

MARINE ENVIRONMENT PROTECTION
COMMITTEE
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Agenda item 7

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REDUCTION OF GHG EMISSIONS FROM SHIPS

Preparations for the Fifth IMO GHG Study

Note by the Secretariat

SUMMARY

Executive summary: This document provides a preliminary analysis of possible terms of reference, suggested timelines, logistics and administrative arrangements for the conduct of the Fifth IMO GHG Study.

Strategic direction, if applicable: 3

Output: 3.2

Action to be taken: Paragraph 10

Related documents: MEPC 81/7/8, MEPC 81/7/21, MEPC 81/16; ISWG-GHG 15/2/6; MEPC 80/INF.10 and MEPC 74/18/Add.1

Introduction

1 MEPC 81 generally supported proposals to initiate a Fifth IMO GHG Study and subsequently instructed the Secretariat to submit a proposal with draft terms of reference, suggested timelines, logistics and administrative arrangements to MEPC 82, taking into account relevant documents submitted to MEPC 81 (MEPC 81/7/8 and MEPC 81/7/21) and the comments made (MEPC 81/16, paragraph 7.45).

2 This document provides the Secretariat's analysis of possible terms of reference, suggested timelines, logistics and administrative arrangements for the conduct of a Fifth IMO GHG Study.

Possible terms of reference

3 The First IMO GHG Study was published in 2000, the second in 2009 and the third in 2014. MEPC 75 (November 2020) approved the *Fourth IMO GHG Study 2020*¹ which contains the following three main areas: inventory of GHG emissions from international shipping 2012-2018; estimates of carbon intensity; and projections of CO₂ emissions from shipping (see also terms of reference in document MEPC 74/18/Add.1, annex 18).

¹ See: <https://www.imo.org/en/OurWork/Environment/Pages/IMO-GHG-studies.aspx>

4 At MEPC 81, following consideration of documents MEPC 81/7/8 (Australia and Republic of Korea) and MEPC 81/7/21 (Canada et al.) and also taking into account document ISWG-GHG 15/2/6 (Republic of Korea), delegations generally were of the view that for comparability purposes with previous IMO GHG Studies, a Fifth IMO GHG Study should preferably also cover at least the three aforementioned areas, whilst allowing the tenderers to propose methodological improvements, as appropriate, taking into account recent progress made in areas such as modelling ship emissions, AIS data improvements and data integrity.

5 Taking into account the discussions at MEPC 81, the following elements, inter alia, could be considered in determining possible draft terms of reference for the Fifth IMO GHG Study:

GHG emission inventories:

- .1 the Fifth Study should ideally include annual GHG emission estimates for the year **2008** (baseline) and for the years **2018-2024**; noting that the Fourth IMO GHG Study 2020 also included emission estimates for 2008 and 2018, the Fifth Study would provide an insight of how updated modelling techniques impact previous emission estimates;
- .2 since the Fourth IMO GHG Study 2020 was finalized in 2020, the Secretariat now submits annual fuel consumption data based on the data submitted to the **IMO DCS**, noting that this data only covers ships of **5,000 GT and above** subject to Chapter 4 of MARPOL Annex VI, whereas the Fourth Study covered all ships of 100 GT and above;
- .3 **IMO DCS data** could be used for **data calibration** purposes, to assess the **correlation of emissions estimates or trends** from various sources (bottom-up, e.g. AIS based ship-activity, top-down, e.g. IEA statistics based on bunker fuel sales), and the Fifth Study could develop **methodologies and approaches to compare and evaluate** data from these different sources (e.g. data from ports/shipowners on biofuels), with the aim of making use of the best available data for each type and size of ship and providing full coverage of the sector;
- .4 for the calculation of emissions estimates, the Fifth Study should use **emission factors** consistent with the previous IMO GHG Studies and the **LCA Guidelines**, as appropriate; noting that the previous Studies were based on **Tank-to-Wake (TtW) emission factors**, the Fifth Study could include inventories for **both Tank-to-Wake emissions** and in addition **Well-to-Wake (WtW) emissions estimates**, further noting that while the LCA Guidelines at this stage do not contain full WtW emission factors for all marine fuels, this may not have a big impact, in particular for the years when Heavy Fuel Oil (HFO) and Marine Diesel Oil (MDO) were the main fuels used; WtW emission factors for fuels for which no such values are available in the LCA Guidelines should be well documented and justified;
- .5 in the absence of further IMO guidance on how to differentiate between **domestic and international voyages** and how to **categorize ship types/sizes**, the Fifth Study should include emission estimates using both **'vessel-based'** and **'voyage-based'** calculation methodologies, as was done in the Fourth Study, providing full coverage of the sector;

- .6 **ship type and size categories** should be aligned, as far as possible, with those used in MARPOL Annex VI, in particular for the application of the short-term GHG reduction measure, although for comparability purposes those used in the Fourth Study may also be considered;

Estimates of carbon intensity:

- .7 since the Fourth Study was finalized in 2020, the Secretariat now submits reports on **annual carbon intensity developments** based on the data submitted to the IMO DCS and data that is externally procured, while noting that this data only covers ships of **5,000 GT and above** and subject to chapter 4 of MARPOL Annex VI whereas the Fourth Study covered all ships of 100 GT and above;
- .8 the main indicators used by the Secretariat in the reports on annual carbon intensity developments are **AER, cgDIST and EEOI**, as also used in the Fourth Study; while noting that recent amendments to appendix IX of MARPOL Annex VI on reporting parameters to the IMO DCS may allow for **additional parameters** to be used, and these may also be considered in the Fifth Study, where appropriate and available;
- .9 noting that since the Fourth Study, the **short-term GHG reduction measure (EEXI, CII, enhanced SEEMP)** was adopted, with the aim to achieve at least 40% reduction of carbon intensity by 2030 compared to 2008, the Fifth Study should specifically demonstrate progress towards that goal by providing carbon intensity estimates for **2008** and for the years **2018 to 2025**;
- .10 to demonstrate shipping's overall energy efficiency, the Fifth Study may also provide a comparison of the carbon intensity of shipping with **other transport modes**;

Projections:

- .11 the Fourth Study contained emission projections for the period 2018-2050; the Fifth Study could **track progress** towards the achievement of the **levels of ambition and indicative checkpoints** set out in the 2023 IMO GHG Strategy by providing updated emission projections for the period 2025-2050; however, in anticipation of the adoption of the **mid-term GHG reduction measures, BAU scenarios** that would include these measures may only be finalized after their adoption (foreseen for autumn 2025);
- .12 the emission projections included in the Fourth Study were based on **TtW emissions** and only covered the **CO₂ emissions of shipping**; the Fifth Study could include projections for **GHG emissions** and for **both TtW and WtW emissions**; and also provide separate emission projections for both **international shipping** and **total shipping**;
- .13 in addition to providing updated GHG emissions projections, the Fifth Study could also provide updated **maritime transport demand projections and associated energy consumption projections of the world fleet**;
- .14 in the context of the GHG emissions projections, the Fifth Study should ideally also update the **Marginal Abatement Cost (MACC) Curves**, to take into account recent technological and economic trends in shipping; and

Possible additional analysis:

- .15 the Fifth Study could update relevant **fuel and technology availability projections** (including e.g. prices and technology readiness levels (TRL)), building on the findings of, inter alia, the *Study on the Readiness and availability of low- and zero carbon ship technology and marine fuels* (MEPC 80/INF.10), as conducted by the IMO Future Fuels and Technology (FFT) Project, and other **relevant assumptions**, e.g. those used in the context of the comprehensive impact assessment of the basket of candidate mid-term measures.

Logistics and administrative arrangements

6 The Committee may consider the establishment of a Steering Committee of Member States overseeing the conduct of the Fifth IMO GHG Study, as per the practice of the previous IMO GHG studies. The Steering Committee would, inter alia, act as a focal point for the Committee, carry out the tender evaluation and provide input and oversight to the successful tenderer to ensure that the Study is delivered in accordance with the terms of reference approved by the Committee.

7 In order to keep the intersessional workload for the Secretariat and Member States manageable, it is suggested **not** to run the above Steering Committee simultaneously with the Steering Committee for another substantial GHG workstream. As per previous practice, the financing of the Fifth Study could be envisaged through voluntary contributions to the IMO GHG-TC Trust Fund.

8 In addition to establishing the Steering Committee, the Committee could also request the Secretariat to undertake, as appropriate, specific studies covering certain elements of the terms of reference, e.g. fuel and technology availability, using existing IMO projects such as the [Future Fuels and Technologies Project](#), and in collaboration with organizations such as the World Maritime University (WMU) or the International Renewable Energy Agency (IRENA). If deemed necessary, these studies could be initiated ahead of or in parallel with the tender process overseen by the Steering Committee and be subject to a quality assurance and quality control (QA/QC) process by the Steering Committee or other experts nominated by Member States, while being separately procured by the Secretariat.

Suggested timelines

9 Taking into account the overall workload on the various GHG work streams between MEPC 82 and MEPC 83, the fact that some elements in the terms of reference would require further clarity on the outline of the basket of mid-term GHG reduction measures and the further development of the LCA Framework, and recalling that the discussion during MEPC 81 indicated that the Fifth IMO GHG Study would largely inform the review process of the 2023 IMO GHG Strategy (envisaged to start in 2027, and to be finalized by 2028), a possible timeline for the conduct of the study could be as follows:

**September/
October 2024**

ISWG-GHG 17/MEPC 82 to further consider possible terms of reference for the Fifth IMO GHG Study, request the Secretariat to further develop draft terms of reference for approval by MEPC 83; and launch the call for nominations of members for a Steering Committee

Spring 2025	MEPC 83 to approve terms of reference; and request the Secretariat to initiate the tender process/supplementary studies and the Steering Committee to initiate its work
June 2025	Tender evaluation by Steering Committee
July 2025	Contract signed
Spring 2026	MEPC 84 to consider an interim report on the Fifth Study
July 2026	Submission of the draft final report on the Fifth Study to MEPC 85
Autumn 2026	MEPC 85 to consider the final report on the Fifth Study with a view to approval

Action requested of the Committee

10 The Committee is invited to consider the information provided in this document, in particular the possible scope of the Fifth IMO GHG Study, associated logistical and administrative arrangements, and suggested timelines, and to take action as appropriate.
