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Agenda item 14(b)
"Emissions from fuel used for international aviation and maritime transport"

UPDATE ON IMO'S WORK TO ADDRESS GHG EMISSIONS FROM INTERNATIONAL SHIPPING

SUMMARY

The International Maritime Organization (IMO) contributes to international action to address climate change by regulating greenhouse gas (GHG) emissions from international shipping.

Since SBSTA 60 in June 2024, IMO's Marine Environment Protection Committee (MEPC) and its Intersessional Working Group on Reduction of GHG Emissions from Ships (ISWG-GHG) held one session each (MEPC 82 and ISWG-GHG 17).

This note is an update of the IMO submission to SBSTA 60 and focusses on the latest developments on the various GHG-related workstreams at IMO aiming to transpose the GHG reduction commitments of the *2023 IMO Strategy on reduction of GHG emissions from ships* into mandatory requirements for ships, in line with the agreed timelines.

Context

1 Following the adoption of the *2023 IMO Strategy on reduction of GHG emissions from ships* (2023 IMO GHG Strategy) by resolution MEPC.377(80) in July 2023, IMO Member States pursued the development of regulatory measures to transpose the GHG reduction commitments into mandatory requirements and effectively enhance IMO's contribution to global efforts in addressing GHG emissions from international shipping.

2 As previously presented in IMO submissions to SBSTA, the enhanced levels of ambition contained in the 2023 IMO GHG Strategy include:

.1 confirmation of the ambition to reduce **CO_2 emissions per transport work (carbon intensity)**, as an average across international shipping, by at least 40% by 2030, compared to 2008;

.2 to reach at least 5%, striving for 10%, of the **energy used** by international shipping to be zero or near-zero GHG emission technologies, fuels and/or energy sources by 2030;

.3 to reach **net-zero GHG emissions** by or around, i.e., close to, 2050, taking into account different national circumstances, while 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; and

.4 **indicative checkpoints** to reach net-zero GHG emissions as follows: reduce the total annual GHG emissions from international shipping by at least 20%, striving for 30%, by 2030, and by at least 70%, striving for 80%, by 2040, compared to 2008.

3 To achieve these goals, IMO is actively engaged in parallel workstreams to develop a global regulatory framework aligned with its decarbonization commitments that also ensures a safe and sound transition of the world fleet towards net-zero GHG emissions.

Development of a basket of mid-term GHG reduction measures: the "IMO net-zero framework"

4 As presented in previous IMO submissions to SBSTA, MEPC and its ISWG-GHG have been developing a basket of mid-term measures aimed at delivering on the reduction targets of the 2023 IMO GHG Strategy, in line with a work plan approved by MEPC 76 in June 2021 and the timelines set out in the Strategy. The mid-term GHG reduction measures are scheduled for adoption in late 2025, with a view to entry into force in 2027, and should effectively promote the energy transition of international shipping and provide the world fleet with a needed incentive, while contributing to a level playing field and a just and equitable transition.

5 In accordance with the 2023 IMO GHG Strategy, the mid-term GHG reduction measures under discussion include a technical element, namely a global marine fuel standard regulating the phased reduction of a marine fuel's GHG intensity; and an economic element, on the basis of a maritime GHG emissions pricing mechanism.

6 Various proposals on the architecture of these measures, in the form of possible amendments to Annex VI (Prevention of air pollution from ships) of the International Convention for the Prevention of Pollution from Ships (MARPOL), have been put forward by Member States and international organizations. Based on these inputs, MEPC 82 (September/October 2024) identified areas of convergence between the various proposals and produced a draft legal text, the "IMO Net-Zero Framework", for use as the basis for the next phase of discussions. If adopted, these amendments would incorporate the proposed new measures in MARPOL Annex VI, which currently has 107 Parties, representing 97.30% of the world merchant shipping tonnage.

7 A comprehensive impact assessment (CIA), exploring the potential impact of candidate measures on the world fleet and on States, in particular developing countries, including Least Developed Countries (LDCs) and Small Island Developing States (SIDS), overseen by a Steering Committee consisting of 32 IMO Member States, was carried out over the past year to guide the Committee's decision-making process. MEPC 82 approved, in general, the report of the Steering Committee on the conduct of the CIA, noted the outcomes of the impact assessment studies and agreed to take them into account, as appropriate, in its further considerations on the development of candidate measures. MEPC 82 also agreed to further assess the potential impacts of the measures on food security, particularly on net food-importing developing countries, which will be discussed during a GHG-Expert Workshop (GHG-EW 6) ahead of MEPC 83 (April 2025).

8 MEPC 82 recommended the holding of two ISWG-GHG meetings, focusing on the further development of the legal text for the mid-term GHG reductions measures, before MEPC 83, which is expected to approve the aforementioned draft amendments to MARPOL

Annex VI. Following approval, the draft amendments are expected to be adopted by MEPC during an extraordinary session in October 2025, with a view to entry into force in Spring 2027.

Life cycle GHG intensity assessment (LCA) of marine fuels

9 MEPC 80 (July 2023) adopted a set of *Guidelines on Life cycle GHG intensity of marine fuels (LCA Guidelines)*, which were updated by MEPC 81 (resolution MEPC.391(81)), to provide a robust international framework to assess the GHG intensity and sustainability of marine fuels, 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.

10 To review scientific and technical issues related to the implementation of the LCA Guidelines, MEPC 81 agreed to the establishment of a Working Group on Life Cycle GHG Intensity of Marine Fuels (GESAMP-LCA Working Group) under the UN's Joint Group of Experts on Scientific Aspects of Marine Environmental Protection (GESAMP) and requested the group to provide scientific and technical input on specific issues for the Committee's future consideration on the further development of the LCA framework, making it more scientifically and technically robust and accurate.

11 MEPC 81 also established Correspondence Groups (reporting to MEPC 83) on the further development of the LCA framework, with focus on "social and economic sustainability themes/aspects of marine fuels"; and on measurement and verification of non-CO_2 GHG emissions and onboard carbon capture.

12 MEPC 82 continued its work on the development of the LCA Guidelines, including consideration of a possible framework for the sustainability certification of actual emission values, and invited Member States to submit proposals for default emission factors for marine fuels, in order to allow the GESAMP-LCA Working Group to review these after MEPC 83.

Fifth IMO GHG Study

13 To support evidence-based decision-making on addressing GHG emissions from international shipping, IMO regularly commissions studies to estimate emissions from the shipping sector and project possible developments. The Fourth IMO GHG Study was published in 2020, providing emission inventories and carbon intensity trends, as well as emission projections for global shipping; and MEPC is considering the commission of a Fifth IMO GHG Study to inform, among others, the review of the 2023 IMO GHG Strategy, which is due for 2028.

14 MEPC 81 requested the Secretariat to prepare draft terms of reference, timeline logistics and administrative arrangements for conducting the Fifth IMO GHG Study. MEPC 82 noted the Secretariat's preliminary analysis and suggestions regarding the potential establishment of a Steering Committee of Member States to oversee the conduct of the Study.

Update on ship fuel oil consumption reporting and annual carbon intensity developments

15 Since 2019, ships of 5,000 gross tonnage (GT) and above (which produce approximately 85% of the total CO_2 emissions from international shipping) are required to collect consumption data for each type of fuel oil they use, as well as other specified information. This data helps to inform the development of measures to reduce GHG emissions from ships, including calculating ships' operational carbon intensity (CII).

16 MEPC 82 approved, in principle, the summary of mandatory ship fuel oil consumption data reported to the IMO ship fuel oil consumption reporting system (IMO DCS) for 2023, covering 28,620 ships representing a combined gross tonnage (GT) of 1,301 million tonnes.

17 In total, on a quantity basis, 211 million tonnes of fuel were used in the 2023 reporting period, which is slightly lower compared to 2022 (213 million tonnes) and 2021 (212 million tonnes). Figure 1 below shows that 93.52% of the fuel oil used during 2023 was either Heavy Fuel Oil, Light Fuel Oil or Diesel/Gas Oil. The remaining fuels outside of these fuel types amounted to 6.48% of the fuel used in 2023 (compared to 5.35% in 2022). The use of liquefied natural gas (LNG) increased slightly compared to previous years, to 12,890,011 tonnes of LNG in 2023, while the reported use of alternative fuels other than LNG (ethane, biofuels, methanol, etc.) continues to significantly increase (see Figure 2).

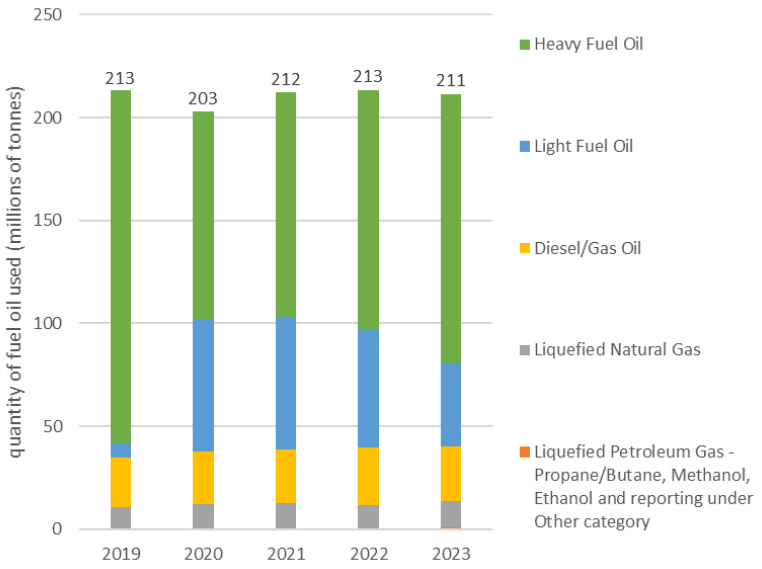

Figure 1: Aggregated annual amount of each type of fuel oil reported by all ships of 5,000 GT and above, from 2019 to 2023

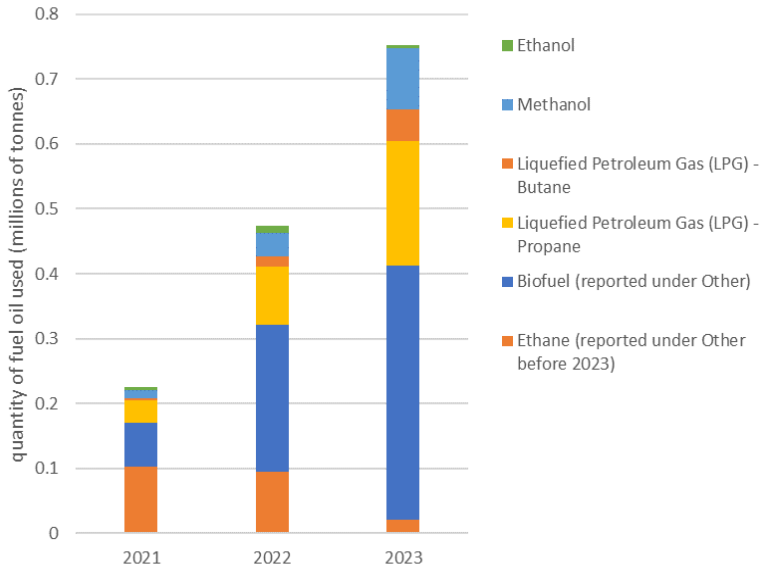

Figure 2: Aggregated annual amount of LPG, ethane, ethanol, methanol and biofuel (reported under the "Other" category) consumed by all ships of 5,000 GT and above

18 The IMO carbon intensity indicator (CII) rating reflects the operational energy efficiency of ships, building upon fuel oil consumption from the IMO DCS and the IMO Ship Energy Efficiency Management Plan (SEEMP) as a management tool. In accordance with the requirements for the IMO short-term GHG reduction measure set out in MARPOL Annex VI, each year and for ships of 5,000 GT and above, the attained annual operational CII has to be documented and verified against the required annual operational CII. Based on this, the ship's Administration determines the operational carbon intensity rating of the ship. The rating is given according to a scale - operational carbon intensity rating A, B, C, D or E - indicating a major superior, minor superior, moderate, minor inferior or inferior performance level. A ship rated D for three consecutive years or rated as E, shall develop a "Plan of corrective actions".

19 For the 2023 reporting period, CII ratings were reported by 24,653 out of the 28,620 reporting ships (86.1%). Table 1 below summarizes the reported operational CII ratings:

Table 1: Summary of reported operational CII ratings

	A	**B**	**C**	**D**	**E**	**Rating not reported**
Total ships	5,528	6,028	7,625	3,931	1,541	3,967
Rating distribution (as a percentage of 28,620 reporting ships)	19.3%	21.1%	26.6%	13.7%	5.4%	13.9%

Implementation and review of the short-term GHG reduction measure

20 Following the adoption by MEPC 80 (July 2023) of the *Review plan of the short-term GHG reduction measure*, to be completed by 1 January 2026, MEPC 82 continued its work to review the 'short-term measure' currently in force to reduce GHG emissions from ships by enhancing the energy efficiency of the global fleet. These regulations, adopted in 2021 and effective since 1 January 2023, require ships to measure their energy efficiency by calculating their attained Energy Efficiency Existing Ship Index (EEXI), and to continuously improve their annual CII rating.

21 The Committee analyzed data submitted by Member States gained from their experience with the implementation of the regulations over the past year, as well as various proposals to improve, in particular, the CII mechanism. A number of key challenges and/or gaps were identified in these submissions, ranging from CII impact on individual ship assessments of operational energy efficiency performance, potential penalization of ships on short voyages, idle time and port waiting time, to the lack of incentivization for port call efficiency and just-in-time (JIT) arrival of ships.

22 The Committee endorsed, in principle, a way forward to address these challenges and gaps, providing, in particular, an indicative timeframe for doing so following a two-phase approach and agreeing that some challenges and gaps will be addressed before 1 January 2026 (phase 1), while some others may be extended after 1 January 2026 (phase 2).

23 In order to further improve ship's energy efficiency requirements by strengthened access to key data, MEPC 82 also amended existing guidelines to enhance the granularity of reports submitted under the IMO DCS as well as improve and clarify data reporting entries in the DCS and SEEMP.

Development of the necessary safety regulatory framework allowing safe handling of future marine fuels on board ships

24 As achieving net-zero GHG emissions requires the uptake of zero- or near-zero GHG emission technologies, fuels and/or energy sources, IMO's Maritime Safety Committee (MSC), at its 107th session (June 2023), included in its agenda a continuous output to develop suitable provisions to ensure the safe operation of these new technologies and alternative fuels onboard ships and established a correspondence group to develop this regulatory framework.

25 MSC 108 (May 2024) noted the report of the correspondence group, outlining a list of fuels and technologies that could support the reduction of GHG emissions from ships, assessing technical aspects, hazards and risks to ship/shoreside for each of these listed fuels and technologies, as well as safety obstacles and gaps in existing regulations to address them. Member States and international organizations were invited to submit further information and proposals to enhance this assessment and the correspondence group was re-established to develop recommendations on how to address barriers and gaps in current IMO instruments that impede the safe use of alternative fuel or new technologies and to report to MSC 109 (December 2024) and MSC 110 (June 2025).

26 In addition, MSC 108 instructed its Sub-Committee on Human Element, Training and Watchkeeping (HTW), at its tenth session in February 2024, to develop relevant training provisions for seafarers on ships using alternative fuels.

27 IMO's Sub-Committee on Carriage of Cargoes and Containers (CCC) is also developing interim guidelines for the safety of ships using alternative fuels. Following the adoption of interim guidelines for the safety of ships using methyl/ethyl alcohol (MSC.1/Circ.1621), fuel cells (MSC.1/Circ.1647) and LPG fuels (MSC.1/Circ.1666) as fuels, the Sub-Committee finalized, at its 10th session (CCC 10) in September 2024, draft interim guidelines for the safety of ship using ammonia as fuel, for consideration and approval by MSC 109.

28 CCC 10 also approved a work plan for its future work, covering the period 2024-2027, on developing safety guidelines for alternative fuels and plans to further develop and finalize:

.1 interim guidelines for the safety of ships using hydrogen as fuel, with a view to approval at MSC 111 in 2026;

.2 interim guidelines for ships using low flashpoints oil fuels and revise interim guidelines for ships using methyl/ethyl alcohol as fuel, with a view of finalization in 2025; and

.3 guidelines for the use of ammonia cargo as fuel, with a view to completion by 2026.

Capacity-building, technical cooperation and other supporting activities

29 IMO is continuing its efforts to assist developing countries, in particular SIDS and LDCs, in addressing GHG emissions from international shipping through its Technical Cooperation (TC) programmes, including a dedicated TC fund and a wide portfolio of projects dedicated to climate action. In addition, the IMO multi-donor GHG Trust Fund, established in 2019, continues to fund important projects and studies supporting the implementation of the 2023 IMO GHG Study and inform decision-making on IMO's GHG reduction measures.

30 In May 2024, IMO organized a dedicated side event on the development of a basket of mid-term GHG reduction measures within the margins of UNCTAD's Global Supply Chain

Forum in Barbados, and in July 2024 a regional workshop on the 2023 IMO GHG Strategy to Reduce Shipping Emissions in the Caribbean was held in Belize. IMO has also started to develop a "Baseline Training Framework for Seafarers in Decarbonization", under the umbrella of the Maritime Just Transition Taskforce.

31 IMO's Future Fuels and Technology (FFT) project , funded by the Republic of Korea, supports the regulatory decision-making on GHG reduction measures at MEPC and its subsidiary bodies. To achieve this goal, the FFT Project conducts global studies and research to facilitate evidence-based discussions among IMO Member States; provides easy and free-of-charge access to the latest information on zero and near-zero marine fuels and technologies through a dedicated website (https://futurefuels.imo.org/); and enhances stakeholders engagement, promoting collaboration and knowledge sharing.

32 IMO's GreenVoyage2050 Programme has officially entered its Phase II (2024-2030), with over USD 21 million in funding from the Governments of Denmark, Finland, France, Germany, Netherlands and Norway. The Programme accelerated its work in supporting partnering countries (Belize, Cook Islands, Kenya and the Solomon Islands) in developing National Action Plans (NAPs) for Green Shipping; published a new training course on Onshore Power Supply; developed a Routes-based Action Plans Toolkit to support accelerating the uptake of clean marine fuels; and is intensifying its technical assistance towards the development of pilot project feasibility studies. Through its Low Carbon Global Industry Alliance (Low Carbon GIA), the Programme continued to develop resources, including a simplified glossary that supports the industry to gain a better understanding of the terminologies and phraseologies used in LCAs, as well as a video series on IMO's EEXI and CII frameworks.

33 The IMO CARES (Coordinated Actions to Reduce Emissions from Shipping) project (approximately USD 1.6 million, 2023 to 2024), with funding from Saudi Arabia, focused on technology solutions for domestic shipping (under 5,000 GT) and ports. The project delivered a global technology competition (Global Challenge) involving 23 technology providers and promoted the accelerated adoption of green maritime technologies in developing countries, especially SIDS and LDCs. The project funding supported the development of in-depth technical proposals by the winning technologies and host countries, which included Waste to Energy in Mauritius, Vertical Wind Turbine in St. Kitts and Nevis, and port call optimisation applications in Namibia and Trinidad and Tobago. The Maritime Technologies Cooperation Centres (MTCCs) in Africa and the Caribbean provided guidance during this process. A comprehensive technology report on the decarbonization of domestic shipping in developing regions was developed under this project, which identifies the green technologies in use, their efficacy and their future potential.

34 The Global MTCC Network (GMN) project (approximately €10 million, 2024 to 2027), with the support of the EU, entered Phase II, which will focus on six technology demonstration pilot projects aimed at reducing GHG emissions from ports and domestic vessels (under 5,000 GT) in Africa (Mauritius and Namibia), the Caribbean (St Kitts and Nevis and Trinidad and Tobago) and the Pacific region (TBD).

35 The Sustainable Maritime Transport Training Programme (GHG-SMART), funded by the Republic of Korea (USD 4.5 million, 2022 to 2026), supports SIDS and LDCs in the implementation of the 2023 IMO GHG Strategy, through capacity-building in maritime decarbonization, with annual training cycles comprised of theoretical and practical sessions and study visits complemented by post-training scholarships at the World Maritime University. Since 2022, professionals from 20 SIDS and 18 LDCs have been trained on relevant aspects

of maritime decarbonization, including regulatory frameworks, ship and port technologies and operations, and policy and finance.

36 The IMO-UNEP-Norway Innovation Forum (USD 647,316, funded by Norway) is an annual global joint initiative of IMO, the United Nations Environment Programme (UNEP) and the Government of Norway, bringing together a broad spectrum of stakeholders to champion innovation and accelerate the transition of the maritime sector towards a zero- and low emission future, with a focus on the needs of developing countries, in particular SIDS and LDCs.

37 The SMART-C GHG Project (2023 to 2027, USD 4 million, supported by the Republic of Korea) is providing tailor-made support to Viet Nam and the Philippines for the development of their National Action Plans and the implementation of the 2023 IMO GHG Strategy.

38 A Voluntary Multi-Donor Trust Fund (VMDTF) was established in March 2023 to assist the in-person attendance of developing countries, especially SIDS and LDCs, in IMO meetings, specifically the meetings of MEPC and ISWG-GHG, as well as other meetings related to the reduction of GHG emissions. Donor contributions since the inception of the VMDTF have funded the attendance of 67 representatives from 40 countries at three sets of MEPC and ISWG-GHG meetings in 2023 and 2024, as well as the participation of representatives of countries at meetings of the Steering Committee on the comprehensive impact assessment on the development of the basket of candidate mid-term measures. This assistance allowed for an increased and more diverse in-person attendance of representatives from developing countries across the different UN regions, especially from SIDS and LDCs, to participate in these important discussions.

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