en este comité para el 7 de julio que permita culminar exitosamente nuestro trabajo. Gracias Señor Presidente, solicitamos que esta intervención sea incluida en el informe final"

Statement by the observer from CSC

"Thank you for giving us the floor.

Chair, my name is Shaama Sandooyea and I am a marine biologist and climate activist from Mauritius. Today is my first time at the IMO, and the Clean Shipping Coalition has offered me the chance to take the floor on their behalf.

There are only two possible outcomes from these negotiations: either member states follow the science and set a 1.5-degree compatible emissions pathway, or you fail to do your job here. By the way, for a 66% chance of staying below 1.5°C that's a 50% cut by 2030. Anything in between is not good enough. The world is watching and right now, you are on the wrong side of history.

The following years until 2030 are decisive – for the climate, for the people, and for the future of the planet, and we do not have the time or the privilege to agree on a grey area.

The Paris Agreement came into effect 8 years ago and these negotiations around climate targets should be "kids' play" by now. That's how much the IMO is lagging on reality.

Although trying to respect the Paris Agreement's 1.5 degrees Celsius temperature limit is a decent start, the IMO still has a lot of work to do to at least become a responsible industry – not even sustainable.

What's preventing you from adopting these targets? Your government chiefs? The oil and gas lobbies? The economy? Are those things more important than the lives of the people?

Not listening to science is a clear message saying you don't care. To be clear, the IMO's current negotiations are addressing only one part of the shipping's contribution to the ecological crisis – the climate. There are way more issues that the shipping industry is responsible for that are endangering marine life, impoverishing coastal and island communities, and of course, jeopardizing our future.

If you doubt what I am saying, just take a look at this new report available from CSC; 50 years of MARPOL and nothing solved!

Three years ago, the bulk carrier MV Wakashio stranded on the reefs in Mauritius and 1000 tons of oil was spilled in the lagoon, destroying mangroves and other marine lives. Today, three years later, it's the people's lives that are destroyed – they have health problems, they cannot eat the seafood, they are struggling to make ends meet, they cannot send their kids to school.

Who is listening to them? Who is making the world a better place for them? Who will change things for them?

The IMO and governments gathered here today have the opportunity of sending a strong message regarding climate justice prior to the COP 28.

Question is: are you brave enough to change the course of history?"

Statement by the observer from FOEI

"Thank You Chair,

We'd like to begin by underscoring the unequivocal warnings of the recent IPCC 6th Assessment Synthesis Report - that without rapid, deep, and immediate emissions reductions in every sector, including shipping - we are bound to see widespread and more pronounced climate impacts and climate-induced loss and damages of epic proportions, especially for climate frontline communities, SIDS and LDCs. Today new science has been published in the journal Nature which indicates that global tipping points including the collapse of the Greenland ice sheet could be reached within 15 years without urgent action.

The IMO has this opportunity to demonstrate global leadership, by committing to a 1.5 degrees pathway. This threshold would suggest key milestones along this journey, with strong and ambitious targets to see a reduction in emissions of 50% by 2030, and 100% by 2040 and as a recent study has shown, this can be achieved with little to no impacts on trade.

At this week's negotiations, we strongly urge you to not leave any nation behind in the pursuit of achieving a just and inclusive transition. The principles of Common but Differentiated Responsibilities, and Equity must be a cornerstone of this Revised Strategy.

Chair and Distinguished delegates, a single climate-induced disaster, whether it'd be in a matter of 24 hours, a few days, a week or a prolonged and/or slow onset climate event can threaten every single sector of our economies, causing millions to billions of dollars in losses and damages. Simply, the cost of inaction today will far outweigh the cost of action.

Distinguished delegates, your governments have a moral obligation to protect our planet and its people, including future generations from the harmful effects of greenhouse gas emissions resulting from shipping. This will be the ultimate test for the IMO, to respond to the urgency as demanded by the IPCC and all climate science; to offer certainty for the industry as to the speed and trajectory of transition required, and equity to ensure that no State is left behind."

Statement by the observer from ITF

"Good day to all.

I must apologise as I've made some minor change in statement. Also have to say that maybe for the first time I'm happy to be one of the last.

Perhaps it will be easier to remember.

Considering time constraint, I'll be very, very brief, and not repeat ITF interventions during ISWG-GHG 15 regarding Respect and Recognition of key role of seafarers in achieving the ambitions of the Strategy.

However, I must express my greatest gratitude to Ambassador and the delegates from the Philippines and Singapore, and others on their eloquent statement and interventions.

Seafarers thank you!

During ISWG-GHG 14 and 15 we have heard and appreciate the comments recognizing the vital role that seafarers and maritime professionals have in ensuring that the goals of the Strategy are met.

And yes, we believe we have, what we hope is, a non-controversial way to recognize these 'key workers' in the Strategy.

However, and to make it short, ITF believe that recognizing the impact these measures will have on seafarers and other maritime professionals, the Organization needs to do more and further consider inclusion of seafarers and maritime workers in the Strategy to ensure a just transition of the workforce, leaving no one behind.

Thank you Chair"

onboard CO_2 capture

Statement by the observer from ACOPS

"Excellencies, distinguished delegates,

Our intervention relates to the consideration of on-board carbon capture or shipboard carbon capture technologies as a means to reduce or eliminate CO_2 emissions from ships and the treatment of this capture in the accounting of emitted CO_2 by the vessel where it has been captured.

Reference is made to the discussion that followed document MEPC 79/15 and paragraph 7.53 in MEPC 79 meeting report and the following documents submitted to this meeting, especially MEPC 80/7 by RINA, MEPC 80/7/7 by China et al., MEPC 80/7/10 by IBIA, and INF papers 14, 31 and 32, as well as MEPC 80/WP.7 that works carbon capture in the carbon accounting formula.

First, we would like to commend the acknowledgement we hear of the pressing need to adopt an ambitious revised strategy for reduction of GHG emissions from ships by Friday. It is indeed overdue and the adoption of effective measures to decrease GHG emissions from shipping is not just an option or a moral duty. It is also a legal duty that is testing our international legal order and requires the joint implementation not only of specific IMO regulations, but also of the joint application of these shipping regulations with obligations under the climate change regime as well as the UN Convention on the Law of the Sea and related treaties. Failure to do so, exposes states to the risk of legal actions, as the drastic increase in climate change litigation shows.

All of us struggle keeping track of relevant developments in the fragmented landscape of international regulatory fora whose outcome are applicable to our work here, at the MEPC. Fortunately, principles of international law call for unity and integration of applicable regulations. The outcome of the two pending advisory opinions currently before the ICJ and the ITLOS will provide useful guidance to the work going on here.

Second, and in this context, we would like to emphasize that on-board carbon capture cannot be envisaged without including the question of the fate of the carbon that has been captured, whichever the source of the captured carbon might be: from point source fossil, point source biogenic or direct air capture.

The papers submitted acknowledge two paths for on-board captured carbon: (i) recycling -and reuse-, or (ii) permanent sequestration. Reference is also made to IPCC recommendations on Carbon Capture and Utilization (CCU) that state that, any CO_2 captured for later use should not be deducted from the sector where it is captured, unless the emissions are accounted for elsewhere in the inventory. Document MEPC 80/INF.31 rightly points out that the IMO may monitor the status of how much captured CO_2 is stored in the long term to ensure that it is being stored permanently when a robust CO_2 value chain is established.

We would like to add that, when designing the revised IMO Strategy, suitable and comprehensive documentation is needed to ensure that any on-board carbon capture meets performance criteria that make them compliant with other applicable regulations such as Article 195 of the UNCLOS on the duty to not transfer damage or hazards or transform one type of pollution into another. Captured carbon must not become a new source of pollution of the marine environment whether directly or through the atmosphere. In addition to provisions in the UNCLOS, pollution of the marine environment from sequestration of CO_2 in subseabed formations is also regulated by the LC/LP.

These provisions are not specific to shipping but they are applicable to the shipping context and the release of carbon that would have been captured onboard. Such release could further worsen ocean acidification. Language that surrounds the use of carbon capture and storage on-board ships must therefore be considered very carefully to ensure that it remains consistent with other applicable provisions of international law.

Thank you Sir, and may I please request that this intervention be attached to the record of the meeting."

Adoption of the 2023 IMO GHG Strategy

Statement by the delegation of Argentina

"Señor Presidente,

La Argentina agradece al Sr. Sveinung Oftedal, por su conducción del Grupo de Trabajo sobre GHG de este Comité.

Mi país se congratula de que hoy podamos adoptar la Estrategia 2023 de la OMI. La preocupación por los impactos del cambio climático es compartida por la Argentina, que ha sufrido lamentables fenómenos en los últimos años, incluidas inundaciones, incendios y sequías.

Por ello, creemos que la industria naviera debe reducir las emisiones de GEI de buques para que ésta haga su contribución a la lucha contra el cambio climático.

En este sentido, creemos que la Estrategia adoptada no es el ideal de cada delegación, pero es el punto en común alcanzado luego de muy arduas negociaciones. Como han expresado muchos en este Comité, el transporte marítimo transporta más del 80% del comercio mundial y, según el último informe del IPCC, entre las emisiones de gases efecto invernadero "difíciles de reducir" se encuentran las del sector del transporte marítimo. A su vez, éste es vital para el comercio mundial y es la herramienta para garantizar la seguridad alimentaria global y para que los países geográficamente remotos alcancen sus legítimos objetivos de desarrollo.

Creemos que, ahora que la OMI tiene una Estrategia actualizada, debemos continuar trabajando de manera conjunta todos los Miembros para la adopción de las medidas de mediano plazo. A este respecto, creemos que es menester buscar el cumplimiento del nivel de ambición y, asimismo, evitar que se generen distorsiones al comercio, menoscabar la seguridad alimentaria, y penalizar, causando perjuicios económicos, a los países en desarrollo, en particular aquellos cuyo comercio se transporta en una alta proporción por vía marítima y que están geográficamente distantes de sus mercados, que dependen de ellos para lograr sus legítimos objetivos de desarrollo sostenible. Quiero destacar que al hablar de mercados me refiero tanto a los de destino de su producción como a los de origen de sus alimentos y demás productos que hacen a su bienestar.

Señor, llegar a la meta convenida conlleva múltiples desafíos que los miembros deberemos abordar. Entre ellos se encuentra la producción a escala necesaria de nuevos combustibles no fósiles, y ello conlleva inversión en investigación y desarrollo también en países en desarrollo, asimismo permitiéndosele el acceso a las invenciones, para que puedan participar en la producción que se necesitará para satisfacer la alta demanda. Además, una "transición justa" a las nuevas fuentes de energía no sólo debería consistir en evitar o minimizar el impacto negativo de las medidas adoptadas y asimismo subsanarlo cuando se produzca, sino también prever financiamiento para la adaptación, especialmente para las transformaciones de infraestructura en puertos, a las que será necesario hacer frente para evitar que se restrinja el comercio global.

La Estrategia 2023 se traducirá en medidas. En cuanto a ellas, nos complace que este Comité avance hacia la conformación de la denominada "canasta", compuesta por un elemento técnico y uno económico, si bien este último no ha sido definido por este Comité. Señor, debemos ser conscientes de que las medidas de mediano y largo plazo tienen un potencial mucho mayor que las de corto plazo de afectar el comercio internacional e impactar negativamente a los países en desarrollo distantes de sus mercados. En cuanto a ello, mi delegación desea hacer tres comentarios.

El primero es que mi delegación objeta, como muchos países en desarrollo, el concepto de un gravamen universal obligatorio. Una medida de “shock” de ese tipo es dudoso lleve a la reducción de GHG deseada pero es claro que llevará indefectiblemente a un aumento del precio del flete, es decir, el peso del gravamen será traspasado al exportador y/o al importador. Por un lado, los países cuyas exportaciones tienen menor valor agregado y van a destinos lejanos se verán más negativamente impactados, y ello incluye a las commodities. La mayoría de los países de América del Sur y África verán cómo se reduce la participación de sus productos en el comercio mundial. Por el otro, los importadores netos de alimentos verán encarecer el flete y cómo aumenta el precio que deben pagar sus habitantes por los alimentos importados, pudiendo, así, afectarse la seguridad alimentaria. Además, resulta paradójico que el retroceso de los países en desarrollo distantes en el comercio global beneficiaría relativamente a países desarrollados del hemisferio Norte. Una organización que habla de “transición justa” no puede acordar la injusticia de que los países en desarrollo medianos sean los únicos que corran con el costo de las medidas. Simplemente no es justo ni equitativo que numerosos países en desarrollo asuman el costo de las medidas, y la eventual recaudación se destine a otros países en desarrollo, sin ninguna contribución financiera de quienes son los responsables históricos del cambio climático.

El segundo es que se debe tener debidamente en cuenta que la Evaluación Comprensiva del Impacto sobre los Estados también debe permitir la selección de cuál elemento económico sería el más conveniente para desarrollar la medida conjuntamente con el elemento técnico y, naturalmente, para su diseño y desarrollo, introduciendo los ajustes que sean necesarios. Por ello apoyamos los términos de referencia de la evaluación comprensiva de los impactos sobre los Estados, y agradecemos las palabras de Islas Marshall, porque reconforta su intervención.

El tercero es un principio central de la negociación sobre cambio climático, como lo es el CBDR-RC. Así, un aspecto esencial del principio CBDR-RC, e incluido en la Estrategia, es el de evitar o minimizar el impacto negativo sobre los países en desarrollo. Esto implica diferenciación en la exigencia de la medida, que se puede reflejar en distintos valores para los parámetros de las medidas de mediano y largo plazo, que incluye el trato diferenciado según la ruta, la distancia a recorrer o las mercaderías.

Señor Presidente, en síntesis, la Argentina apoya que las medidas que la OMI adopte de aquí en más sean capaces de lograr los niveles de ambición que esperamos, y que a la vez eviten o minimicen el impacto negativo sobre los países en desarrollo distantes de sus mercados, porque ello sólo incrementará la pobreza, así como las distorsiones al comercio, y eviten menoscabar la seguridad alimentaria. Creemos que lograr ambos es posible. Sólo tenemos que continuar trabajando juntos, con esfuerzo, comprensión y flexibilidad. Así es que, en este momento, también deseo reconocer a todas las delegaciones, porque un resultado que es apoyado de manera consensuada sólo se obtiene con una gran dosis de buena fe y cooperación.

Muchas gracias"

Statement by the delegation of Australia

"Thank you Chair,

Good morning to all.

I would like to begin by congratulating the Solomon Islands on its Independence Day.

Australia would like to thank all delegations that have worked tirelessly to come together, to ensure that this Organization was able to deliver a 2023 Strategy on the Reduction of Greenhouse gas emissions from ships.

As many have conveyed, this Strategy represents an agreement which will ensure that we move as one, as only moving as one, can we achieve the outcome we seek.

And that outcome is to urgently decarbonize the shipping sector.

Australia had entered these discussions with the aim of providing a clear signal to industry which would drive the transition to decarbonize. What we have before us is certainly an improvement on the Initial Strategy, although not necessarily as clear as what we had hoped.

However, it does signal to the world that we will work together on decarbonizing our industry, starting now. Australia urges industry to take this Strategy as the signal needed to embark on decarbonization.

It is now up to all of us to support this transition and ensure that when we assess our progress in line with the agreed checkpoints, we are exceeding our ambitions and not playing catch up.

Beyond the Strategy itself, we also see and opportunity for this Organization to improve its processes and enhance openness, transparency and accountability. These improvements will be critical to maintaining the IMO's integrity not only in relation to our discussions on GHG, but in the broader context of the work of this Organization.

To this end, there is a proposal on transparency sponsored by 21 states for consideration at Council 129 in two weeks' time that would help improve openness significantly, that Australia urges member states to consider.

Australia requests that this statement be attached to the Committee's report.

Thank you Chair"

Statement by the delegation of Bangladesh

Mr. Chair
Ministers, Excellencies, Secretary General
Distinguished delegates
Ladies and gentlemen

The delegation of Bangladesh convey its best wishes to the delegation of the Solomon Islands on its Independence day.

The delegation welcomes the adoption of the 2023 GHG Strategy that has taken into account the concerns of the Small Island States, least developed countries and the climate vulnerable countries.

This delegation also appreciates your leadership in steering the works of this Committee with the support of Mr. Arsenio Dominguez and his colleagues from the Secretariat which has brought us to this great result on the adoption of the GHG strategy 2023. Of course, the Secretary General's initiative in this regard is to be especially recognized.

We now express our special appreciation for the excellent work of the intersessional working group over several sessions led by Mr. Sveinung Oftedal and the members of the Group.

As we can see now, with the adoption of the 2023 GHG Strategy the transition to zero emission starts today.

Bangladesh noters with interests the points raised by the UAE that every ending is also a new beginning.

So, the delegation of Bangladesh expresses its commitment to carry on with the works that lies ahead of us with the same spirit of cooperation and collaboration.

Thank you all.

Statement by the delegation of Belgium

"Thank you chair and good day to all

Let me start with congratulating the Solomon Islands with their national Independence Day.

Two weeks ago we came to the IMO with the world holding its breath and with big expectations from the IMO. MEPC 80 had to become a milestone that would define the future of shipping.

After two weeks of intense negotiations and constructive dialogue, we have reached an agreement. I will not go into the substance of the agreement.

I do want to emphasize another achievement of MEPC 80, namely the fact that we did this together. Clearly, we all wanted IMO to succeed, in many ways.

We want to thank all delegations for the commitment, professionalism, cooperation and for the spirit of compromise, the Secretariat for their tremendous work and efforts, the Secretary-General, the Chair of the WG and yourselves Chair for the profound leadership and we are looking forward to continue our journey all together in an inclusive and transparent way and we will continue to improve in this.

Belgium is pleased to support the adoption of the 2023 revised Strategy. Back home, we might have to explain some of the wordings in the Strategy, but the main message we carry with us home is that the IMO can deliver.

Thank you Chair."

Statement by the delegation of Brazil

"Thank you Mr. Chair, Ministers, excellencies, fellow delegates, ladies and gentlemen, Good day to all In our first intervention last week, Brazil mentioned that every negotiation is a story in itself, and this one has been a quite intense story about trust.

Together we have been able, in the last two weeks, to agree on a framework for the reduction of GHG emissions on shipping, sending a clear signal to the industry and other stakeholders in the sector. And we have been able to achieve this very delicate set of agreements through compromise, through understanding, and above all, through trust.

For that, we thank all the delegations for the hard work, their flexibility, and the positive atmosphere throughout the whole time. Well, most of the times. And we particularly thank our friends in the pacific islands for their openness and willingness to renew the dialogue between our regions on the next steps to come. We are also deeply grateful to Mr. Sveinung Oftedal for his steady and sensitive leadership and for the Secretariat for their amazing work.

And now that this step on the way is coming to a conclusion, the harder part will begin. We will have to work some more, in the next months, to make our decisions tangible.

Brazil will remain committed to exploring the best ways for the shipping sector to attain its fair share of participation in our collective efforts towards the goals set out in the UN Framework Convention on Climate Change and its Paris Agreement. And we are now reassured by the perception that another goal is shared by all the members of this Organization, which is the goal of identifying and designing the measures that will take us there while not endangering food security nor hurting the lives and livelihoods of people, particularly the most vulnerable populations in developing countries, including of course SIDS and LDCs.

As we launch the comprehensive impact assessment that will allow for better understanding about the measures at hand, Brazil will continue to actively support the process, to the best of our capacity. With this view of contributing further, Brazil would be very interested in working in and with the steering committee that will oversee the assessment.

But assessing and designing the measures to come are not the only hard work we have ahead of us, nor the most immediate. First, we will have to explain to the outside world and our constituencies what we have accomplished here these weeks.

Colleagues, Brazil understands the Strategy just adopted provides clear parameters for the industry. It has clearly strengthened the levels of ambition previously set, indicating the members of this Organization really mean it, when they say a transition is coming. It has provided clarity on the constitutive elements of measures to be further developed and assessed, as well as on the criteria to be observed in this process. It has provided a layout for a comprehensive impact assessment, in which the possible negative effects of the measures to be adopted will be assessed, measured and addressed, before the adoption of any measures.

Those are not small accomplishments, colleagues, but they are not the full story, and it is up to us to make sure the rest is told. What does it mean, colleagues, in a context of accelerated climate change and multiple crisis, to adopt strengthened levels of ambition? What does it mean, in a very unstable world, to come together, all on board, around a common goal? What does it mean to come to London with very different instructions, very different realities and short-term concerns, and different constituencies altogether, and still be able to find landing zones and reach consensus? What does it mean, Chair?

For Brazil, it means there is a will. It means multilateralism is still alive, still useful, still the only way for us to deal with the challenges we face together as humans. It means bridges have been built between regions. It means trust has been established, trust that we hope will remain throughout the process going further. In short, Chair, to Brazil, it means there is hope."

Statement by the delegation of Canada

"We wish a happy Independence Day to the Solomon Islands.

Canada came to this meeting seeking levels of ambition that clearly align with the 1.5°C temperature goal of the Paris Agreement.

We have heard, and will continue to hear, different estimates of whether or not the 2023 Strategy meets this threshold. Different studies use different assumptions about the shape of the 1.5-aligned pathway as well as uncertainties in the resulting climate response and Earth system feedbacks.

A review of this literature is helpfully annexed to ISWG-GHG 15/2/2 by Austria and others. Our own internal modelling indicates that further enhancements to the IMO GHG levels of ambition, particularly for 2040 and 2050, will likely be needed to avoid temporarily overshooting a safe 1.5-aligned pathway thereby reducing risk of exceeding irreversible climate tipping points. We look forward to undertaking further analysis on this matter in the coming months.

Nevertheless, we will leave MEPC 80 with a feeling of great optimism. The 2023 IMO GHG Strategy was developed with unprecedented compromise and contains what are arguably the clearest and most ambitious global emissions targets ever adopted in the United Nations system. Before this session, many were betting against this Organization, and we should all be proud to have exceeded their expectations.

We would like to thank all of the delegates from all Member States, who worked tirelessly as one team, one humanity, understanding that ultimately, this issue matters greatly to all of us. We would like to especially thank our Captain, Mr. Oftedal, as well as his support crew led by Mr. Hoenders.

As work under this agenda item now rightfully turns toward implementation, we look forward to working with all Member States, during the comprehensive impact assessment for both a marine fuel standard, and a maritime GHG emissions pricing mechanism – based on full well-to -wake emissions - that will deliver on the agreed targets.

We ask that our statement be appended to the final report.

Thank you, Mr. Chair"

Statement by the delegation of Chile

"Buenas tardes Sr. Presidente, Señor Secretario General, Ministros, Excelencias, Delegados y Colegas, Felicitamos a las Islas Solomon por su día de la independencia.

Nuestro país quisiera agradecer el espíritu de colaboración, flexibilidad y trabajo conjunto desarrollo por todos los miembros de esta Organización para poder alcanzar una Estrategia revisada que nos guiará en las diferentes acciones que adoptaremos para reducir el cambio climático. Creemos que este es un paso importante en la tarea que hemos adoptado los miembros de la Organización desde hace ya varios años; y nos congratulamos por esta estrategia revisada.

Como indicamos en nuestra intervención al inicio, nuestro país está comprometido con la ambición necesaria para reducir los gases de efecto invernadero, pero también tiene preocupaciones por los impactos que un impuesto universal obligatorio podría tener en nuestro país que es geográficamente remoto y tiene una alta dependencia del transporte marítimo para su comercio. No reiteraremos los argumentos muy bien presentados por Argentina, los que compartimos; más bien queremos indicar que nos parece que la manera en que trabajamos esta semana para los términos de referencia para la evaluación comprensiva y la preocupación que se ha mostrado por todas las delegaciones en abordar los posibles impactos negativos desproporcionados antes de la adopción de la medida.

En esa línea, creemos que los términos de referencia que logramos redactar para la evaluación de impacto comprensiva nos permitirán analizar los elementos técnicos y económicos para el diseño, y posterior adopción de la o las medidas. Chile se sumó activamente a los trabajos desarrollados esta semana y queremos agradecer a todos los representantes y delegados que participaron hasta largas horas y también los diálogos francos que hemos tenido con todas las delegaciones de países desarrollados, países en desarrollo y los pequeños estados insulares.

Nos parece que este es el camino que debemos transitar, ya que el diálogo y el trabajo conjunto es la manera en que logramos resultados consolidados que nos ayudan en esta compleja tarea de enfrentar el cambio climático.

No queremos terminar sin antes sumarnos al reconocimiento del trabajo y compromiso del Presidente del Grupo Sr. Sveinung Oftedal. Su guía y apoyo fueron clave y le estamos profundamente agradecidos. Agradecimiento que se extiende a la Secretaría, en particular el equipo de la División de Protección Marina que nos apoyó en todo momento y también a la donación que acaba de realizar el Reino Unido para aportar en la tarea que tenemos por delante. Muchas gracias."

Statement by the delegation of Colombia

"Gracias señor presidente, buenos días a todos los presentes y felicitaciones a las ISLAS SALOMON en su celebración de independencia.

Al igual que lo han mencionado varias distinguidas delegaciones, COLOMBIA no se escapa de los impactos negativos del cambio climático, en especial en nuestras zonas costeras e insulares.

Por eso agradecemos la disposición y compromiso de todas las delegaciones que se ha expresado en la elaboración de esta estrategia, cuyas metas adoptadas están basadas en consideraciones técnicas y económicas que esperamos permitan obtener las metas consensuadas sin detrimento de las condiciones sociales y económicas de nuestra población.

Reconocemos que alcanzar el consenso no ha sido fácil, agradecemos la flexibilidad y compromiso de las islas, para continuar el recorrido arduo que nos espera y poder implementar lo aquí pactado. Estamos convencidos que trabajando de manera conjunta lograremos alcanzar los objetivos y el máximo nivel de ambición en la reducción de emisiones de gases de efecto invernadero procedentes de los buques.

Colombia reitera su compromiso con los esfuerzos de esta organización para luchar contra los efectos del cambio climático, y para mantener el aumento en la temperatura media global por debajo de los 1.5°C para el 2050.

Gracias señor presidente."

Statement by the delegation of Cook Islands

"Kia Orana tatou katoatoa,

The Cook Islands warmly thank you Chair and thank the Chair of the Working Group, as well as the Secretariat for supporting the tremendous efforts by the member states over the last fortnight.

The Committee has now adopted the 2023 revised Strategy, recognized by all here present as a highly significant demonstration of the leadership role continued to be played by the IMO, to progress the timely decarbonization of the shipping sector in a manner that includes the consideration of any potential impacts though a comprehensive impact assessment, and respects the concerns and needs of the SIDs, LDCs and leaves no one behind.

Chair, yet again, IMO has delivered and the Cook Islands is proud of being part of this journey, together with brothers and sisters from the Blue Pacific and wider Global South. The next leg of our voyage together is to a rising sun and our hopes for a brighter future.

Meitaki maata e kia manuia."

Statement by the delegation of Denmark

"It is a decisive moment for IMO.

By adopting the GHG Strategy IMO have set a historical milestone.

With this Strategy we set a clear course to zero GHG shipping for us all to pursue and send a clear signal to the World around us.

Our climate Strategy is the result of years of intensive deliberations and of negotiations, which has required everybody to compromise, give and take. We would like to thank and commend all parties for their listening, understanding and willingness to find common solutions.

We would also like to thank the Chair of the Working Group Mr. Sveinung Oftedal, but very much also the Secretary-General and his GHG team for their tremendous efforts and their tireless work.

Moving forward we stand committed to work with all parties to deliver on the promised targets so we will achieve zero GHG shipping and do so in a just and equitable way.

Thank you."

Statement by the delegation of Ecuador

"Ecuador desea extender su agradecimiento al Presidente del Grupo de trabajo interperiodos de GHG (Sr. S. Oftedal), así como a la Secretaría por el permanente apoyo; pero sobre todo felicitar a todos los delegados que trabajaron en este proceso, construyendo verdaderos puentes de cooperación para llegar a un solo destino que es la aprobación de la Estrategia 2023 para reducción de GHG de los buques.

Esta estrategia refleja la clara decisión de los Estados Miembros y en general de la Organización para hacer frente a los retos que demandan el cambio climático, esto es un hito histórico; pero la aprobación de esta estrategia nos pone en un mayor compromiso con el mundo para alcanzar los niveles de ambición que nos hemos comprometido, tomando en cuenta que en este proceso ningún país debe quedarse atrás.

Deseamos resaltar la importancia que todos podamos compartir las preocupaciones de otros, por ello agradecemos que se comprendió que a los países en desarrollo del cono sur, como ECUADOR nos preocupa el impacto a los Estados, a la soberanía alimentaria, al comercio marítimo y consideramos que el reflexionar y tener empatía, para ponernos en el lugar del otro, nos va a permitir avanzar y reducir las consecuencias que las medidas puedan generar en los Estados. En este sentido, deseamos expresar un reconocimiento a las islas del Pacífico por su compromiso de colaborar y avanzar en este proceso, y reafirmamos nuestro compromiso para seguir trabajando para implementar esta estrategia y que se alcancen los niveles de ambición formulados y alineados con el Acuerdo de París.

Estamos en el mismo barco y deseamos alcanzar los mismos objetivos, por ello esta estrategia es el derrotero que nos permitirá navegar a un mejor futuro."

Statement by the delegation of Fiji

"Thank you for giving me the opportunity to address this Committee.

At the outset, we wish to thank you Mr. Chairman, the Chairman of the Working Group on GHG emissions, the Secretariat and all delegations that put in the commitment and efforts to ensuring a successful outcome of a Revised GHG Strategy.

Mr Chairman when we made our opening statements earlier this week, we had called for 1.5 degrees aligned Strategy. This was critical as this would mean that humanity still had a chance and it was safer for the world. It seems that the current Strategy has fallen short of the 1.5 target in 2023.

However, Mr. Chairman, Fiji is thankful that a Revised Strategy was achieved this week which has enabled policy directions not only for IMO as a specialised UN body in shipping but also for member states and industries.

Coming to a consensus on the indicative check points and other parts of the strategy, was not an easy task, but one that was only achieved through understanding and consensus. The strategy reaffirms IMO’s commitment to reducing GHG emissions from international shipping through just and equitable transition. This Strategy sets the pathway to achieving decarbonization by 2050."

Statement by the delegation of France

"Merci monsieur le président.

C'est un moment historique pour le transport maritime international, et une lourde responsabilité qui nous incombe à tous pour la mise en œuvre concrète de cet accord.

C'est un moment lourd de responsabilité. Car aujourd'hui notre organisation s'engage devant près de 8 milliards d'habitants tout autant impacté par les effets du changement climatique que dépendant du transport maritime international.

Nous nous engageons à décarboner le transport maritime international d'ici 2050 sans compensation à l'extérieur du secteur. Si beaucoup à l’extérieur se focaliseront sur la date de 2050 et l'interprétation de notre rédaction sur ce point, la France souhaite avant tout mettre en avant nos engagements les plus proches.

Nous nous engageons sur une trajectoire pour réduire de 20 à 30 % les émissions du transport maritime d'ici 7 ans, en 2030. Nous nous engageons sur une trajectoire pour réduire les émissions du transport maritime de 70 à 80 % d'ici 17 ans, en 2040.

C'est le sens aussi de notre décision en matière de sélection des mesures, avec une mesure technique qui jouera un rôle central et un prix des émissions de gaz à effet de serre. Et nous nous engageons à adopter ces mesures en 2025, c'est-à-dire dans 2 ans.

Si 2050 est une échéance importante, c’est bien la trajectoire qui doit attirer notre attention et c'est bien dès aujourd'hui que nous, mais aussi l'ensemble de l'industrie et des acteurs privés partie prenantes, doivent redoubler d'efforts, d'investissement et de créativité pour atteindre les objectifs que nous nous sommes fixé un horizon très proche. Ces objectifs sont extrêmement ambitieux mais aussi atteignables, si tous, y compris les acteurs industriels, agissent dès maintenant, sans attendre.

C'est enfin un moment chargé en émotions car c'est aujourd'hui le résultat d'un travail de plusieurs mois, pour l'ensemble des États de cette Organisation. Depuis deux semaines avons travaillé jour et nuits pour parvenir à la révision de la stratégie et la sélection des mesures, dans un esprit de coopération exemplaire et sous le leadership admirable de Sveinung Oftedal et l’assistance sans faille du Secrétariat.

Ces négociations se sont déroulées dans un esprit d'écoute, de respect et de compréhension mutuelle avec le souhait commun d’aboutir à un accord qui tienne compte de priorités de chacun.

Ainsi, plus encore que la Stratégie, c'est l'esprit d'équipe et de coopération que nous avons bâti aujourd'hui au sein de cette Organisation entre toutes les délégations, de toutes les régions du monde, qui nous rend optimistes sur notre capacité, ces deux prochaines années, à mettre le transport maritime sur une trajectoire climatique viable.

Merci monsieur le président."

Statement by the delegation of India

"At the outset, India congratulates you Mr. Chairman, the Secretariat, and the Chairman of the Working Group for their able leadership, without which this Revised Strategy document would never have been materialized in this session. Though this delegation still maintains its concerns over unrealistic targets, we convey our agreement to this document as India's endorsement of the views of this Organization, that 'sustainable development' is the only way forward for the international community to address the current climate change issues.

We thank the member states, particularly the developed states for recognizing the reference to the UNFCCC and the CBDR-RC in the document, whereby we are only recognizing the historical realities of contrasting contributions of the countries to global environmental problems and the undeniable differences in the economic and technical capacities between them to address the climate related issues. This has been the position of India in all fora of climate change negotiations, which now stands vindicated on this floor as well.

We also thank our fellow member states for formally acknowledging the challenges that developing countries, may face in the implementation of the 2023 IMO GHG Strategy and that any ambitious target would inherently be linked to the national circumstances of the member states concerned. We also thank the WG for explicitly addressing the human element, including the impact on seafarers and other maritime professionals, in the safe implementation of 2023 IMO GHG Strategy.

However, we are still apprehensive of the extent to which the spirit of this Strategy is going to be transformed to reality, particularly in ensuring the much-needed capacity building initiatives in developing countries that account for more than 60% of world seaborne trade. Hence, India strongly requests the Organization to put in place effective mechanisms to continuously assess and monitor the effectiveness of implementation of this resolution, so that the capacity building support materially reaches the entitled developing nations; Fortunately, we have good examples in this regard, like the IMO-Norway Green Voyage 2050.

Distinguished delegates, Climate Change negotiations are taking place against the backdrop of an increasingly globalized and interdependent world economy. Development must, therefore, remain at the centre of the global discourse and should not impose conditionalities or additional burdens on the developing countries. It must not sharpen the division of the world between an affluent North and an impoverished South, and justify this with a green label.

Mr. Chair, we conclude our statement with a strong alert to this forum that any number of resolutions with any amount of ambitious targets on global emission control without addressing the genuine concerns of the developing nations who are going to hold the key for emission control of the future world is not going to generate the desired effects. Nor do any regulatory framework or resolutions, without recognizing the genuine rights of the developing nations to strive for better standard of living for their people, will stand the challenges of time."

Statement by the delegation of Indonesia

"Thank you Chair,

Indonesia would like to congratulate Solomon Islands for celebrating their national day.

Excellencies and Honorable Delegates.

This Organization has come so far to reach this decision. We applaud everyone for their hard work. Indonesia has been part of other climate change negotiations in other forums, but at this Organization, Chair, the spirit of solidarity and the willingness to reach consensus are more evident.

We value the spirit of compromise that everyone has shown these past 2 weeks. We value the inclusivity and transparency that this Organization did during the negotiations.

We understand that this is another beginning. The real work is not the Strategy, but the implementation of the selected measures to address the climate urgency.

Indonesia will do our homework, particularly on the development of biofuel as one of our effort in regard of the energy transition while continue seeking another alternative green fuel that is suitable for our archipelagic nation.

Indonesia will also continue to address the safety of the seafarers when adapting to the new technology resulting from the technical measures to be implemented. This will consequently imply that enhanced technical capacity for the human element and to adapt technology know-how that developing countries needed to implement the revised Strategy effectively.

Indonesia reiterates its support on the implementation of the Comprehensive Impact Assessment and will work together to ensure that the data and information required for it are factual and based on each country's national circumstances. Only by this we can be sure to have the selection of measures that are effective and can be accepted by all.

Indonesia remains confident that this Organization will continue to deliver, and we will continue to work together with others to achieve the goals as set out in the 2023 IMO GHG Strategy.

Thank you Chair.

We also would like to request that our statement be attached to the final report."

Statement by the delegation of Israel

"Thank you Chair,

Distinguished delegates good day to all

The clean document which was submitted to the Committee by the GHG Working Group in the leadership of Mr. Oftedal of Norway is the result of a mutual cooperation, understanding and devotion of all parties involved to the urgent issue of climate change caused by international shipping.

We wish to express our gratitude to the Chair, the Group and the Secretariat for their time and efforts in the past weeks to achieve a consensus aligned with the Paris Agreement 1.5 degree limit by the spirit of good faith.

The *2023 IMO Strategy on Reduction of GHG emissions from ships* is a milestone in the work of the IMO. Nevertheless, it represents the beginning of a challenging pathway towards clean shipping expected by 2050, with the ambitious check points in 2030, only 7 years from now, and 2040. We still have a lot of work to do.

Israel welcomes the adopted Strategy and commit itself to cooperate with other members towards the final target of decarbonized shipping.

Please allow me to greet all

A Peaceful Saturday, in Hebrew:

Shabat Shalom

Thank you Chair

We request this statement be appended to the final report."

Statement by the delegation of Italy

"Firstly, we wish to thank the Chair of the Committee and the Chair of the WG for their efforts in the difficult task of guiding the complex negotiations as well as the Secretariat for the Organization of the meeting.

Above all, however, I would like to express my heartfelt thanks to all the delegations for the great spirit of cooperation and sense of responsibility, thanks to which today we can celebrate a result that is an important signal for the shipping and the industry.

We also highlight the achieved consensus on the follow-up actions and on the need to adopt measures in 2025 based on a comprehensive impact assessment to ensure that emissions from the sector are effectively reduced while contributing to a level playing field and a just and equitable transition.

We consider the agreement achieved a milestone to ensure that international maritime transport makes a fair contribution to achieving the Paris Agreement temperature goals and we fully support the adoption of the 2023 IMO GHG Strategy.

During these days we have shown a great ability to work together for a shared consensus, and I believe this is the spirit in which the IMO should approach its role, considering the important challenges to face on climate change.

Thank you all."

Statement by the delegation of Jamaica

"Thank you Chair.

Congratulations to the Solomon Islands on their Independence Day.

Chair, Jamaica joins the other Member States here today in recognizing this incredible milestone which a few days ago seemed so elusive. The spirit of cooperation, compromise, and concessions by the Organization has prevailed.

We are particularly mindful of the intermediate checkpoints along our journey of at least 20% striving for 30% by 2030 compared to 2008 and to reduce the total amount of GHG emissions from international shipping by at least 70% striving for 80% by 2040 compared to 2008, but we also look forward to the 2028 Review of this Strategy when we anticipate, and the science is telling us, that our indicative targets will change.

We look forward to the work of the Steering Committee and the conduct of the Comprehensive Impact Assessment which is so important for Developing Countries and SIDS not only those far from their markets but also our Caribbean countries as well where we are also very apprehensive of the likely severe impacts that may follow.

Chair we thank you for your tremendous work and the work done by the Secretariat and the sterling leadership and tireless effort of Mr. Oftedal Chair of the GHG Working Group and we congratulate the hard work of the members of the Working Group, all of which has brought the Revised Strategy to this successful juncture.

We also thank those member states which have made financial commitments to the GHG TC Trust Fund and the Multi donor trust fund.

Thank you Chair."

Statement by the delegation of Kiribati

"Please allow me to begin by expressing our gratitude to everyone who has worked tirelessly on the text before us, including the Secretariat and our Working Group Chair.

This is a very significant document for all of us, as it establishes the direction of the industry and the policy by which we will all move forward collaboratively and constructively. We acknowledge that this has been an extremely challenging and distressing negotiation for all parties involved, and we would like to thank everyone who has engaged with us in open and forthcoming exchanges, allowing us to adopt this Revised Strategy and move forward together. We appreciate that many delegations, particularly those from developing countries and those most vulnerable to climate change, had to make significant compromises, and we thank them for that. We are confident that we now have a solid foundation of mutual trust from which to proceed. We are aware that the requirements and vulnerabilities of developing countries must be central to all aspects of the development of our mid-term measures. In our revised Strategy, we fought very hard for a commitment to an equitable transition. We will continue to fight for equity in the coming months and years to ensure that no country is left behind.

For Kiribati, we were hoping for higher levels of ambition that will ensure that our island nation has some hope of a future for our children. We had hoped for a Revised Strategy that was completely aligned to 1.5 degrees, not a Strategy that merely keeps it within reach.

Having said that, Kiribati wants to acknowledge the spirit of co-operation and willingness of member states to work together. We are not there yet. We need to work on the measures that are essential to achieve the emissions reductions we so desperately need. We need to build on the trust that has been built in the past two weeks of negotiations, we need to work together in a spirit of cooperation.

We need to support UNCTAD to undertake the comprehensive impact assessment with urgency, as we all need to see the levy and fuel standard adopted as soon as possible to actually drive the transition to a zero-carbon shipping future.

Thank you, Chair."

Statement by the delegation of Madagascar

"M. le Président,

Premièrement, nos félicitations aux Îles Salomon pour leur fête de l'indépendance.

La présente délégation souhaite exprimer ses sincères félicitations et remerciements aux membres Groupe de travail dans son ensemble, qui ont travaillé jour et nuit afin d'arriver à au développement d'un document historique.

M. le Président, l'OMI est attendu au tournant concernant la réduction des émissions de gaz à effet de serre par le transport maritime international, compte-tenu de la situation climatique dont nous sommes tous témoins et qui nécessite une action concrète mais réaliste et qui a toutes les chances d'être acceptées et appliquées. Et au vu de la présente Stratégie révisée, on peut dire que l'OMI n'a pas failli à sa mission, et, encore une fois, toutes les mérites vont à toutes et à tous qui ont contribué pour ce résultat. Nous nous félicitons d'un document, qui reflète une position globale qui ne laisse aucun pays de côté.

Toutefois, il serait peut-être encore trop tôt de crier victoire car nous ne sommes qu'au début d'un voyage, d'une expédition qui va être difficile, mais qui a besoin d'action rapide.

En effet, beaucoup reste encore à faire, car 2030 n'est plus loin et les mesures devraient être mises en œuvre aussitôt que possible.

Nous appelons à la continuation de l'esprit de collaboration, d'entraide, de compréhension et de solidarité qui habite cette organisation, que ce soit de la part des Etats membres, ou du Secrétariat, ou des ONG, dans l'accomplissement de ces missions et pour atteindre les objectifs fixés dans le document.

Nous souhaitons ré affirmer notre ferme volonté de continuer à travailler étroitement avec l'OMI et toutes les parties prenantes pour arriver à atteindre l'objectif de décarbonation du transport maritime, pour le bénéfice de la planète.

Nous demandons à ce que la présente déclaration soit attachée au rapport final.

Merci M. le Président."

Statement by the delegation of Marshall Islands

"Thank you Chair.

Well. Here we are. We made it. A Revised Strategy that keeps 1.5 within reach, and commits this industry to an equitable transition. There is much work still to do, to ensure that 1.5 remains not just within reach, but is achieved in reality. But I am proud today of the work we have done, and that we have done it together.

Chair, you have heard the Marshall Islands, and our sisters and brothers from the Pacific, speak often of the threat we face. We make no apology for this. We make no apology for our unwavering demand for a safe future for our people. We cannot in good conscience demand anything less. But we also know that to get to that safe future - to have any chance of getting to that safe future - we need cooperation. We need solidarity. We need understanding. We need to work together, not only at the IMO, but across the international arena, if we are to have any hope of saving our beautiful blue planet, and building a truly ecological civilization. The climate vulnerable need our voices to be heard, and we are confident that they have been heard, and are heard, today.

Chair, we know the transformation we are asking for is unprecedented. We know it causes concern, particularly among some of our fellow members of the Global South. We know that we must be careful, and thorough, in assessing our technical and economic measures. The Comprehensive Impact Assessment process will be essential for all states to understand the potential for disproportionate negative impacts, so that we can address these appropriately together.

We have collectively provided the world with much-needed evidence this week that urgent action on climate can still be achieved, when we work together on the basis of empathy and solidarity. We believe that we can continue to walk this path together, and that it must be, and can only be, a path that protects, empowers, and uplifts the Global South. We acknowledge that we have been heard, and we commit to listen.

It only remains, Chair, for me to thank my team, to thank you, to thank our Working Group Chair, to thank the Secretariat, and to thank every person in this room, who I know wants to be part of the solution. I know every person in this room wants to play their part in addressing the climate crisis, for themselves, and for their children, and for their grandchildren. The Marshall Islands thanks you. I thank you.

I request that my statement be attached to the Committee's report.

Kommol tata."

Statement by the delegation of Mexico

"Gracias Señor presidente,

Señor Secretario, distinguidos delegados, Ministros, colegas,

Felicidades al Comité, al Secretariado y a todos los colegas que pasaron largas horas discutiendo y negociando el documento que acabamos de aprobar. Agradecemos al Señor Oftedal su paciencia y sabiduría para conducir al grupo.

La estrategia revisada contenida en el WP12 es la muestra de la importancia que revisten los foros multilaterales. Lograr consensos no es fácil, implica identificar puntos de encuentro y atender, en la medida de lo posible las necesidades de todos, implica compañerismo y sensibilidad para lograr balances finos como el que tenemos frente a nosotros hoy.

La Organización Marítima Internacional es un foro multilateral especializado que contribuye con la implementación de la Agenda 2030 y sus ODS.

México privilegia los acuerdos negociados y de buena fe, estamos orgullosos de la tarea que hemos logrado en esta 80 sesión del MEPC y seguiremos comprometidos para continuar con las tareas aún pendientes detalladas en el punto 6 del anexo 1 del WP12.

Damos la bienvenida y agradecemos la contribución que acaba de anunciar el Reino Unido.

Y como dicen nuestros hermanos del sur del continente latinoamericano: la seguimos.

Gracias Señor Presidente."

Statement by the delegation of Panama

"Muchas gracias Sr. Presidente, vamos a ser breve, porque el resto es historia.

Buenos días Secretario General, Ministros, Embajadores, distinguido delegados en este plenario y buenas tardes y noche a todos los que nos siguen de manera virtual. Aprovecho esta oportunidad para felicitar a las Islas Salomón por su día de independencia.

Primeramente, permítanos agradecerle a usted, al secretario general por el seguimiento día y noche, al Director de la Division del Medio Marino, Arsenio Dominguez y a su equipo de trabajo, al Presidente del grupo de trabajo, Sr. Oftedal y no quiero dejar de reconocer el trabajo realizado por el Sr. Bruno de la distinguida delegación de Brasil por la coordinación y lograr unir a todos los países de todas las regiones en una sola mesa así como también a todas las delegaciones por la tremenda labor realizada y por la buena disposición demostrada durante estas dos semanas de negociaciones, la cual nos llevó a lograr un consenso y adoptar la Estrategia en el día de hoy, lo que sin duda alguna representa un momento histórico para la industria marítima.

La República de Panamá reafirma su compromiso una vez más para continuar colaborando con la industria y los Estados Miembros en el diseño de las medidas que formaran parte de la cesta de medidas para lograr los objetivos acordados en la Estrategia. La adopción de esta Estrategia solo es un paso y aún nos falta mucho por hacer por lo que exhortamos a los Estados miembros y organizaciones internacionales a continuar colaborando constructivamente en la futura labor de esta Organización.

Hoy aceptamos un reto y la robustez de la cesta de medidas garantizara que se logre reducir significativamente las emisiones de gases de efecto invernadero procedentes del transporte marítimo internacional y contribuir a la lucha contra el cambio climático.

Mantener vivo el 1.5 requerirá de la colaboración conjunta tanto del sector público como el privado, del desbloqueo de las inversiones para la producción de combustibles alternativos y el desarrollo y despliegue de tecnologías de cero emisiones, por lo que hemos enviado una señal clara a los productores de combustibles con la adopción de un objetivo para 2030 para incentivar el uso de energías mas limpias.

Para finalizar, Sr. Presidente, agradecemos al Reino Unido por su aporte financiero y a la industria por su compromiso y las iniciativas que han estado promoviendo para descarbonizar el sector.

Gracias Presidente."

Statement by the delegation of Palau

"Secretary-General ,Ministers , distinguish colleagues,

First let me congratulate to the Solomon Island for the Independence day.

Sir, also this delegation as others , wants to emphasize the great result achieved which is the result of patience, intelligence, spirit of cooperation, mutual support and open dialogue shown by all the participants (member states and IMO Secretariat) in this meeting and in the Working Group on GHG who, with a great spirit of service , have demonstrated high negotiation skills for a common horizon regarding the revised Strategy on reduction of GHG emission from ships

Collaboration and mutual support have found their highest level of expression in this brilliant result achieved.

Now we have to work all together as a team for make the decisions made effective and practicable for the future of all.

I believe these days will be remembered as a great achievement that we can all be proud of.

Last but not least let me congratulate to (the man on my right side) Mr Oftedal from Norway and the team of the Environment Division for the dedication made on this matter.

Thank you Chair"

Statement by the delegation of Peru

"Muchas gracias, señor Presidente.

Felicidades a Islas Salomón en su Día Nacional.

En esta década crítica para lucha contra el cambio climático, el Perú saluda el espíritu de solidaridad y buena fe con el que hemos alcanzado un consenso amplio y significativo para la adopción de nuestra Estrategia 2023.

La Estrategia constituye un hito histórico para el transporte marítimo internacional y presenta una meta ambiciosa de alcanzar la neutralidad de carbono, coherente con la meta de temperatura de largo plazo del Acuerdo de París, y ofrece una trayectoria de referencia para la industria y los Estados.

Asimismo, los términos de la Estrategia y sus anexos son coherentes con una transición justa y equitativa y la consideración de los medios de implementación necesarios para abordar los potenciales efectos desproporcionadamente adversos sobre los Estados en desarrollo, en el marco del principio de las "responsabilidades comunes pero diferenciadas según sus respectivas capacidades".

Finalmente, el Perú desea reiterar su gratitud con el señor Sveinung Oftedal por su liderazgo, con la Secretaría y el equipo del señor Arsenio Domínguez por su arduo trabajo y dedicación, y con todos los delegados cuyos esfuerzos y compromiso nos condujeron a este significativo logro.

Agradeceré que esta declaración sea incluida en el Informe Final de este periodo de sesiones del Comité.

Muchas gracias."

Statement by the delegation of Philippines

"Mr. Chairman,

Allow me at the outset to express our sincere appreciation to Mr. Oftedal for ably steering the Intersessional Working Group on Reduction of Greenhouse Gas Emission from Ships. We thank all the participants of the Working Group and the Secretariat for the work done. And we thank you Chair, for guiding us in this historic endeavour.

Seafarers are at the heart of the shipping industry.

In the pandemic, they kept the global supply chain open with the world heavily reliant on more than 80% of trade by volume, including food, vaccines, medical supplies and raw materials being transported by sea. They remained an invisible workforce and their massive contribution to the global trade has been largely overlooked and unrecognized.

As we recover from the pandemic and shape a sustainable future, let us not forget this invisible people. They are also key to the success of the decarbonization goals of the IMO. We may talk about vision, objective, levels of ambition and measures to reduce greenhouse gas emissions from shipping; but at the end of the day the seafarers will be operating and managing the ships. They have a vital role in adopting and carrying out sustainable shipping practices. And yet, as we gather this week to revise the IMO Initial Strategy to reduce greenhouse gas emissions, it is appalling that there is scant mention of seafarers in the draft document. Some are even reluctant to include mention of *human element* in the Guiding Principles. It is ironic that we talk about a just and equitable transition of the shipping industry to a green economy, leaving no country behind, when we leave the industry´s workforce, the seafarers, in the lurch.

Perhaps in the future there will no places but for a few if any seafarers. But we beg the industry to consider that, but for the grace of God and seafarers, the maritime industry would not stand on the brink of that future as it does today let alone achieve the greenhouse goals the IMO is boldly adopting. Seafaring may one day bid a final farewell to the noblest and oldest human occupation; without which the world would never be connected—and we would not be here considering these measures. But until then consider they are not disposable tissue. In our time and the foreseeable future, they are indispensable. Treat them accordingly. We therefore appeal for the reinstatement of paragraph 5.5 concerning human element to 3.5 in the Working Paper.

Climate change affects all countries albeit in varying degrees.

The Philippines is one of the most vulnerable to climate calamities. So, we are keen to see the long-term temperature goal of the Paris Agreement achieved. At the end of this week, we hope for the adoption of a revised IMO Strategy to reduce GHG emissions from ships; but in a balanced, feasible, pragmatic, and grateful way. One that would enable developing countries to balance commitments in the Paris Agreement with the imperative of sustainable development. One that will enable them to meet their obligations yet provide for the basic needs of their peoples while securing climate justice and energy security for all—and not just a fortunate few. In the pandemic, Manila Bay was packed with stranded shipping with thousands of marooned seafarers on them; we found a way to safely disembark and send them on their home countries and called it "green lanes" because fighting climate change is not for a planet without people.

We will comply with the IMO's decarbonization goals. But it will not be easy. We are cognizant that reduction measures will disproportionately affect most but a comparatively few states who advanced by carbon. We will be burdened with financial constraints to construct port infrastructure for bunkering service of compliant fuel oils. We will need to equip our workforce with necessary skills to handle new technology and new alternative fuels, onboard new types of ships. With 580,000 certificated Filipino seafarers, we need to ensure the competence of our seafarers serving the international merchant fleet. There will be need for capacity building. These may be addressed by revenue from market-based measures, subject to deeper deliberation on management of funds and revenue utilization. We cannot overemphasize the need for adequate, predictable, and sustainable sources of financing to strengthen the ability of countries like ours to cope with the challenges posed by the shipping industry´s transition to a green economy.

Our President, His Excellency Ferdinand R. Marcos Jr, said of climate change at the 77th UN General Assembly that there is no other problem so global in character that it requires a globally united effort. Thank you."

Statement by the delegation of Spain

"El camino hacia 2050 empieza hoy a cobrar mucho más sentido gracias a la nueva ambición acordada en la estrategia de 2023 de la OMI sobre la reducción de las emisiones de GEI procedentes de los buques.

Este acuerdo constituye un hito histórico para garantizar que el transporte marítimo internacional contribuya de forma equitativa a la consecución del objetivo de temperatura del Acuerdo de París.

El objetivo de 2050 para alcanzar las cero emisiones netas supone un enorme aumento del nivel de ambición en comparación con la actual estrategia de 2018, y junto al camino marcado por los puntos de comprobación indicativos a 2030 y 2040, permiten a la OMI aplicar una trayectoria coherente con el objetivo de la temperatura del Acuerdo de Paris.

El objetivo para aumentar la adopción de fuentes de energía, combustibles y/o tecnologías de emisiones nulas o casi nulas de GEI pondrá en marcha la transición enviando una señal clara a las industrias marítima y del combustible.

Destacamos igualmente, el consenso logrado en relación con las medidas de seguimiento y sobre la necesidad de adoptar las medidas de aplicación de los objetivos en 2025 sobre la base de una evaluación amplia de las repercusiones que garantice que se reduzcan eficazmente las emisiones del sector, contribuyendo al mismo tiempo a la igualdad de condiciones y a una transición justa y equitativa.

España acoge con enorme satisfacción todo el conjunto de elementos que se derivan de la estrategia de 2023 y reitera su compromiso y disposición a seguir colaborando con todos los estados miembros de la OMI, así como todas las partes interesadas de la industria para poner en marcha la transición del sector marítimo aplicando una trayectoria coherente con el objetivo de temperatura del Acuerdo de Paris y por lo tanto apoyamos decididamente la adopción de la estrategia de 2023 de la OMI sobre GEI.

No quisiéramos finalizar nuestra intervención sin reconocer el enorme esfuerzo realizado por todos los Estados Miembros, sin el cual este acuerdo no hubiera sido posible. El espíritu de compromiso no tiene precedentes y constituye la clave para continuar con nuestra labor en el futuro.

Nuestra más sincera felicitación a todos los que forman parte de esta Organización, a la Secretaría en su conjunto, a usted señor presidente, y al señor Oftedal como presidente del grupo de trabajo por su encomiable labor una vez más.

Solicitamos por último que esta declaración se adjunte como anexo al informe final del MEPC.

Muchas gracias."

Statement by the delegation of Tuvalu

"Thank you Chair,

And good morning/afternoon to Ministers, Excellencies and all distinguished delegates.
It is only a few days since I spoke at the start of the week, urging us all to be courageous and bold. We had high hopes that we would be able to adopt a Revised Strategy this week which without any doubt was truly setting shipping on a 1.5 aligned transition. So we are very disappointed that we have ended up with a Strategy that falls short of what we needed.

But we are also realistic and understand that to reach any chance of setting this critical sector in the right direction, we needed to compromise. We also understand that many countries, and especially developing countries from the global south, have also had to make significant compromises. And we are truly appreciative of the major concessions they have made in order to get us to this point, so that we are able to adopt a Revised Strategy that, as the Chair of our Working Group has so often reminded us, none of us are happy with, because this is about us all having to compromise.

Chair, Tuvalu is amongst the first nations in the world that is at risk of being entirely inundated as a result of climate change. And so I hope that all here can work with us collaboratively with openness and with co-operation moving forwards to assess and adopt the measures that will see emissions from shipping peak and then start to decline as soon as possible.

As a nation that is entirely reliant on international shipping, we understand that the cost and impacts of this transition is something we all need to carefully consider. But we are also confident in the shipping industry's ability to change. We have seen it before. We are confident that the industry will now prioritize its efforts - and its capital - into decarbonizing. In fact, we expect it to.

Tuvalu looks forward to working with all member states and delegates from the industry and civil society in a collaborative manner that is truly inclusive and transparent, that will see shipping stepping up to the plate and fulfil its responsibilities to reduce emissions. We are hopeful that the Strategy that we adopt today sends the signals needed to ensure that this happens with the urgency the climate crisis dictates.

Finally Chair, I wanted to reiterate my thanks to Latin America and the developing countries in the global south for the spirit of compromise they have shown this week. I am sure they equally appreciate the huge concessions that we, the climate most vulnerable, have also made for this Committee to now be able to adopt this Revised Strategy.

Thank you, Chair"

Statement by the delegation of United Kingdom

"At the start of the week the United Kingdom stressed the need for action in this Organization in response to the overwhelming and unequivocal climate science which demands our leadership in setting a bold and ambitious 2023 IMO GHG Strategy.

As we come towards the end of the week and have before us the Revised Strategy, the UK whole heartedly supports its adoption.

We commend the Secretary-General, the Secretariat, the Chair of the Working Group and our colleagues and friends from across the globe.

Once again, the IMO's unwavering spirit of cooperation and leadership has led us to a Strategy we should all be proud of.

The 2023 IMO GHG Strategy will send a powerful signal to the sector that the transition to zero emission shipping begins today. It will set out a pathway for shipping that keeps 1.5 degrees within reach, with checkpoints encouraging deep cuts in emissions in the 2030s as shipping strives for an 80% emissions reduction by 2040.

Chair, we must of course celebrate what we have achieved, collectively, here today. We must also recognize the real work is only just beginning. We will now work together on the development of mid-term measures on an ambitious timeline and the Comprehensive Impact Assessment. This will continue the momentum from this MEPC as we progress the development of regulatory measures that leave no one behind.

Looking at the Strategy as a whole we should all leave this pivotal MEPC in the knowledge we delivered. We have arrived at an inclusive Strategy that clearly communicates to the outside world the journey ahead for shipping, providing the signal to unlock investment into zero and near zero fuels and technologies, while also ensuring our sector plays its part towards our Paris Agreement commitments.

Thank you, Chair"

Statement by the delegation of United Arab Emirates

"On behalf of our delegation, the United Arab Emirates wishes to express our sincere congratulation to the delegation of the Solomon Islands for their Independence Day.

Let me also congratulate Mr. Sveinung Oftedal of Norway for his excellent work in steering so far 15 meetings of the Intersessional Working Group and many meetings of WG established during MEPC sessions on the development of a GHG reduction Strategy. We also extend our sincere thanks and appreciation to the Secretariat in the marine environment division for their dedication and support to this work. Special thanks to all Member States for their cooperative, productive and constructive engagement that made this historic achievement possible. UAE would also thank all NGO’s who has been part of this process for their significant contributions and advise.

Mr. Chair, we have been together throughout this journey. The actual work to respond to climate change began in 1997 when IMO adopted MARPOL annex 6 – and we continued since then. 2018 marked the first key step towards the reduction of GHG from ship by the adopting of the Initial Strategy in 2018 followed by the short term measure and many supportive actions.

Throughout our work, a balance between socio-economic growth and environmental sustainability was taken into account in order to avoid potential disruption to shipping operations and trade which in support to the economic growth and prosperity of nations around the globe on one hand, and achieving the decarbonization from shipping on the other.

Today, we collectively mark another successful milestone by unanimously adopting the 2023 Strategy. This is a continuation work which contributes towards the global efforts in addressing the climate change. Every ending is also a new beginning, one journey ends and another begins towards our ambitious target of 2050.

As mentioned by the distinguished delegation of Singapore that shipping demonstrated its progress to address the 3% emissions from shipping, However, there is still work to be done to the remaining 97% from other sectors. Having said that, and as you may know that UAE is hosting the 28th Conference of the Parties (COP 28) to the United Nations Framework Convention on Climate Change (UNFCCC) from 30th November to 12 December 2023. COP 28 will serve as a global political, economic, scientific and social platform to achieve commitments to reduce the impact of climate change through negotiations and to assess the progress in climate action.

The UAE is approaching COP 28 with a strong sense of responsibility to move from ambition to real action. Thus, making COP 28 a COP of ambitious, innovative, future-focused with concrete outcomes and practical solutions. We look forward to welcoming you to COP 28."

Statement by the delegation of United States

"Thank you, Chair.

First, we would like to thank the Chair of ISWG-GHG for his leadership and the Secretariat for its tireless support.

The United States also would like to thank Member States for their constructiveness and for their hard work. We appreciate in particular the efforts of States that worked together, across delegations, to identify landing zones.

This Revised Strategy not only achieves consensus but constitutes a strong contribution from the shipping sector as we work to keep the 1.5-degree goal within reach.

We have collectively agreed to accelerate our work to decarbonize the shipping sector from the end of the century to by or close to 2050, sending a clear signal to all stakeholders that we need to take decisive action.

We have recognized the need to take into account the full lifecycle of greenhouse gas emissions of all marine fuels, as a zero-emission future for shipping should not come at the cost of increased emissions upstream.

We have included a new level of ambition, to increase the uptake of zero- and near-zero GHG emission fuels and technologies by at least 5% and striving for 10% by 2030. Our strategy now speaks not only to our sector, but to others across the shipping supply chain, to ensure that we have the necessary technology to deliver on our ambition.

And we also have included indicative checkpoints that will map a clear trajectory of emissions reductions – 20 percent striving for 30 percent by 2030, and 70 percent striving for 80 by 2040 – that are ambitious and also feasible.

For the record, we would like to reiterate our objection to the section in the Initial Strategy, and repeated in this Revised Strategy, that references the Kyoto Protocol. We will send in that objection for the report.

Finally, Chair, we look forward to working with all other Member States – building on the spirit of trust and cooperation that we have developed this week – on the important work that lies ahead of us: The development of ambitious measures that help us deliver on our collective goal.

Thank you, Chair.

Objection to 3.5.1.2

With regard to paragraph 3.5 of the 2023 Strategy, in the Guiding Principles section, the United States recalls its statement in 2018 concerning the corresponding paragraph of the Initial GHG Strategy, i.e., paragraph 3.2. In line with that earlier statement, we object to the reference to the principle of common but differentiated responsibilities and respective capabilities, in the light of different national circumstances. This Organization has always operated under the principles of non-discrimination and no more favorable treatment. The Strategy must similarly follow those principles. As Paragraph 3.5.1.1 makes clear, any measures adopted in furtherance of this 2023 Strategy must apply equally to all ships operating internationally, regardless of flag. Paragraph 3.5, specifically 3.5.1.1.2, includes a principle that does not apply in this Organization; it cannot override or diminish the principles of this Organization. Neither that paragraph nor paragraphs 4.10 to 4.14 in section 4 on the section on impacts on states, can be used to suggest this Organization can take action that would be discriminatory. We will work tirelessly to ensure any future actions taken by this Organization are non-discriminatory."

Statement by the delegation of Vanuatu

"Thank you Chair, and good morning Ministers, Excellencies and all distinguished delegates.

Vanuatu would like to echo others in saying how much we appreciate the openness of other delegations to listen to what we have had to say, and their willingness to engage in dialogue.

However, I have also to say that some of the informal meetings last week should have been much more open and inclusive, given that the outcomes of those meetings led us to what we have in front of us today. With that being said, we are grateful for the flexibility shown by all delegations, particularly those from the Global South, to work together to achieve the result that is in front of us today.

As this is my first time to participate in an IMO MEPC meeting, it strikes me that there needs to be greater transparency and open decision-making moving forward in this house. We need a fair decision-making process that enables all member states to participate. That of course requires ensuring financial support to those delegations who need it, so they can attend the meetings. But it also requires ensuring that when 'small groups' meet informally to develop text that goes forward as the base text for the wider group to consider, there must be a true representation of all spectrums of interest and concerns in that small group.

Sir, we have not ended up with a Revised Strategy that guarantees us that shipping is on course for a 1.5 degree-aligned transition. That is because we have a process which is not based on science, but political compromise, and a need for us all to reach consensus. But we know that the Strategy itself is not what will reduce the emissions, it is the measures that will do that. That is why it is so essential that we now focus on developing and adopting a universal mandatory GHG levy and a global fuel standard.

Vanuatu urges all member states to ensure UNCTAD has the support necessary to undertake the comprehensive impact assessment and to bring their findings to us as soon as they can. We cannot afford a stretched-out lengthy process, as the climate most vulnerable do not have time. In fact, given the alarming media reports I have seen this week on global temperatures smashing all historic records, none us have time. Vanuatu would like to urge this Committee to establish the steering committee to oversee the CIA, so that the levy and fuel standard can be adopted as soon as possible.

We are confident that when this Revised Strategy comes up for review, that this house will be revising the levels of ambition upwards. We are hopeful that the industry has sufficient guidance to now embark on its transition to the 1.5 degree future we all need.

Finally, Chair, I would like to express my thanks to all delegations who have been willing to meet and express frankly their views and concerns. Open and frank dialogue is essential to us moving forwards collectively. We appreciate the compromises made by all delegations, and in particular the global south, who have all made significant compromises so that we have been able to agree a Revised Strategy that sets us on the path towards 1.5 degrees.

Thank you, Chair, and I would like to have this statement attached to the report of this Committee."

Statement by the delegation of Venezuela (Bolivarian Republic)

"Gracias Señor Presidente

Mi delegación toma hoy la palabra para agradecer, a usted, por su liderazgo; al señor Oftedal, Presidente de nuestro Grupo, por su paciencia y buen juicio; a la Secretaría, que estuvo presente, incansable, acompañándonos y a todas las delegaciones aquí presentes, porque hay que reconocer el espíritu de solidaridad entre nosotros, que finalmente fue la base para alcanzar el consenso.

Señor Presidente,

Venezuela es un país en desarrollo abierto al mar, con una frontera marítima extensa que limita con un numero considerable de países, entre ellos Francia, Estados Unidos y Países Bajos. Su comercio se hace por mar y hacia mercados distantes. Venezuela depende del transporte marítimo, y este perfil de país que muchos aquí compartimos, ha marcado la posición de mi delegación en el desarrollo de las negociaciones; una posición fundamentada en el principio CBDR-RC y en la convicción de que las medidas que acordemos deben estar vinculadas a una evaluación integral de su impacto sobre los Estados. No la vamos a repetir aquí, la hemos dejado suficientemente clara en estos días, pero sí queremos reiterar nuestro compromiso con esta Organización para construir de la mejor manera, a partir de realidades distintas, un propósito colectivo, una respuesta de todos que nos permita contribuir de manera efectiva y realista a la lucha contra la crisis climática.

Como dijo el señor Oftedal ayer, al concluir la reunión, más que un gran Acuerdo; hemos alcanzado un nuevo nivel de entendimiento y de cooperación entre nosotros y eso nos va a servir para el camino que nos falta por andar. Y es verdad, hemos dado un gran paso, pero solo es el primero. Presidente, Venezuela está dispuesta a avanzar en la difícil tarea que tenemos delante de nosotros.

Mi delegación agradece que esta intervención se incluya en el informe final.

Muchas Gracias"

Statement by the observer from ICS

"Thank you for permitting the shipping industry to speak, and I will seek to complement rather duplicate the many positive statements from Governments.

ICS sincerely congratulates you Mr Chairman and all IMO Member States, as well as the Working Group and its indefatigable Chairman, Mr Oftedal.

ICS greatly welcomes this ambitious and historic agreement to achieve net-zero GHG emissions from international shipping – ICS having previously announced the industry's commitment to net-zero emissions by 2050 at the UN Climate Summit, in Glasgow, in 2021.

We are pleased by the clear reference in the 2023 Strategy to the year 2050 for net-zero GHG emissions, which gives a strong direction of travel to the shipping industry and, most importantly, to energy and fuel producers, who need to rapidly supply zero GHG marine fuels in very large quantities if such a rapid transition is to be possible.

However, we note that the checkpoints which have been agreed for 2030 and 2040 are extremely ambitious – 20% to 30% absolute GHG emissions reduction by the sector by 2030 compared to 2008 and 70% to 80% absolute reduction by 2040. The industry will do everything possible to achieve this, but the 2040 goal is less than 17 years away and the availability of the alternative marine fuels that will be required is currently virtually zero.

ICS therefore wishes to emphasise that such an ambitious checkpoint for 2040 can probably only be achieved if IMO rapidly adopts a global levy on ships' GHG emissions to support, as proposed by ICS, a 'fund and reward (feebate)' mechanism that will reduce the cost gap and incentivise the accelerated production and uptake of zero GHG fuels.

Unless governments help shipping reach a take-off point by around 2030, which means IMO must adopt by 2025 the levy-based measure on GHG emissions which we need to reduce the cost gap, we fear that the extremely ambitious goals which IMO has set for shipping for 2040 may not remain plausible.

While a majority of governments now support a levy for shipping involving flat rate contributions to an IMO fund, we are disappointed it was not possible for the Committee to agree this week that such as measure should be prioritized for finalization, although we acknowledge concerns among some Member State about the economic impacts, although we believe that if a levy-based measure is designed correctly that disproportionate negative impacts can be avoided.

But we are pleased that a levy and the ICS 'fund and reward' proposal remain firmly on the table, and will be subject to a comprehensive assessment by UNCTAD of the economic impacts on States, alongside other proposals, to be completed by early next year.

Finally, ICS is pleased to advise that to assist rapid progress on the comprehensive impact assessment, after this meeting ICS will be sending a cheque to IMO equivalent to 100,000 USD to the GHG-TC Trust Fund.

Finally, finally, Chairman, shipping industry leaders will gather for a major *Shaping the Future of Shipping Summit* in Dubai during COP 28 on 10 December, which we are hosting in cooperation with the UAE Government, and government representatives will be very welcome to join us.

Thank you - we will sent these remarks to the sec to be appended to the report."

Statement by the observer from FOEI

"Thank you Chair,

From the perspective of civil society we came with great expectations and wanted to see the highest possible ambition front and centre in the revised GHG Strategy.

We are deeply disappointed in that Parties have fallen short of achieving the level of ambition needed, to accelerate the just and equitable transition of the shipping sector, whilst securing our collective future, in particular the future of the many climate frontline communities, SIDS and LDCs.

We still remain concerned for the lack of ambition, and the lack of clarity shown in the strategy, notably that it does not quite align to the science-based 1.5°C reduction pathways. In fact the science would suggest that this would need a reduction of 50% by 2030 – and 100% by 2040. As research by CE Delft has shown, these targets are economically and technologically feasible.

We recognize however that today's agreement is one that reflects a pathway of collectively moving forward.

Recalling the words of the UN Secretary-General and the Executive Secretary of the UNFCCC at the start of the week to do all that we can, and recognizing that the science around what is happening in the world today is telling us that we have run out of time - we strongly urge all states to aim for the highest possible ambition in the delivery of the new Strategy and in delivering regional and national measures.

Mr Chair, we kindly request that this statement be attached to the report of this Committee.

Thank you."

Statement by the observer from CSC

"Sir, the IMO has this week moved on climate change. But in the week that delivered us the world's hottest day ever, for sure it hasn't moved fast enough. This agreement could and should have been reached twenty years ago. We knew then the dangers of global heating and then as now we had the means to meet the levels of ambition. But back then Sir these levels of ambition could have set shipping off on a safe 1.5°C pathway. That is not the case today.

Every year a big slice of the 1.5°C carbon budget is consumed and the shipping industry's room for manoeuvre shrinks. Right now, the industry is gobbling up around 10% of its 1.5°C carbon budget annually, and time is running out and running out fast. By some calculations if emissions fall in line with this agreement the 1.5°C budget will be spent by 2032.

Of course, it is always better late than never, but what you have agreed does not go far enough and is definitely not a 1.5°C pathway. But it is more ambitious than it looked like it might be on Thursday morning and we are grateful to those that took a stand at the last minute to improve the agreement's indicative checkpoints.

Sir we understand the limitations of multilateral processes but that does not absolve the IMO of its responsibility to ensure that international shipping urgently stops contributing to the climate crisis. Some progress has been made this week but much more remains to be done and we hope that what we have seen here this week is the beginning of a process that will see the IMO quickly align its work with a good chance of keeping global heating below 1.5°C.

In the meantime we would encourage progressive states to implement complementary local, national or regional regulations in the pursuit of emission reductions from this sector. Every tonne of CO_2 counts and we have no time to lose.

Finally Sir, let's stop all this ridiculous talk about shipping being a hard to abate sector. You have all the wind in the world. A limitless, free and entirely non-polluting resource that you are uniquely placed to exploit."

Statement by the observer from Inuit Circumpolar Council

"Thank you Chair.

Inuit and other Indigenous Peoples worldwide, have a direct, profound and spiritual relationship with our collective global ocean, coastal seas and the marine environment as a whole. – Inuit also have inherent rights to these regions and resources as affirmed in the UN Declaration on the Rights of Indigenous Peoples and other international human rights instruments.

Inuit share these values with many SIDS and LDCs. Our communities, both in the Arctic and in the Pacific, are on the front lines of the climate crisis. A crisis that is not our doing.

The revision of the IMO's GHG reduction strategy must be in line with 1.5 degrees, and must compel states and shipping operators to act quickly. The agreement reached this week isn't aligned with 1.5 degrees and doesn't establish a strong and significant absolute 2030 target, such as halving emissions by 2030. With Inuit Arctic homeland disappearing before our eyes, deep reductions are imperative and Inuit Circumpolar Council urges states and the global maritime community to go beyond what was agreed this week.

Indigenous Knowledge must be considered and included when assessing impacts, whether from climate change on communities or economic impacts from measures to decarbonize the sector. SIDS, LDCs and Inuit this week have stressed an equitable transition that would leave no one left behind. IMO members must include Indigenous Peoples in their considerations of this, and don't leave us behind."

Statement by the observer from IWSA

"Congratulations to the Solomon Islands on their independence day, and a happy International Peace and Love day to one and all.

We would like to add our thanks to all of the Secretariat staff for all of their hard work over these last two weeks.

We recognize that there have been some very difficult compromises made over the last two weeks, notably the two hottest weeks globally recorded in the past 40 years. While we all know that this agreement isn't 1.5°C aligned, it is still a milestone on the way to delivering on a high ambition decarbonization pathway for the industry, but just as many delegations have stated, it is only the first milestone.

Of course, binding interim targets would add much more certainty for the industry and for investors to move, however the use of indicative checkpoints in their place has been agreed and striving for, or even exceeding, the top end of those will be critical to keeping 1.5°C alive.

The next and probably the most important milestone will be an agreement on ambitious and robust technical and economic measures without which we will not be able to deliver. The International Windship Association will be fully engaged with the development of these measures. Wind propulsion technologies offer proven and substantial decarbonization benefits, available for immediate deployment and our members are committed to continuing to push forward with the scaling of that deployment and with their expansion of production capacity. This will be their ongoing contribution to delivering a just, fair, equitable and the highest emission reduction transition possible.

Thank you Chair."

ITEM 9

Statement by the delegation of Norway

"Thank you, Mr Chair,

First, Norway would like to congratulate the IMO for having adopted the revised Biofouling Guidelines. This is an important step to reduce biofouling and prevent the spread of invsive aquatic species.

We look forward to continue our collaboration with other member states in the development of the necessary standards to assist the implementation and uptake of the Guidelines.

Nationally, we have recent examples of introduction of invasive species. We know how harmful this can be to the existing ecosystems. Norway is therefor currently working to introduce a national framework to minimize biofouling and spread of invasive species based on the IMO Guidelines.

The work on control and management of ships biofouling to minimize the transfer of invasive aquatic species is also an important contribution to following up on the Kunming-Montreal Global Biodiversity framework agreed last year, in particular its Global target number 6 on reducing threats to biodiversity through the spread of invasive species.

On this background, we believe that it is now time for the IMO to start work on a mandatory framework for reduction of biofouling and hindering of further spread of invasive aquatic species. We look forward to continued cooperation with all colleagues to this end.

Thank you, Mr Chair."

ITEM 11

Statement by the delegation of Italy

"On behalf of the co-sponsors countries of the Particularly Sensitive Sea Area in the North-Western Mediterranean Sea, Spain, France, and Monaco, we would like to express our delight at the adoption of the resolution as reported in annex 1 of Mepc 80 wp10, which represents a significant step forward in marine and coastal protection.

This adoption concludes an extensive cycle of work started in 2020 carried out by France, Italy, Monaco and Spain, through international and national consultations, in particular with stakeholders and within the IMO.

The PSSA in the North-Western Mediterranean Sea is an area of utmost importance for shipping as well as for cetaceans, encompassing the whole Pelagos Sanctuary for Marine Mammals and the Mediterranean Cetaceans Corridor.

Therefore, the adoption of the PSSA will improve the protection of cetaceans against the risk of collisions with ships in this area of crucial importance for marine biodiversity by implementing the approved associated protective measures (speed reduction, appropriate safety distances, broadcast of the position of medium and large cetaceans observed and reporting of all collisions).

These voluntary protective measures will significantly limit the probability of collisions as well as of fatal ship strikes in case of impacts between ships and large and medium cetaceans and will address other ship-generated pollution to protect the marine and coastal environment in the area.

The speed reduction measure will also be beneficial for environmental sustainability, contributing to the achievement of low-carbon objectives and to the reduction of air pollutants.

Mr Chair, acknowledging the relevance of the regional dimension and cooperation, France, Italy, Monaco, and Spain will continue to collaborate to ensure the appropriate application of the associated protective measures within the PSSA and to create synergies on prospective protection measures that could further contribute to the protection of our ocean and seas.

Finally, allow me to thank all countries and all the experts engaged in this ambitious environmental achievement as well as the Secretariat for the support during the whole process of designation, in particular for the positive response to the output of the Maritime Safety Committee 107 which invited MEPC 80 to finalize the approval of the Associated Protected Measures within the PSSA as an urgent matter.

Thank you!"

Statement by the delegation of France

"Monsieur le président,

Merci de me donner la parole.

Le document MEPC 80-INF 26 déposé par l'île Maurice, relatif à son intention de créer une Zone maritime particulièrement vulnérable (ZMPV) , comporte une carte en annexe qui intègre l'île de Tromelin dans les eaux sous juridiction de l'île Maurice.

Monsieur le président,

La délégation française souhaite rappeler ici que l'île de Tromelin est un territoire sur lequel la France exerce une pleine souveraineté. En conséquence, la carte versée devant le MEPC pour information par l'Ile Maurice sur les ZMPV ne reflète pas la réalité cartographique des espaces maritimes situés autour de cette île, et ne respecte pas la ZEE française en laissant supposer que la ZEE et l'île relèveraient de la juridiction et de la souveraineté Mauriciennes. Ce document ne saurait avoir la moindre valeur juridique s'agissant d'une soumission purement informative.

De plus, les enceintes multilatérales et les comités de l'OMI ne sont pas les lieux appropriés pour soulever des questions de souveraineté nationale. Enfin permettez-moi d'ajouter que la France entretient un dialogue avec l'Ile Maurice sur ce sujet.

Je souhaite que cette déclaration soit annexée au rapport de notre comité.

Merci Monsieur le président."

ITEM 12

Statement by the delegation of Ukraine

"Mr. Chair,

The delegation of Ukraine would like to express its gratitude to the I MO Secretariat for its efforts in providing technical support to the I MO Member States to facilitate the accession, ratification and implementation of various instruments adopted under the auspices of our Organization.

We highly commend the report of the Secretariat on the activities carried out during the previous biennium (MEPC 80/12) and the proposed thematic priorities of the Integrated Technical Cooperation Program for 2024-2025. Let me elaborate on several of them:

1) GHG emissions from ships

Proceeding from the importance of the issue of reducing greenhouse gas emissions from ships and the ongoing consultation on the revision of the relevant IMO Strategy, which we hope will be successfully concluded this week, this delegation believes that the I MO should support Member States in adapting national plans to reduce greenhouse gas emissions from ships that among other things, it should focus on establishing cooperation between key stakeholders on this issue.

In this regard, the delegation of Ukraine proposes to organize a regional seminar related to reducing GHG emissions from ships, as an option in a hybrid format. We would like to emphasize that Ukrainian experts have experience in conducting studies of emissions from ship internal combustion engines, as well as in identifying the properties of various types of fuel, in particular, those that have not yet been used on ships or with little-studied properties. We are ready to offer a study of the greenhouse emissions of marine internal combustion engines when using different types and grades of fuel to find out the safest for personnel and the environment.

At the moment, Odesa National Maritime University in cooperation with German and Polish partners carries out a project aimed at contributing to the improvement of the efficiency of the operation of marine engines (main and auxiliary) and, accordingly, to the acceleration of the decarbonization of the marine fleet. This is achieved due to effective non-destructive control of work processes and optimization of engine operating modes and their subsystems. You can familiarize yourself with this project by looking at the 80th MEPC Virtual Portal section.

2) Ballast Water Management

Being among the 6 pilot countries of the GloBallast program, Ukraine was one of the first to implement special requirements for ship ballast and is currently taking measures to finalize the internal procedures necessary for the ratification of the BWM Convention.

Therefore, we would be interested in organizing a training course to increase the awareness, knowledge and skills of the participants on the relevant aspects of the BWM Convention, which would speed up its further effective implementation, contribute to the application of the relevant IMO Manual, as well as expand the network of experts on these issues.

3) Cooperation in marine pollution preparedness

Russia's attacks on commercial ships, which resulted in oil spills, and the recent destruction of the Kakhovka HPP proved the necessity of increasing cooperation among the coastal states in the Black Sea region in order to improve the preparedness to deal with these disasters. Currently, there is a need to prevent the negative impact of the above terrorist act on the marine environment and to take special measures to:

clean up the pollution of the northwestern part of the Black Sea; fully assess the damage caused not only to Ukrainian territorial waters but also to other coastal states and the Black Sea in general; develop the scientific basis for the restoration of the Black Sea ecosystem; eliminate the pollution as such and its consequences; restore the functioning of the maritime complex and revive ecosystem.

Ukraine suggests organizing an International or regional seminar on the problem mentioned above with the aim of improving the coordination in prevention and response to pollution by hazardous substances and provision of assistance to those states that are in the process of joining or implementing the OPRC Convention and the OPRC-HNS Protocol.

We also call on partner states, as well as the IMO and other international organizations, to get involved in this process and would be grateful for any help in eliminating the consequences of ecocide at the Kakhovka HPP.

Ukraine plans to present relevant proposals for consideration at the next session of the I MO Technical Cooperation Committee."

ITEM 16

Statement by the delegation of Sri Lanka

"Good afternoon,

Chair and Distinguished Delegates

We wish to draw the attention of the committee on the submission MEPC 80/16/3 which calls for establishment of a new traffic separation scheme south of Sri Lanka. As we pointed out during the adoption of the agenda on 03 July, Sri Lanka disagrees with the consideration of this subject at the MEPC as Sri Lanka categorically rejects the content of the document.

As per SOLAS Chapter V regulation 10, ensuring the safety of navigation in congested sea areas is the prime responsibility of the coastal state concerned. A TSS separates opposing streams of traffic aiming to reduce the incidence of head-on encounters, reduces dangers of collision between crossing traffic and simplifies the patterns of traffic flow, especially in the converging areas such as South of Sri Lanka.

Availability of aids to navigation and state of hydrography survey in the area off Dondra head plays a key role in ensuring the safety of the ships. The existing aids to navigation in the southern part of Sri Lanka help mariners to determine their position with sufficient accuracy to navigate in the TSS.

When amending an existing TSS, the traffic pattern in the area shall not be affected and new system shall not demand further improvements or adjustments in the navigational aids or hydrographic surveys. Further, the routes should follow as nearly as possible to the existing traffic patterns in the area concerned. These facts indicate that the proposed new TSS which will be located outside the territorial waters, further south of Sri Lanka may make it difficult for ships to fix their position due to the added distances from the navigational aid and lack of hydrographic information.

Whale stranding records of the Government of Sri Lanka (GOSL) reveal that most of the carcasses were in the late stages of decay which indicated that the mortality may have taken place far away from the Sri Lankan coast but washed ashore in Sri Lanka. The incidents indicated in the document MEPC 80/16/3, based on various studies had not scientifically proven the cause of death of whales and the locations of collisions, as appropriate. Monitoring by photo identification of whales reveals that sign of injuries and/or recovered wounds are very rare.

So far, no comprehensive research studies have focused on risk of collisions between ships and whales off the coast of Sri Lanka. The Government authorities, research groups, and other relevant parties, are actively engaged in continuous monitoring efforts to protect marine mammals, including whales. GOSL is taking steps to undertake a comprehensive research study to identify the threats, safeguards and conservation actions.

Further to that the concerns rose in the proposal regarding the collisions between fishing vessels and ships within the existing TSS not supported with actual data. According to the records of the GOSL from 2019 to the date indicate 13 collisions of fishing vessels with ships around the coast of SL and none was recorded within or in the close proximity of the existing TSS. The data proves the effectiveness of the existing TSS which ensures the safety of navigation in this very busy shipping lane.

Mr. Chair, at a time when the MEPC 80 extensively discusses the reduction of Greenhouse gas (GHG) emission from ships, GOSL would like to state that the existing TSS provides the shortest distance for ships which trades between East and West and from Arabian sea to the Bay of Bengal and vice versa. Therefore, the existing TSS contributes to lower GHG emissions or the least contributions to climate change impacts.

The ports of Hambantota and Galle cater to many ships (about 750 vessels per month) which are serviced outside port limits (OPL), mainly in Galle. Shifting of the TSS will have a significant impact on these services and business continuity. The local boat and launch services will have longer travel times and associated costs contributing negatively to the planned development of the maritime economy and services.

Mr. Chair, the Government of Sri Lanka expresses its categorical objection to the proposal (MEPC80/16/3), calling for the creation of a new TSS by amending the existing TSS. As a responsible Member State of the organization, Sri Lanka is committed to adhering to the international regulations on the safety of navigation. The GOSL recognizes the significance of protecting the marine environment and conserving the whale population from potential ship collisions within the vicinity of the island. The GOSL remains actively engaged in the ongoing monitoring of whales and other marine mammals in the waters surrounding Sri Lanka, in close collaboration with various key stakeholder agencies.

Therefore, Chair, the GOSL categorically rejects the proposal in document MEPC 80/16/3 for the establishment of a new TSS and affirms to the Committee that GOSL shall continue to endeavour to monitor, review and take actions required to address the maritime safety and environmental concerns, if any.

Finally, GOSL requests the Chair to append this submission to the final report of the Committee, and to cease any further consideration of the matters raised in MEPC/80/16/3.

Thank You."

Statement by the observer from IWC

"The International Whaling Commission has been considering the issue of ship strike risks to the northern Indian Ocean blue whale population south of Sri Lanka for the last ten years. IWC considers this to be an area where mitigation measures are needed because of the high risk of collisions with whales. The Scientific Committee of the IWC has reviewed the scientific information over several years and made recommendations for ship routeing. These are now included in document MEPC 80/16/3, which if implemented would greatly improve the conservation of blue whales in the northern Indian Ocean."

Statement by the observer from WSC

"Thank you Mr Chair.

Document MEPC 80/16/3 highlights two issues that arise with the current Traffic Separation Scheme south of Sri Lanka. First, the TSS sits over a major marine feeding area for blue whales and is widely recognized as one of the highest risk ship-strike locations in the world. Secondly, tens of small fishing vessels operate across and around the TSS as these are highly productive waters. Numerous ship masters consider traveling through the TSS as highly risky due to the presence of so many small fishing and whale watching vessels.

The east-west traffic that sails south of Sri Lanka constitutes one of the largest trade lanes in the world. We also have a situation today where fully 1/3 of the east-west traffic now sails south of the existing TSS due to these risks.

In light of the above considerations, we would welcome the opportunity to work cooperatively with Sri Lanka to address this important matter. In this context, we encourage Sri Lanka and the IMO to work with industry and other interested parties to establish an additional TSS roughly 15nm south of the existing TSS. This action would result in largely alleviating the environmental and safety risks surrounding the current TSS and would offer an internationally defined traffic separation scheme for the sizeable and growing volume of ships sailing south.

Thank you Mr. Chair and we would kindly ask that this statement be appended to the report of the Committee."

Statement by the delegation of Ukraine

"Mr. Chair,

Ukraine shares grave concerns over the spread of uncontrolled ship-to-ship transfers of oil and other hazardous materials, in particular with the involvement of the so-called "dark fleet".

Recognizing the importance of preserving marine and shore ecosystems, this delegation emphasizes the urgent need to find effective solutions to strengthen regulations pertaining to such transfers.

We are of the opinion that flag and port states and potentially affected coastal states should play a vital role in establishing a strong deterrent against such illegal activities. Proactive measures should be taken to protect their marine environments and the wellbeing of their populations. This should also include robust legal frameworks, enhanced cooperation between law enforcement agencies, and the establishment of specialized units to investigate and prosecute offenders.

In view of the above, this delegation joined the co-sponsors of document MEPC 80/16/4 and fully supports the action items, including the draft Assembly resolution contained therein.

Mr. Chair,

Ukraine is also concerned about attempts to use the above practices to bypass international sanctions regimes, including those aimed at limiting Russia's ability to utilize crude oil for fuelling its military campaign against Ukraine, which poses a significant threat to regional stability and exacerbates the ongoing international armed conflict.

Since our last statement at the 79th MEPC nothing has greatly changed in these illicit activities, which are still occurring in certain locations in the Black Sea and the Mediterranean. Though the thugs have replaced the vessels participating in the scheme as hubs, the beneficiaries remain the same.

Ukraine stays in close contact with relevant flag states and countries of shipowners' origin, as well as EU and other partners in order to cut these bloody oil trade chains.

We encourage relevant coastal states to closely monitor ship-to-ship operations in their territorial sea or exclusive economic zone and take appropriate actions, including the banning of such operations.

I thank you, Mr. Chair."

Statement by the delegation of the Islamic Republic of Iran

"Mr. Chair,

The Islamic Republic of Iran attaches great importance to the protection and preservation of the marine environment, a crucial subject for all flag states, port states and coastal states whose concerns are addressed, among other relevant international documents, by part 12 of the United Nations Convention on the Law of the Sea (UNCLOS) 1982, the provisions of chapter 8 (transfer of oil between oil tankers at sea) of annex I to the International Convention for the Prevention of Pollution from ships (MARPOL) 1973; and regulations 19 and 19-1 of chapter 5 and regulations 19 and 42 of chapter I of the annex to the International Convention for the Safety of Life at Sea (SOLAS) 1974 and article 218 of UNCLOS 1982.

The Islamic Republic of Iran is of the opinion that having the above-mentioned international conventions and legal instruments will make producing a new resolution under any other business unnecessary. Moreover, some certain wordings used in the document and especially in the annexed proposed draft resolution are matters of concern. For instance, the word sanctions are used multiple times in the text in general terms which may include transnational sanctions while we are at the realm of the United Nations and providing the international community with a resolution that strengthens imposition of transnational and unilateral sanctions and coercive measures is not only unacceptable but also in contradiction with the International law. Furthermore, phrases like illicit traffic in the text used for dark shipping while illicit traffic in UNCLOS used only for traffic in narcotic drugs or psychotropic substances. Also phrases like other illicit activities or illicit operations in the title of the draft resolution are phrases we couldn't find the definition of or their terms of reference in the international conventions and legal instruments.

Therefore, this delegation would like to draw attention and reiterate that we should keep the IMO away from any deviation from the internationally accepted terms in its core documents and avoid from producing documents with such literature which would create a dangerous precedence for the future work of the IMO.

Finally, we would like to request the secretariate to kindly include this statement in the report under the agenda item 16 of the Committee.

And thank you for your attention."