IMO Marine Environment Protection Committee (MEPC 84)

Summary Report

Summary of significant outcomes

Below is a brief overview of some of the significant outcomes from MEPC 84:

- **IMO Net-Zero Framework**
  - Further discussion took place on the mid-term GHG reduction measures. It was clear at this stage that finding a compromise position between those advocating for the draft Net Zero Framework to be adopted with minimal change and those in favour of a market readiness approach was not possible.
  - Discussions will continue on both the regulatory framework and on supporting guidelines at two intersessional working groups on GHG (ISWG-GHG) ahead of MEPC 85.
  - MEPC 85 is tentatively scheduled to be held 30 November to 3 December, whilst MEPC ES.2 is planned to be resumed for 1 day on Friday 4th December, subject to any further discussion at MEPC 85.
  - Terms of reference for a 5th IMO GHG Study were completed – this will support the review of the IMO GHG Reduction Strategy in 2028.

- **Review of the GHG Reduction short-term measures**
  - EEDI guidelines were updated to consider dual-fuel and hybrid ships
  - Discussion to strengthen the requirements of the ship energy efficiency management plan (SEEMP) to drive operational energy efficiency, which would introduce regular internal reviews, continuous improvement, changes to the auditing arrangements and an energy efficiency implementation log. This work will continue at a future session.
  - A CII metric on adverse weather and a cgHRS metric for cruise passenger ships were discussed, but not agreed at this stage.

- **Ballast Water Management**
  - Amendments to the BWM were finalised and agreed. Amendments to the BWM were finalised and agreed. Ships must now prove BWMS are working, maintained, and achieving D-2 standards, not just installed and type-approved.

- **Air Pollution Prevention**
  - A new ECA in the NE Atlantic was adopted for Nitrogen Oxides, Sulphur Oxides and Particulate Matter.
  - Amendments to MARPOL Annex VI to align it with the NOx Code for multiple engine operational profiles.

- **Oil Pollution Prevention**
  - Approval of a new MARPOL Annex I regulation 12A permitting an integrated bilge water treatment system and supporting guidance.

- **New protected areas**
  - Agreed to the new Nasca Ridge (Peru) PSSA Associated Protective Measure.
  - Considered an Arabian Sea PSSA and a Nasca Ridge MARPOL Special Area.

MEPC 84 Webinar

For further information about GHG emission reduction measures, please register to join our MEPC 84 webinar

Introduction

MEPC 84 took place 27 April – 1 May 2026 at the IMO in London. A week earlier the Intersessional Working Group on Greenhouse Gases (ISWG-GHG) 21 took place and reported to MEPC. This report provides a summary of the outcomes from the meeting which are significant to Lloyd's Register's (LR) work with our customers.

Additional Information see LR's reports on:

- Outcome for MEPC ES 2 and Summary Report for MEPC 83
- Summary Report for PPR 13
- Summary Report for SDC 12
- Summary Report for III 11
- Summary Report for CCC 11

Reduction of GHG emissions from ships

GHG reduction measures

Development of regulatory measures

Following the adjournment of the Second Extraordinary Session (ES.2, October 2025), when the Net-Zero Framework (NZF) was not adopted as anticipated, MEPC considered proposals on how to further progress discussions and procedurally conclude on the adoption of the NZF. Submissions broadly fell into:

- Adopting the NZF as it stands.
- Continuing work to reach compromise and consensus, by amending the NZF; or
- Considering alternatives to the NZF which could follow a similar architecture to the NZF but could base greenhouse gas intensity reduction targets on the market availability of fuels.

Following statements from Member States, it was clear that there is a commitment to the IMO GHG 2023 strategy, to achieve net zero by or around 2050. Furthermore, a global IMO measure is considered important to avoid regional or unilateral measures which would create a fragmented regulatory framework.

However, many understood that further consideration of the draft NZF (as approved at MEPC 83) and the development of supporting guidelines was needed. Regarding the economic, element a new proposal for the global measure to be aligned with market readiness gained some support. However, for consensus to be found there was an understanding that there must be a focus on pragmatism and realism, given that views amongst Member States remain divergent on how best to address concerns with the NZF.

Future Intersessional working groups on GHG reduction from ships (ISWG-GHG)

Noting the continued commitment to work together to converge on a global measure, MEPC agreed that two intersessional working group meetings on GHG reduction would be scheduled to take place before MEPC 85 to provide an opportunity for further discussions. These sessions will work with the objective to:

- consider proposals including those contained in any documents submitted to MEPC 84, MEPC 85 and previous sessions of ISWG-GHG, as well as documents submitted to ISWG-GHG 22 and 23, on how to address concerns in the draft amendments to MARPOL Annex VI on the IMO Net-Zero Framework in line with the 2023 IMO GHG Strategy; .
- consider draft guidelines supporting the uniform and effective implementation of IMO's mid-term measures; and
- consider the development of the IMO Life Cycle GHG Assessment (LCA) framework;

MEPC agreed that:

- ISWG-GHG 22 is tentatively scheduled for 1 – 4 September 2026.
- ISWG-GHG 23 is tentatively scheduled for 23 – 27 November (the week immediately preceding MEPC 85).
- MEPC 85 is tentatively scheduled to be held 30 November to 3 December.

Resumption of MEPC ES.2

Regarding the resumption of MEPC ES.2, it was noted that it was agreed for the session to be adjourned for 1 year. It was therefore agreed that MEPC ES.2 should be resumed for 1 day on Friday 4th December, subject to any further discussion at MEPC 85.

Work in support of regulatory measures

Despite adoption of the IMO NZF not taking place in October 2025, work has progressed intersessionally to further develop details of various guidelines in support of the NZF (if adopted) or underpin other possible regulatory measures in the future. MEPC considered the work that had been undertaken intersessionally by ISWG-GHG 20 and ISWG-GHG 21. For more detail on the ISWG-GHG discussions and the progress made see Annex 1 to this report.

Life-Cycle Assessment (LCA) of GHG Emissions

The IMO LCA guidelines provide default emission factors for use in calculating the GHG intensity of fuels. Default GHG emission factors are standard values that any fuel supplier can use for certification and that ships can apply when calculating their GHG Fuel Intensity (GFI) and total GHG emissions. These values are pathway-specific and must be submitted to IMO and successfully assessed by the GESAMP-LCA WG prior to

incorporation into the IMO LCA Guidelines, following MEPC.1/Circ.916 *Draft Methodology for Submission, Scientific Review and Recommendation of Proposed Default Emission Factors By GESAMP-LCA WG.*

LCA default emission factors

New default emission factor proposals for consideration by the GESAMP-LCA WG

MEPC considered proposals for 48 Well-to-Tank (WtT) and 29 Tank-to-Wake (TtW) default emission factors for various fuel pathways including:

- LNG (Methane)
- Ammonia (Fossil production pathways)
- Ammonia (Fossil with CCS)
- Ammonia – Renewable (Electro-Ammonia)
- Ethanol
- Biodiesel / FAME

These have been sent to the GESAMP-LCA WG for further analysis, assessment and potential recommendation for inclusion in the LCA Guidelines, following the methodology outlined in MEPC.1/Circ.916.

Agreed new default emission factors

Recommendations on new default emission factors were considered following assessment of submissions during the second and third meetings of the GESAMP-LCA WG.

The review of many proposed fuel pathway submissions (WtT and TtW) could not be completed due to insufficient information. Each submitter was invited by the GESAMP-LCA WG to provide this additional recommended information in due course. Additionally, Member States were invited to follow the recommendations to improve future submissions. These include providing complete and transparent LCA data, clear value-chain descriptions with logistics and flow charts, accessible and comprehensive documentation, robust primary TtW emissions data with documented methodologies and uncertainties, and following supporting guidance and FAQs (to be developed by GESAMP-LCA WG).

Based on GESAMP-LCA WG recommendations, new fuel pathway codes and where applicable provisional default emission factors were agreed:

Pathway code	Fuel / pathway description	Emission factor(s) recommended for inclusion in LCA Guidelines by GESAMP-LCA WG
EtOH_b_FR_intcorn_r_CHP	WtT Intermediate crop corn-based ethanol	20.8 gCO_2eq/MJ
LNG_f_SLP_CCS_gm	WtT LNG with upstream CCS	n/a
EtOH_b_FR_1stgen_gm_sugarcane	Sugarcane based ethanol	Default emission factors pending completion of data review – more data requested from submitter.

These will now be included in a future update of the IMO 2024 LCA Guidelines.

The fourth meeting of the GESAMP LCA-WG is scheduled for 29 June - 3 July 2026.

Development of the LCA Framework

Work has progressed intersessionally at ISWG-GHG 20 and 21 to further develop the LCA guidelines, in particular regarding the:

- WtT calculation methodology
- TtW calculation methodology
- Sustainability themes/aspects
- Methodology to determine default emission factors
- Methodology to determine actual emission factors
- Chain of custody models

For more detail see Annex 2 of this report.

Relevant updates on GHG reduction activities, climate change, fuels and technologies

MEPC acknowledged ongoing IMO-UNFCCC cooperation, updates on shipping's climate impact, recent IMO seminars on OCCS and biofuels, a proposal for clearer marine fuel classification, and a proposal for regular climate-status updates for the IMO starting at MEPC 85.

Fifth IMO GHG Study

The Fifth IMO GHG Study will be the next major global scientific assessment of greenhouse gas emissions from international shipping, commissioned by the IMO. It is anticipated that the study will provide a non-policy prescriptive, transparent assessment of shipping GHG emissions for the period 2018–2025/26, with projections to 2050, aligned with the 2023 IMO GHG Strategy.

MEPC has approved the ToR for the fifth study, which builds on the Fourth IMO GHG study. Using recent IMO DCS data, it maintains the core elements: global inventory, carbon intensity analysis, and emission scenarios. The framing of WtT, TtW (including fugitive and non-combusted emissions), and WtW emissions aligns with IMO LCA guidelines. Transparency requirements now include replicable models, sensitivity analysis, and public access to anonymised output data. Business as usual scenarios must reflect current IMO policies at contract award to avoid ambiguity.

The study will be overseen by a geographically balanced steering committee, conducted by an independent consortium selected through competitive tender, and subject to robust QA/QC procedures. Final delivery is scheduled for MEPC 87 (Spring 2028).

Energy efficiency of ships

Fuel oil consumption data reported to the IMO GISIS database

2024 Fuel Oil consumption data report

MAPROL Annex VI regulation 27 requires that owners of ships of 5,000GT and above are to collect and report fuel oil consumption data annually to the Administration, or their recognised organisation, to obtain a

statement of compliance. Once reported, data must be transferred to the IMO Ship Fuel Oil Consumption Database (IMO DCS) in GISIS. This data is then used to compile an annual report to MEPC summarising the data collected.

MEPC approved in principle the report of the fuel oil consumption data for 2024 including:

- summary of the fuel oil consumption data submitted to the IMO DCS for 2024.
- the reporting on carbon intensity developments on the basis of supply-based measurements, using AER and cgDIST indicators.
- the reporting of CII values.

MEPC also noted the overall improvements to the reporting process in the IMO DCS module in GISIS:

- Enhanced granularity and transport work reporting (mandatory from 1 January 2026, following amendments to MARPOL Annex VI).
- Integration of EEXI and CII data reporting, improving alignment between fuel-use data and efficiency metrics.
- Requirements for ships to report CII together with transport work, and if unable to calculate CII must state a reason, reducing data gaps and ambiguity in submissions.
- Enhanced checks to identify missing ships, duplicate entries, unrealistic values, and incorrect ship classifications, with follow-up actions by Administrations and ROs.
- Update of the fuel list and carbon conversion factors (CF; e.g. inclusion of ethane and clearer treatment of biofuels), ensuring consistency across EEDI, EEXI, CII and DCS reporting.

Strengthening the anonymisation provisions in the IMO DCS for Fuel Oil Consumption Reporting

Starting 1 September 2027, access to the IMO DCS database will change (see Accessibility to the IMO Ship Fuel Oil Consumption Database (regulation 27 and Appendix IX) to improve transparency). MEPC considered further amendments to the MEPC.349(78) which would in principle anonymise not only ship identifiers but also the recognised organisation (RO) acting as data submitter, reduce the risk of indirect ship identification, and clarify that Administrations and their duly authorised ROs may access relevant non-anonymised and historical data.

Given that the amendments on enhanced DCS data accessibility have not yet been adopted, the Group recommended deferring consideration of these amendments to MEPC 85. Additionally, the Secretariat was asked to carry out a preliminary IT and resource impact assessment of the proposed data security and access requirements, taking account of the ongoing GISIS review.

Proposed new Energy Consumption Index

There are recognised problems with the accuracy and consistency of fuel consumption data collected under the IMO Data Collection System (DCS). Existing methods, such as bunker delivery notes, tank sounding, or flow meters capture only the physical quantity of fuel consumed or delivered but are limited in recognising errors or consistencies related to the ship's actual performance.

As such, MEPC considered a proposal to amend MEPC.395(82) *2024 SEEMP Guidelines*, to introduce a new Energy Consumption Index (ECI) as a performance-based tool to improve the accuracy and consistency of fuel consumption data reported under the IMO DCS. The ECI links reported fuel use to engine power, operating hours and specific fuel consumption, providing an additional verification layer alongside existing measurement methods such as bunker delivery notes and flow meters.

It was concluded that, although there could be potential value in the proposed ECI, significant concerns were raised about added administrative burden, data accuracy, and methodological robustness. Therefore, the ECI as a new metric was not supported at this stage. Further information, clarification, and practical examples on the use of the ECI were invited to be submitted to a future MEPC session for reconsideration.

2024 Carbon Intensity Indicator (CII) report

In the absence of cargo-related data submitted to DCS, to calculate transport work, MEPC noted the report from the IMO Secretariat on the demand-based carbon intensity of international shipping using model-based estimates for the period from 2019 to 2024.

With the adoption of the IMO short-term measures to cut greenhouse gas emissions in 2021, it was agreed that progress on carbon-intensity improvements should be tracked each year. This monitoring uses two approaches (supply and demand based) alongside the fuel-use data already reported to IMO, which are:

- emissions relative to a proxy for transport work (a supply-based measure, similar to AER (Annual Efficiency Ratio) or cgDIST (capacity-gross Distance)).
- emissions relative to the actual transport work performed (a demand-based measure, similar to the EEOI (Energy Efficiency Operational Indicator)).

MEPC noted the carbon intensity developments of the shipping fleet from 2019 to 2024, which show that the average supply-based and demand-based carbon intensity in 2024 has reduced by 31.5% and 38.6%, respectively, compared to 2008.

EEDI

Application of the EEDI requirements to ships with dual fuel capabilities and those with hybrid propulsion systems

MEPC.364(79) *2022 Guidelines on the method of calculation of the attained Energy Efficiency Design Index (EEDI) for new ships* (EEDI Calculation Guidelines) works well for ships using conventional fuels and for ships with LNG dual-fuel engines, but they do not fully address newer engine types now entering service. In particular, the guidelines do not clearly cover:

- ships fitted with dual-fuel engines that use two liquid fuels, such as methanol or ethanol alongside conventional fuel oil.
- Ships fitted with hybrid systems (noting that there is not a clear definition of such vessels in MARPOL Annex VI, thereby limiting recognition in the EEDI and EEXI frameworks).

These gaps create uncertainty and inconsistent application of the regulatory requirements. MEPC invited intersessional work and to submit refined proposals to a future session.

Amendments to the EEDI Calculation Guidelines

MEPC adopted MEPC.410(84) *Amendments to the 2022 Guidelines on the method of calculation of the attained Energy Efficiency Design Index (EEDI) for new ships* which:

- Extends the definition of “gas” to encompass any fuel used in dual-fuel mode, including liquid fuels.
- Defines a hybrid propulsion as a system which is based on a power threshold relative to main engine MCR as certified under the NTC 2008.

Amendments to the EEDI Survey and Certification Guidelines

Following agreement to amend the EEDI calculation guidelines as mentioned above, in parallel MEPC adopted MEPC.411(84) *2026 Guidelines on survey and certification of the Energy Efficiency Design Index (EEDI)* to ensure consistent verification practices aligned with the update to the EEDI calculation guidelines.

Wind Assistance Calculations for EEDI

IMO guidance on accounting for innovative energy-efficiency technologies has evolved from EEDI-only rules (2013; MEPC.1/Circ.815) to a broader EEDI/EEXI framework (2021; MEPC.1/Circ.896), which further refined methods for the calculation and verification of wind assisted propulsion at the final verification stage of the EEDI. Proposals to refine the correction method were discussed and supported in principle at MEPC 83, but further technical refinement was recommended.

MEPC further considered the progress made on this issue including proposals to amend MEPC.1/Circ.896 *2021 Guidance on Treatment of Innovative Energy Efficiency Technologies for Calculation and Verification of the Attained EEDI and EEXI*. Accordingly, MEPC invited further work to be undertaken to further update the correction method based on a sea trial for the effective propulsive power matrix of the wind assisted propulsion ships to improve the reliability of attained EEDI calculations.

Please click below to access LR's retrofit report on applying wind propulsion to ships to assist compliance with GHG reduction measures

Review of the IMO short-term GHG measures (EEXI and CII)

MARPOL Annex VI regulation 28 (Operational Carbon Intensity) called for a review to be completed by 1 January 2026 by the IMO of:

- The effectiveness of the CII in reducing the carbon intensity of international shipping.
- The need for reinforced corrective actions or other means of remedy, including possible additional EEXI requirements.
- The need for enhancement enforcement mechanisms.
- The need for enhancement of the data collection system.
- The revision of the reduction (Z) factors and reference CII.

This review is being undertaken in two phases. Phase 1 was concluded by MEPC 83. Phase 2 is ongoing, undertaking outstanding work as outlined in the work plan agreed at MEPC 83 (see the LR MEPC 83 Summary Report for details).

Topics considered under Phase 2 of the review of the IMO short term measures

Interim Clarification of CII Calculation Methodology Pending Phase 2 Review

The IMO has expanded the IMO Data Collection System (DCS) so that, from 2026, ships will report more detailed data such as fuel use by activity, total transport work, use of shore power, and whether ships are "under way". This new data is introduced for analysis and future reform, rather than immediate change to how the CII metric is calculated. As such there is a need for interim clarification of MEPC.352(78) *CII Guidelines (G1)* and the MEPC.395(82) *2024 SEEMP Guidelines*, to keep the current CII calculation method unchanged, ensuring fairness and consistency until the Phase 2 review is completed and any new approach is formally agreed.

Amendments to MEPC.352(78) *CII Guidelines (G1)*

MEPC adopted MEPC.412(84) on amendments to the *2022 Guidelines on operational carbon intensity indicators and the calculation methods (CII Guidelines, G1)*, which clarify that supply-based transport work (capacity × total distance travelled), should continue to be used as a proxy for the calculation of the attained annual operational CII of individual ships. Noting that 'total distance travelled' comprises of both 'underway' and 'not underway' data collected in a given calendar year.

Amendments to MEPC.395(82) *2024 SEEMP Guidelines*

MEPC adopted MEPC.413(84) on amendments to the *2024 Guidelines for the development of a Ship Energy Efficiency Management Plan (SEEMP)*, clarifying that the total distance travelled is a combination of both 'underway' and 'not underway', including an amendment to Appendix 4 –*Standardised data reporting format for the Data collection system and operational carbon intensity to the administration.*

Recalculation of CII reference line and rating boundaries for cruise passenger ships

Under MARPOL Annex VI, the Carbon Intensity Indicator (CII) system requires the IMO to set ship-type-specific reference lines and rating thresholds that reflect ship operational carbon performance. For cruise passenger ships, the existing CII uses a metric based on emissions per gross tonne and distance travelled (cgDIST). Industry submissions have raised concerns that distance travelled does not properly reflect how cruise ships operate, because their emissions are more closely linked to time in service rather than distance sailed. Alternative metric, cgHRS have been proposed which replaces distance with total hours operated.

Following the agreed work plan for further review of the short-term GHG measures, a new CII reference line and rating boundaries have been re-calculated for cruise passenger ships using the proposed cgHRS metric, based on verified, non-anonymized IMO DCS data for the 2019 reporting year.

Following consideration of the proposed cgHRS metric and due to the divergent views on the matter, the metric could not be finalised. MEPC invited submission of an updated proposal to a future session, with a view to finalise the development of the revised cgHRS metric at MEPC 86 (expected October 2027).

New CII metrics

The CII framework measures ship energy efficiency by total fuel consumption, but its ratings are affected by factors like port delays and weather that owners cannot control. These issues vary by ship type and have raised concerns about fairness and consistency among Member States and industry stakeholders. Given that in 2024 the detail and scope of data collected under the DCS was expanded (as per MEPC.385(81)) more detailed operational and fuel-related data will be available alongside a potential new GFI metric.

Discussing any development of a new CII metric, there was support for further exploration of ideas to identify issues including:

- whether CII should be limited to fuel consumed while under way,
- possible incorporation of well-to-wake (WtW) GHG intensity,
- adoption of an energy-based metric (MJ/transport work),
- improving cost-effectiveness,
- strengthening enforcement, and
- ensuring a just and equitable transition.

No conclusion was reached on this matter, and as such MEPC invited submission of concrete proposals to MEPC 85 for further consideration.

The impact of adverse weather on fuel consumption and CII rating

MEPC considered the issue that adverse weather can have a significant impact on a ship's fuel consumption and CII rating. Divergent views were noted on the subject noting the impact this has on countries remote from main shipping lanes and dependent on fleets exposed to adverse weather conditions, but also the challenges of documenting and verifying the navigation in adverse weather conditions and complexity introduced for the CII framework. MEPC agreed to keep this topic in abeyance until a concrete proposal was submitted.

Strengthening SEEMP to Drive Continuous, Auditable Improvements in Ship Energy Efficiency

While CII can indicate performance trends, it has limitations in reliability, ship-specific relevance and enforceability. It is also recognised that improving energy efficiency depends less on the metric itself and more on how improvement measures are planned, implemented, monitored and verified, which sits within the SEEMP framework. MEPC has previously endorsed the idea to shift the emphasis towards a stronger, auditable SEEMP cycle, including regular internal reviews, clearer accountability for implementation, better record-keeping, and more consistent audits.

Given this, MEPC discussed proposed amendments to MARPOL Annex VI which would, if accepted, mandate:

- **Regular internal reviews** of ship energy-efficiency performance (at least annually, with a preference for quarterly reviews), to ensure fuel consumption trends and implemented measures are checked frequently rather than only after poor CII ratings emerge.
- **A move from "rating compliance" to continuous improvement**, replacing the focus on simply achieving a C rating with ship-specific, incremental year-on-year improvement targets based on each ship's previous performance—especially for D- and E-rated ships.
- **An Energy Efficiency Implementation Log (EEIL)** to be maintained electronically, recording what efficiency measures were planned, implemented, modified, or abandoned, and providing objective evidence for internal reviews and external audits.
- **Clearer accountability within companies**, including identifying a designated person responsible for ship energy-efficiency performance, rather than diffuse responsibility across shipboard and shore staff.
- **Stronger and clearer audit and verification arrangements** for SEEMP Part III, including:
  - clearer audit scope and frequency,
  - defined auditor competence requirements,
  - linking audit outcomes to Statements or Confirmations of Compliance,
  - focusing more intensive audits on D- and E-rated ships, with lighter oversight for better-performing fleets.
- **Reduced reliance on "hard enforcement"** of CII results, arguing that direct enforcement of an operational rating is unreliable, and instead strengthening process-based enforcement through SEEMP planning, logging, reviews, and audits.

- **Better alignment between SEEMP and a reformed CII**, where CII acts as a performance indicator and market signal, while SEEMP becomes the mechanism that drives and proves efficiency improvements.

Despite there being broad support for enhancing the SEEMP framework, using the proposals discussed as a starting point, work was not finalised due to concerns raised including regulatory enforcement, excessive administrative burden. Work will continue intersessionally, with information and proposals to be submitted to a future session, including draft amendments to MARPOL Annex VI and relevant guidelines.

Interaction between the short-term measure and the IMO Net-Zero Framework

MEPC considered proposals to ensure synergies between IMO regulatory frameworks. Noting that CII aims to reduce energy use per transport work, while the IMO Net-Zero Framework is mainly focused on WtW GHG emissions via fuel standards and economic tools. Political uncertainty about the framework's future means its final scope and regulatory impact, and its effect on ongoing reviews of short-term measures, remain unclear. Overlapping or unclear roles between the CII and any future regulatory frameworks could weaken incentives for efficiency improvements and distort investment choices.

MEPC noted discussions to ensure synergies between the IMO carbon intensity/energy efficiency framework and the IMO Net-Zero Framework. From the discussions it was cautioned that more information is needed on the implications of considering synergies at this stage stressing:

- that the core purpose of CII must be clearly defined.
- the benefit of some overlap between short-term and mid-term measures.
- the ongoing uncertainty around mid-term measures leading to priority being given to enhancing SEEMP for now.
- the need for enforcement of the CII framework.

Refining fuel category references

The current guidelines to support the implementation of CII rely on a carbon conversion factor (Cf), referenced from MEPC.364(79) *Guidelines on the method of calculation of the attained Energy Efficiency Design Index (EEDI) for new ships*. The Cf is a key parameter used to convert fuel consumption into CO_2 emissions and directly affects the calculation of ship energy efficiency indicators. Current guidelines have shown limitations in addressing the latest international marine fuel standards and diversified fuel compositions (e.g. biofuel blends), which may lead to deviations in emission data verification.

MEPC considered and concluded that further consider the refinement of fuel category references, including for biofuels, including potential implications on other instruments such as the bunker delivery note (BDN) was needed. Proposals addressing this issue are requested for a future session.

Amendments to MEPC.1/Circ.905 to update the carbon conversion factor (Cf) calculation logic

MEPC.1/Circ.905 requires the Cf of biofuel blends to be calculated based on "energy-weighted" proportions. This method is inconsistent with the principle of mass conservation and may lead to a mathematical inconsistency whereby the calculated emissions of the blended fuel exceed the sum of emissions from its individual components.

As such, MEPC approved MEPC.1/Circ.905/Rev.1 on *Revised interim guidance on the use of biofuels under regulations 26, 27 and 28 of MARPOL Annex VI*, clarifying that for biofuel blends, the Cf should be based on the weighted average of the Cf for the respective amount of fuels by mass instead of energy, and that a biofuel blend should be treated as an equivalent fossil fuel type when the biogenic component is not certified. The application date for this revision will be 1 January 2027. MEPC.1/Circ.905/Rev.1 supersedes MEPC.1/Circ.905.

Harmful aquatic organisms in ballast water

Amendments to the International Convention for the Control and Management of Ships' Ballast Water and Sediments

MEPC approved draft amendments to the *International Convention for the Control and Management of Ships' Ballast Water and Sediments* (BWM Convention). Collectively the amendments will require shipowners / operators to demonstrate that the Ballast Water Management System (BWMS) is working properly, not just that it is type approved and installed correctly. Surveyors and port State control will increasingly inspect maintenance records, alarms, failures and corrective actions, not just certificates. Systems that are technically installed but poorly maintained or poorly operated are much more likely to result in deficiencies or detentions. Therefore, fundamentally ship owners / operators will need to ensure active management of the installed BWMS at a ship level to ensure continued compliance post installation.

The amendments to the BWM convention stipulate that:

- The **discharge of unmanaged or partially managed ballast water on the high seas** (or areas designated by the port State) where challenging water quality or contingency measures apply will be explicitly allowed if aligned with the IMO guidance (as per amended regulation A-3 new paragraph 4*bis*).

- **Ballast Water Management Plans must be accurate and controlled**, introduced through:
  - New regulation B-1.2bis requiring a BWMP to identify whether the BWMS is approved in accordance with the BWMS Code (MEPC.300(72)); approved under earlier G8 guidelines (MEPC.279(70); or operating under regulation D-4 (prototype).
  - New regulation B-1.2ter and, B-1.4bis B-1.4ter and B-1.4quater, requiring a BWMP to include maintenance procedures; safe ballast water exchange procedures; contingency measures; and temporary storage of grey water / treated sewage (if applicable).
  - New regulation B-1.2 requiring mandatory parts of BWMP must be approved by the Administration and version-controlled.

    Going forward this means that any BWMP will need to be updated to reflect the new requirements and reapproved. Furthermore, any future material change to the operation of the BWMS (for example BWMS upgrade, operation changes, contingency updates) may require formal BWMP reapproval.

- **Auditable BWMS maintenance records will be mandatory**, introduced through:
  - New regulation B-2.2bis, which allows the use of an equivalent maintenance recording system;
  - New regulation B-2.2ter, which requires a BWMS maintenance log within the BWRB if no equivalent system exists; and
  - New Appendix II which provides a template for a BWMS Maintenance Log.

- **Crew familiarisation with the installed BWMS will be enforceable**, introduced through the revision of regulation B-6, which requires that officers and crew must be familiar with duties and evidence of familiarisation must be kept onboard.

- **Ongoing ballast water management system performance will now be a regulatory obligation** introduced through amendments to regulations E-1.1, E-1.2, E-1.3, which require surveys to verify that the BWMS is *installed, maintained and achieving D-2 performance*; and

- **Active Substance systems will face tighter operational control**, introduced through:
  - New regulation D-2.3, which establishes mandatory limits on discharge of Active Substances.

- New regulation E-1.4.3, which requires annual sampling of residual Active Substances.
  This means that failure to discharge within MADC limits can now be considered as a regulatory non-compliance, rather than simply being a technical issue. URN

- **Surveys will examine ballast water management** every year, introduced through:
  - Revised regulation E-1.4, requiring annual surveys to include verification of BWMS maintenance records and annual sampling of residual active substances.
  - Revised regulations E-1.1 and E-1.3 (as noted above).

- **Failures and defects will trigger mandatory reporting and repair planning,** introduced through:
  - Revised regulation E-1.7, requiring that BWMS failures must be reported promptly; and
  - New regulation E-1.7.2, requiring a time bound repair plan approved by flag and destination port State(s).
    This means that continuing operation with a defective BWMS now requires formal approvals, not informal understanding. Failure management becomes a multi-authority issue involving potentially both flag and port States.

It is anticipated that these amendments will be adopted at MEPC 85, with expected entry into force date of May 2027.

It was also recognised that the experience-building phase associated with the BWM Convention will conclude at the time of the entry into force of the amendments to the BWM Convention and BWMS Code, which will be determined at the time of the adoption of the amendments

MEPC.409(84) 2026 Guidelines for Ballast Water Management and development of Ballast Water Management Plans (G4)

MEPC adopted MEPC.409(84) *2026 Guidelines for Ballast Water Management and development of Ballast Water Management Plans (G4)*. The 2026 G4 guidelines significantly expands and clarifies mandatory BWMP requirements, aligning it closely with the updated Convention regulations (see above). These revised guidelines revoke MEPC.127(53), as amended.

Ongoing Review of the Ballast Water Management Convention

MEPC further progressed the review of the BWM Convention and the outstanding amendments to the associated guidelines and BWMS Code.

The following topics related to the Ballast Water Management Code (MEPC.300(72)) are to be progressed:
- Minimum flow for testing: Flow rates should closely match real conditions for realistic rated capacity.
- Filter performance vs. approval flow: Clarify that approvals reflect tested filter performance only.
- Test water augmentation: Establish clear rules for additives and documentation.
- Natural test water data: Document characteristics consistently with augmented test water.
- Organisms >50 µm in land-based tests: Raise organism levels for challenging yet achievable conditions.
- Test cycles: Simplify and clarify required test cycle rules.
- Endurance test definition: Define a new long-duration reliability test.
- BWMS Code section for endurance test: Create a dedicated section to avoid confusion.
- Biological testing in endurance test: Exclude efficacy testing; include operational challenge.

- Endurance test success criteria: Set clear standards for alarms, stoppages, and performance.
- Treatment sequence in testing: Clarify if endurance testing is continuous or cumulative.
- Endurance test documentation: Specify data recorded during endurance testing.
- Minor/major modifications definitions: Refine definitions to prevent unneeded re-approval while keeping discretion.
- DBP information in approval documents: Administrations must explain handling of GESAMP-BWWG recommendations.

The following additional guidelines and topics that need to be developed were discussed:

- **Treatment of ballast water at reception facilities (G5)** - Amending MEPC.252(67) *Guidelines for port State control under the BWM Convention (G5)* to strengthen their role as a practical compliance option under the BWM Convention for situations with BWMS has failed or, a vessel has non-compliant discharges or faces operational issues due to challenging water quality. However, this was not supported, noting that treatment at reception facilities is outside the Convention's scope.
- **Strengthening the Active Substances approval procedure (G9)** - Amending MEPC.169(57) *Procedure for approval of Ballast Water Management Systems that make use of Active Substances (G9)* to strengthen understanding and control of disinfection by products (DBP) while ensuring the Active Substance approval framework remains fit for purpose protecting human health and the environment.
- **Status of the CWQ Guidance** - Amending MEPC.387(81) *Interim Challenging Water Quality Guidance*, to:
  - remove the interim status: this was not taken forwards due to the pending BWMC amendments.
  - develop practicable ballast water exchange options under CWQ: this was not supported under the review of the BWMC.
  - revise the bypass procedure: no consensus was reached on this due to data uncertainty.
  - accept and apply contingency measures: this was not supported as it is already addressed through repair plan requirements.
- **Standardisation of DBP measurement** – it was concluded that this should not be taken forwards under commissioning texting guidance as DBP's are addressed elsewhere.
- **Exceptional uptake of untreated ballast water during docking/undocking** - New standalone guidance will be developed to reflect real operational practice, noting ships often must take on untreated local water for stability when undocking, creating uncertainty and potential non-compliance with the D-2 standard.
- **Definition of "final total quantity" in the Ballast Water Record Book** - Amendments to the Record Book were agreed. This will eliminate inconsistent interpretations and ensure clear, uniform and reliable ballast water record-keeping under the BWM Convention.
- **Underdosing and historical bypasses** - This will be considered further under PSC and contingency-related objectives.
- **System behaviour, alarms and record-keeping** - Further guidance will link system behaviour and alarm interpretation to inspections.
- **Crew familiarisation checklist** - Familiarisation (not training) will be addressed under new operational guidance.
- **Indicative analysis and false positives** - High false-positive rates will be addressed through further work on sampling guidance.
- **Routine reliance on contingency measures** - Future guidance should better reflect real-world reliance on contingency measures.
- **Operational usability challenges** - New guidance may address alarms, workload and usability.
- **DBP information in type-approval review guidance** - Recent DBP data may be used to strengthen review of existing approvals.
- **Testing requirements for major modifications** - Testing expectations may be explored without setting prescriptive rules

- **Operationally usable OMSMs** - Future guidance should improve clarity and usability of OMSMs for crews and inspectors.

MEPC re-established the Correspondence Group on Review of the BWM Convention to further progress work on the above matters.

Revision of Guidelines outside the review of the BWM convention

Update of BWM.2/Circ.62 Guidance on contingency measures

MEPC considered a proposal to urgently amend the Guidance on contingency measures (BWM.2/Circ.62) to address divergent interpretations and operational difficulties, outside the formal Convention review process. The amendments seek to clarify the applicability, avoid indirect penalisation of compliant ships, and confirm that port reception or treatment facilities should not be mandatory as contingency measures for ships fitted with BWMS. Discussion on the matter was divided and as such did not progress with the update of the guidance at the current time. MEPC encouraged port States to work with flag States and ships to identify appropriate contingency measures on a case-by-case basis, using the full range of options already available in the existing Guidance.

Update of MEPC.387(81) Interim Challenging Water Quality Guidance

MEPC considered operational experience and feedback on the implementation of the MEPC.387(81*) Interim Challenging Water Quality Guidance*, and noting concerns about its mandatory application, despite its primary purpose to only guide the development of the BWMP when ships cannot operate the BWMS optimally in CWQ. MEPC considered urgently amending the Interim Guidance revising the definition of "operational demand", clarifying ballast water exchange (BWE) procedures, replacing detailed flowcharts with a simplified pre-arrival assessment, and better reflecting risks of equipment damage and port disruption. However, MEPC did not agree to amend the interim guidance at this time, but invited submissions to a future session, but also noting that update of MEPC.387(81) would now be included in the ongoing review of the Convention.

Unified Interpretation for implementing regulation D-3 of the Ballast Water Management convention

MEPC agreed to a new unified interpretation of regulation D-3 to resolve confusion over installation dates for BWMS approved under the 2016 G8 Guidelines. This will be included in an update of BWM.2/Circ. 66.

Currently a BWMS installed before 28 October 2020 may be approved under:
- MEPC.125(53) and MEPC.174(58) Guidelines for the approval of Ballast Water Management Systems (G8; Old G8 guidelines)
- MEPC.279(70) 2016 Guidelines for the approval of Ballast Water Management Systems (G8 guidelines)
- MEPC.300(72) Code for approval of Ballast Water Management Systems (BWMS Code)

A BWMS installed on or after 28 October 2020 must be approved in accordance with MEPC.300(72).

This phased approach was agreed to manage the transition from guidelines-based approval to the use of the mandatory BWMS code approvals. The BWMS Code states *"BWMS approved taking into account the 2016 Guidelines (G8) adopted by resolution MEPC.279(70) shall be deemed to be in accordance with the BWMS Code"*. However, Port State Control officers, particularly during Paris and Tokyo MOU CICs (2025), questioned ships fitted with 2016 G8 approved BWMS installed after October 2020 and some PSCs treated these systems as non-

compliant with regulation D-3, despite their approval status. As such this UI clarifies that BWMS approved under the 2016 G8 guidelines are deemed approved in accordance with the BWMS Code and may therefore be installed on or after 28 October 2020.

Ballast water management systems (BWMS) that make use of Active Substances

Approval of BWMS which use active substances

MEPC approved the following BWMS which use active substances:

- Blue Ocean Shield electrolytic chlorination (EC) BWMS – Final approval

MEPC also noted the following BWMS type approvals by Member States under the BWMS Code:

- Headway Technology Groups's OceanGuard Sim BWMS a filter-less electrochlorination system - Denmark
- Alfa Laval's PureBallast 3.5 Ultra (and Ultra Ex) as a modified UV- and filter-based system building on the earlier PureBallast 3.2 approval - Norway
- BlueBallast II NK-O3 BWMS (NK Co., Ltd), an ozone-based system using active substances – Liberia
- BlueBallast II NK-O3 BWMS (NK Co., Ltd), an ozone-based system using active substances - Liberia

MEPC additionally noted the following modifications/amendments to systems previously type approved by Norway:

- minor modification to the Optimarin Ballast System allowing the Control Panel Mk3 to replace Mk1 in older installations, without affecting D-2 compliance or requiring re-approval.
- amendment to the type approval of Senza BWMS TG2 (TeamTec), confirming that design updates (mixing unit, flow meter, control cabinet, signal communication) do not affect compliance.
- amendment to the type approval of the Cyeco BWMS, adding explosion-proof (Ex) models for hazardous areas, with no impact on D-2 compliance or system operation under the BWMS Code.
- amendment to the type approval of the inTank BWTS, adding an alternate TRO sensor and new bulk-chemical models (FITT/SuperFITT), with no impact on BWMS performance or compliance under the BWMS Code.

Increased exposure to carcinogenicity, mutagenicity and reproductive (CMR) toxicity substances

MEPC noted that GESAMP:

- considered new hazard information on the classification of certain Relevant Chemicals (acetaldehyde, 1,2-dichloropropane and 1,1,1-trichloroethane) for carcinogenicity, mutagenicity and reproductive (CMR) toxicity. The GESAMP-BWWG Database of chemicals most commonly associated with treated ballast water has been updated (http://gisis.imo.org) as well as the calculation for derived minimal effect level.
- concluded that crew and port State control exposure risks may exceed exposure thresholds to chemicals with CMR toxicity in worst-case scenarios unless PPE/RPE and strict procedures are applied.

Consideration and adoption of amendments to mandatory instruments

MEPC adopted resolutions:

- MEPC.407(84) Amendments to MARPOL Annex VI (Clarification of entries in data reporting required by regulations 27 and 28, designation of the North-East Atlantic as an Emission Control Area for Nitrogen Oxides, Sulphur Oxides and Particulate Matter, accessibility to the IMO Ship Fuel Oil Consumption Database, and review clause of the short-term GHG reduction measure); and

- MEPC.408(84) Amendments to MARPOL Annex VI (Use of multiple engine operational profiles for a marine diesel engine, including clarifying engine test cycles).

These amendments will enter into force on 1 September 2027.

The designation of the North-East Atlantic as an Emission Control Area for Nitrogen Oxides, Sulphur Oxides and Particulate Matter (regulations 13, 14 and appendix VII);

A new Emission Control Area (ECA) has been established for both NOx and SOx emissions in the North-East Atlantic, encompassing Greenland, Iceland, the Faroe Islands, and the western coasts of the United Kingdom and Ireland, extending southward to Spain and Portugal.

For NOx Tier III requirements, the regulation applies to ships operating within the ECA that have a building contract signed on or after 1 January 2027, or, in the absence of such a contract, with keel laying on or after 1 July 2027, or delivered on or after 1 January 2031.

With respect to SOx requirements, vessels navigating within the ECA must use fuel oil with a sulphur content not exceeding 0.10% m/m. This will be required from 1 September 2028 i.e. 12 months after entry into force of the new ECA.

Accessibility to the IMO Ship Fuel Oil Consumption Database (regulation 27 and Appendix IX) to improve transparency

The amendments to MARPOL Annex VI regulation 27 will enhance transparency by expanding access to DCS data. Specifically, these changes will permit the following:

- The Administration of a ship, or its recognised organisation, will receive full access to the reported data in the Fuel Oil Consumption database for that ship.
- All MARPOL Annex VI Parties will be granted comprehensive access to anonymised data for the purpose of analysis. The publication of non-anonymised data may be subject to the express approval of the flag State of the ships, prior to its inclusion in the non-anonymised database.
- Public user accounts will have access to anonymised data, ensuring that individual vessels remain unidentifiable.
- Only at a company's request will the IMO be able to grant public access to non-anonymised fuel oil consumption reports for a company's own ships.

Amending the review clause of the short-term GHG reduction measure to reference the 2023 IMO GHG strategy (regulations 20, 25 and 28)

The amendments to regulations 20, 25 and 28, update and align the review clause provisions for EEXI and CII requirements with the IMO 2023 GHG strategy.

The use of multiple engine operational profiles for a marine diesel engine clarifying engine test cycles (regulations 2, Appendix I and II).

The amendments to Regulation 2 and Appendices I and II of MARPOL Annex VI ensure that the amendments adopted in resolution MEPC.397(83) *Amendments made to the NOx Technical Code 2008 (Use of multiple engine operational profiles for a marine diesel engine, including clarifying engine test cycles)* work legally and operationally at ship level, aligning certification records, enforcement, and on-board verification with the NOx Technical Code (NTC) 2008 changes.

Specifically, the amendments are:
- Regulation 2 – alignment of the definition of the "irrational emission control strategy" with MEPC.397(83).
- Appendix I - introduces new entries in the IAPP Supplement explicitly identifying engines approved for multiple engine operational profiles (NTC Chapter 8) and Tier I, II or III operation under those profiles.
- Appendix II – is fully replaced to match the engine categorisation, test cycles (E2, E3, D2, C1) and weighting factors introduced by MEPC.397(83).

These amendments mean that the use of multiple engine operational profiles is permitted, but heavily controlled, with requirements for documentation, crew training on certified operating envelopes and, as needed, engagement with engine manufacturers and flag States.

Air pollution prevention

MARPOL Annex VI and the NOx Technical Code

Reduction of the impact on the Arctic of Black Carbon emissions from international shipping

MEPC noted:
- The ongoing consideration of a "polar fuels" concept by PPR 13 to control black carbon emissions in the Arctic.
- The invitation for new proposals on the subject, taking into account discussions regarding any consistency of any future standard with existing provisions in MARPOL Annex VI regulating fuel oil quality, as well as existing measures, such as the prohibition of the carriage and use of heavy fuel oil in the Arctic (regulation 43A of MARPOL Annex I) and the North American, Canadian Arctic and Norwegian Sea Emission Control Areas.

Evaluation and harmonisation of rules and guidance on the discharge of discharge water from EGCS into the aquatic environment

Updates on the development of a database on local and regional restrictions on the discharge from ECGS

Member States have been invited to submit information on local/regional restrictions/conditions on the discharge water from exhaust gas cleaning systems (EGCS) using the new dedicated tab in the MARPOL Annex VI module of GISIS.

Consideration of emission factors for use in the environmental risk assessment of the discharge of wash water from EGCS

With regard to the GESAMP Task Team on EGCS, MEPC noted that the Task Team was re-established to enable discussions on methodology and exploratory data analysis to commence.

Identification and development of regulatory measures on the discharge of wash water from EGCS

Finally, regarding the identification and development, as appropriate, of regulatory measures and instruments on the release of discharge water from EGCS into the marine environment MEPC:

- Noted the discussion at PPR 13 regarding a proposed change to regulation 4 of MARPOL Annex VI. The change would allow coastal States to ask for additional protective measures to limit discharges from exhaust gas cleaning systems (EGCS) in Particularly Sensitive Sea Areas (PSSAs).
- Concurred with the recommendation that Member States planning to apply for a new PSSA should consider whether an EGCS-related protective measure would be relevant when they are preparing and submitting their proposal.
- Noted the invitation for interested Member States and international organisations to continue discussions between sessions and to submit new, practical proposals to PPR 14 on how to control discharges of EGCS wash water.

Review and development of NOx emission requirements in MARPOL Annex VI and the NOx Technical Code 2008

Approval of NOx emission requirements to provide a means for certification of engines that operate on non-carbon-containing fuel or mixtures of carbon-containing and non-carbon-containing fuels

Following the work of PPR 13 on NOx emissions, MEPC approved amendments to the NOx Technical Code 2008, concerning certification of engines that operate on non-carbon-containing fuel or mixtures of carbon-containing and non-carbon-containing fuels, with a view to circulation and subsequent adoption. See the LR PPR 13 report for further details.

Applicability of NOx regulations to CCGT systems

MEPC considered a proposal to apply a new method to define and apply NO_x limits for ships using combined-cycle gas turbine (CCGT) electricity generation, arguing that the current MARPOL Annex VI approach, based on shaft power from reciprocating engines, is not suitable for these novel systems.

Regulation 13 of MARPOL Annex VI applies to marine diesel engines and that CCGT systems therefore fall out of the current regulatory scope. Additionally, concerns were raised that applying system-wide output-based approaches could reduce calculated values without achieving actual emission reductions. In the absence of sufficient support, it was agreed that interested Member States may bring this issue forward for future consideration.

Amendments to MARPOL Annex VI Regulation 15 and the supplement to the IAPP certificate (Appendix I)

MEPC approved the draft amendments to MARPOL Annex VI (regulation 15 (Volatile organic compounds) and appendix I (Form of International Air Pollution Prevention Certificate), with adoption expected at MEPC 85 (expected November 2026). See the LR PPR 13 Summary Report for further details.

Draft amendments to MEPC.1/Circ.795/Rev.9 Unified interpretation of IMO environment related conventions

MEPC approved:

- the revised unified interpretation of regulation 16.9 of MARPOL Annex VI to clarify requirements on shipboard incinerator type approval testing.
- a unified interpretation of regulation 13.2.3 of MARPOL Annex VI to clarify the application date for a major conversion, as well as the revised unified interpretation of regulation 13.2.2 on "Time of replacement of an engine" following the introduction of the new ECAs.

See the LR PPR 13 Summary Report for further details. This will be published as MEPC.1/Circ.795/Rev.10.

Development of a framework for the measurement and verification of actual tank-to-wake methane (CH_4) and/or nitrous oxide (N_2O) emission factors and Cslip value for marine diesel engines

To measure and report GHG emissions for ships under the *2024 Guidelines on Life Cycle GHG Intensity of Marine Fuels*, owners must use default or where permitted actual emission values. Actual values require clear, standardised, and verifiable methods to ensure accuracy and comparability. Work has progressed by correspondence group in developing such methodologies, notably through engine level monitoring (ELM) approaches or the use of continuous emissions monitoring systems (CEMS) onboard ships.

Amendment of MEPC.402(83) Guidelines for test-bed and onboard measurements of CH_4 and/or N_2O emissions from marine diesel engines

MEPC.402(83) on *Guidelines for Test-Bed and Onboard Measurements of Methane (CH_4) and/or Nitrous Oxide (N_2O) emissions from marine diesel engines* specifies a procedure for test-bed and onboard measurements and reporting of CH_4 and/or N_2O emission values from marine diesel engines, as well as documentation and verification of the same. The approach supports the assessment of a fuel and engine combination's Tank-to-Wake CH_4 and N_2O in the context of the *2024 Guidelines on Life Cycle GHG Intensity of Marine Fuels* (2024 LCA Guidelines).

Following further development of these guidelines, MEPC finalised and adopted MEPC.414(84) *2026 Guidelines for test bed and onboard measurements of CH_4 and/or N_2O emissions from marine diesel engines.* These guidelines update MEPC.402(83) providing:

- Expanded technical clarity, through more detailed measurement, calibration and interference-checking provisions, aligned with updated ISO 8178-2022 practices.
- Clearer treatment of methane slip, refining the definition, calculation and correction of methane slip to a reference gas composition, improving comparability.
- Explicitly clarifying the scope for methane-containing fuels (natural gas, bio-methane, e-methane) and their mixtures.
- Provisions for stronger handling of data gaps, by formalising the use of existing measurement data and conservative defaults (e.g. HC as CH_4 proxy) where direct measurements are unavailable.
- Clarity for when onboard measurements apply to individual engines vs. engine groups, and limitations for engine families.
- Positions the guidelines as a foundational, voluntary tool for future integration with LCA, CII, and net-zero frameworks, without prejudging mandatory use.

Guidelines for Engine load monitoring (ELM) and calculation of emission values

Engine Load Monitoring (ELM) can be used to monitor actual engine load during operation instead of the pre-defined weighting factors as described in section 3.2 of the NOx Technical Code 2008 (NTC 2008), as amended, and to be used in combination with verified CH_4/N_2O emission measurements to derive more representative emission values. The approach could support the assessment of a fuel and engine combination's Tank-to-Wake CH_4 and N_2O in the context of the *2024 Guidelines on Life Cycle GHG Intensity of Marine Fuels (2024 LCA Guidelines).*

MEPC adopted MEPC.415(84) *Guidelines for engine load monitoring (ELM) and calculation of emission values (ELM Guidelines).* These guidelines can be used by any ship operating a marine diesel engine with a requirement to report CH_4 / N_2O emissions, and wishing to diverge from the use of default values.

Guidelines for Continuous Emission Monitoring Systems (CEMS)

Continuous Emissions Monitoring Systems (CEMS), is equipment installed on a ship that can continuously measures exhaust gas emissions, providing direct, real-time emissions data as an alternative to periodic fuel sampling and calculation of emissions data. The approach could be used by any ship operating a marine diesel engine with a requirement to diverge from the use of default values (as outlined in the IMO 2024 *LCA Guidelines)* when reporting CH_4 / N_2O emissions.

MEPC adopted MEPC.416(84) *Guidelines for continuous emission monitoring systems (CEMS Guidelines).* These guidelines provide information on exhaust gas measurement systems, determination of exhaust gas flow rate, calculation procedures, data recording, CEMS documentation and CEMS certification.

Quantification of TtW emission values for methane and/or nitrous oxide emissions

Noting the adoption of:

- MEPC.414(84) *2026 Guidelines for test bed and onboard measurements of CH_4 and/or N_2O emissions from marine diesel engines*
- MEPC.415(84) *Guidelines for engine load monitoring (ELM) and calculation of emission values (ELM Guidelines).*
- MEPC.416(84) *Guidelines for continuous emission monitoring systems (CEMS Guidelines).*

MEPC agreed that, irrespective of any future mandatory frameworks, actual TtW emission values for methane (CH_4) and/or nitrous oxide (N_2O) emissions may be quantified, on a voluntary basis, using the following approaches:

1. engine load monitoring, using the ELM Guidelines, in conjunction with the *2026 Guidelines for test bed and onboard measurements of CH_4 and/or N_2O emissions from marine diesel engines*; and/or
2. continuous emissions measurement system, using the CEMS Guidelines.

Voluntary measurements and studies using the approaches are encouraged, and information on their implementation should be shared at a future session.

Emissions abatement devices

Emissions abatement devices are still at an early stage of development, so any approval or verification framework must ensure they reduce emissions and maintain performance over time. Some methane abatement systems are known to degrade as they age. Continuous emission monitoring systems (CEMS) or spot-check measurements are one way to verify real-world effectiveness. CEMS may be disproportionate or impractical in some applications, suggesting that alternative approaches, such as diagnostic or parameter-

based monitoring, should also be allowed. However, spot checks alone could miss under-performance if testing occurs only under favourable conditions. There is therefore a requirement for guidance on the use of emission abatement devices, to ensure that they are effective, durable, emission reductions under real operating conditions.

Noting that the EU's FuelEU Maritime approach, which requires maintenance records for methane abatement devices, MEPC invited submissions on CH_4 and N_2O emission-reducing devices, the associated technologies, their actual use and operational experience.

Components, settings and operating values that influence CH_4 and N_2O emissions

There is a need to ensure that methane (CH_4) and nitrous oxide (N_2O) emission values remain valid over time, not just at the point of certification. Some engine components, settings and operating parameters can significantly influence non-CO_2 emissions, and that there should be a way to verify that engines in service continue to operate within their verified emission characteristics. One option is to develop an onboard verification procedure, like engine-parameter checks used under the NO_x Technical Code. An alternative approach is to use onboard diagnostic (OBD-type) systems. However, while these OBD-type system may help detect faults, they are not suitable for continuous compliance monitoring and their reliability and cost would need further assessment. As such MEPC invited relevant stakeholders (engine manufacturers, technology providers and Administrations) to share relevant information, including experience with parameter verification and the use of OBD-type functionality in supporting compliance assurance.

Development of a regulatory framework for the use of onboard carbon capture and storage

MEPC 83 approved the work plan to creating a regulatory framework for onboard carbon capture and storage (OCCS). MEPC noted that substantial progress has been made in outlining an OCCS regulatory framework, but that many elements, such as detailed testing parameters, monitoring requirements, discharge criteria and integration with LCA accounting, require further technical work and experience. As a result, MEPC re-established the intersessional correspondence group, reporting back to MEPC 86, with the terms of reference to:

- further develop the framework for the measurement and verification of actual tank-to-wake methane (CH_4) and/or nitrous oxide (N_2O) emission factors and C_{slip} value for marine diesel engines.
- consider how this framework can support the application of the 2024 LCA Guidelines.
- develop a regulatory framework for the use of onboard carbon capture and storage using the *Work plan for the development of a regulatory framework for the use of onboard carbon capture and storage (OCCS)* with the exception of matters related to accounting of CO_2 captured on board ships.
- develop specific methodological guidance on OCCS accounting, verification, and certification, building upon the existing OCCS framework in the LCA Guidelines.

Marine Plastic Litter from Ships

Action Plan and Strategy

Revision of the Strategy to Address Marine Plastic Litter from Ships and consolidation with the 2025 Action Plan into a single resolution

MEPC 83 adopted MEPC.404(83) the 2025 Action Plan to address marine plastic litter from ships and approved in principle a revised grouping of short-, mid-, long-term and continuous actions. See the LR PPR 12 Summary Report for further information about the 2025 Action Plan. PPR 13 conducted a review of MEPC.341(77) *Strategy to Address Marine Plastic Litter from Ships* and combined the updated strategy and the 2025 Action Plan into a combined single draft resolution entitled the *2026 Strategy and the Action Plan to Address Marine Plastic Litter from Ships.*

MEPC 84 consequently adopted MEPC.417(84) *2026 Strategy and the Action Plan to Address Marine Plastic Litter from Ships.* A comprehensive review of the strategy and Action Plan will likely take place in 2030.

Plastic pellets

In response to the *MV X-Press Pearl* incident in 2021 (which resulted in the spillage of 11,000 tonnes of plastic pellets off the shore of Sri Lanka), a specific action has been included in MEPC.404(83) the *2025 Action Plan on Marine Plastic Litter* to develop mandatory measures to reduce the environmental risks of plastic pellets transported by sea in freight containers.

Development of amendments to appropriate mandatory instruments to address the environmental risk associated with the maritime transport of plastic pellets

MEPC considered the analysis undertaken by PPR 13 regarding the potential mandatory instruments that could be amended and associated implications to regulate the carriage of plastic pellets. Noting the recommendation of PPR 13 was to develop a new mandatory code through MARPOL Annex III and/or SOLAS, MEPC, further discussed how to proceed and agreed that PPR should develop and finalise the text of a new code, as well as the accompanying amendments to MARPOL Annex III and SOLAS to support the code. A decision as to which instrument(s) should support the code will be taken later. The drafted Code, MARPOL and SOLAS amendments should be submitted to a future session of MEPC.

Development of measures to prevent the carriage of plastic pellets in bulk

Considering the report of PPR 13, the discussion on creating a new IMSBC Code schedule stating explicitly that "*plastic pellets shall not be carried in bulk*" or alternatively adding this prohibition to an existing schedule was noted, and that this proposal would be forwarded to CCC for further consideration.

Fishing gear

It is estimated that 5.7% of all nets, 8.6% of traps, and 29% of fishing lines are lost annually, causing ecological, economic, and navigational harm. This underscores the need for an IMO led regulatory approach.

Adoption of an MEPC circular to promote the implementation of fishing gear marking systems and the FAO Voluntary Guidelines

To progress action on the marking of fishing gear, whilst further work is carried out to develop mandatory measures, PPR agreed a draft MEPC circular to promote the implementation of fishing gear marking systems and the FAO Voluntary Guidelines for the Marking of Fishing Gear. MEPC approved this circular which will be published as MEPC.1/Circ.921.

Voluntary reporting of data on lost or discharged fishing gear

To quickly build evidence on abandoned and lost fishing gear (a major source of marine plastic pollution), MEPC reviewed proposals for voluntary data reporting through the MARPOL system, while technical discussions on mandatory reporting and data management continue. MEPC tasked PPR 14 to review these documents and take further action as needed.

Information gathering survey on waste produced by ships during their normal operations

A proposal for a short voluntary survey to be conducted during port State control inspections to collect baseline data on voyage-specific information on waste type, quantities, management practices, and use of port reception facilities was discussed. The data would help fill key information gaps and support the IMO Study on marine plastic litter from ships, informing future measures under the 2025 Action Plan. Co-sponsors were invited to submit a refined proposal to MEPC 85, noting that MEPC had concerns about the use of PSC to conduct the survey, and the questions being asked. However, generally there was support for such a survey, to support the Marine Plastic Litter Action Plan and Strategy.

Underwater Radiated Noise from Ships

Concern has been raised that a significant portion of the underwater noise generated by human activity may be related to commercial shipping. The international community recognises that underwater-radiated noise (URN) from commercial ships may have both short and long-term negative consequences on marine life, especially on marine mammals.

Experience-building phase for the reduction of underwater radiated noise from shipping

To improve knowledge about the URN from shipping, an experience building phase (EBP) is ongoing where the industry is encouraged to apply MEPC.1/Circ.906/Rev.1 - *Revised guidelines for the reduction of underwater radiated noise from shipping to address adverse impacts on marine life* and submit findings with the intention to develop new mandatory and non-mandatory requirements.

MEPC noted the progress reported by SDC 12 on the URN EBP to date and agreed in principle to extend it by two years, with a target completion year of 2028. This is subject to a review by the secretariat of the technical and financial considerations with a view to advising MEPC 85 as needed.

IMO-commissioned study on URN emissions

Considering the report from SDC 12, MEPC agreed in principle to an IMO-commissioned study on URN emissions and the associated draft terms of reference, recognising the need to identify and secure financial resources, before confirming at MEPC 85, and subject to the Secretariat review the cost implications of extending the EBP (as discussed above).

If undertaken the study would aim to create reliable estimates of URN from international shipping that are relevant for policy decisions. These estimates will help set future URN targets, evaluate ways to reduce noise, and guide long-term decision making. By providing current baseline data as well as projections for shipping noise, the study will support the URN Action Plan and will use consistent scenarios and timelines to those in the Fifth IMO GHG Study.

Underwater radiated noise (URN) policy road map

Following from the agreement to extend the URN EBP, MEPC considered the development of a policy road map to guide work during the two-year extension of the EBP URN. Submissions on such a road map were invited to MEPC 85, identifying the most appropriate way forwards on how to reduce URN from shipping during the extension of the EBP, considering the outcome of the second workshop on underwater radiated noise and links to energy efficiency which noted that:

- significant knowledge on URN already exists and should be better applied.
- increased awareness of URN-related issues within the IMO groups working on energy efficiency is needed.
- reducing URN could have unintended consequences, such as lowering engine output and adversely affecting Selective Catalytic Reduction (SCR) system performance due to reduced exhaust gas temperatures. This is an issue which should be addressed at PPR 13.
- there are ongoing challenges in the holistic design and integration of multiple technologies and emphasised the need for more submissions, particularly those involving additional modelling and in-water demonstrations.

Technical guidance on co-optimising energy efficiency and underwater radiated noise at the design and retrofit stage

Considering the report from SDC 12, MEPC approved MEPC.1/Circ.922*Technical guidance on co-optimizing energy efficiency (EE) and underwater radiated noise (URN) at the design and retrofit stage*. These guidelines apply to newbuild and retrofit ships with a focus on design stage choices and maintenance/upgrade interventions with demonstrated co-benefits. They provide non-mandatory, practical guidance to help ship designers, builders, owners and operators identify and implement measures that deliver joint benefits for fuel efficiency, GHG reduction and underwater noise reduction.

Pollution Prevention Response

MEPC considered the report of PPR 13 with specific consideration of the technical matters detailed below, and additionally approved:

- the biennial status report of the Sub-Committee for the current biennium and the provisional agenda for PPR 14.
- the holding of an intersessional meeting of the ESPH Technical Group in 2027.

MARPOL Annex I and related guidelines

Amendments to MARPOL Annex I and consequential changes to the IOPPC and Oil Record Book

MEPC approved the draft amendments to MARPOL Annex I (new regulation 12B and amendments to appendix II – Form of the IOPP certificate and Supplements, and appendix III – Form of the Oil Record Book), with adoption expected at MEPC 85. These amendments introduce new regulations for integrated bilge water treatment requirements. See the LR PPR 13 Summary Report for further details.

Update of the draft revised 2020 IBTS Guidelines

MEPC approved in principle the draft 2026 Guidelines for systems for handling oily wastes in machinery spaces of ships incorporating guidance notes for an integrated bilge water treatment system (IBTS). It is anticipated that these guidelines will be finally approved by MEPC 85 in conjunction with the adoption of the draft amendments to MARPOL Annex I. See the LR PPR 13 Summary Report for further details.

Revised Guidance for recording of operations in the Oil Record Book Part I

MEPC approved in principle, the draft revised Guidance for recording of operations in the Oil Record Book Part I – machinery space operations (all ships), with final approval expected at MEPC 85 in conjunction with the adoption of the Integrated Bilge Water Treatment MARPOL Annex I amendments. See the LR PPR 13 Summary Report for further details.

Clarification regarding the carriage of cargo oil in slop tank(s) of oil tankers

There is an absence of any specific requirements in MARPOL Annex I addressing the carriage of oil cargo in slop tanks. Interested Member States have been asked to develop a common understanding on this matter and propose a draft unified interpretation or submit a proposal to MEPC for a new output to amend MARPOL Annex I if required. See the LR PPR 13 Summary Report for further details.

MARPOL Annex II & IBC code

Safety and pollution hazards of chemicals and preparation of consequential amendments to the IBC Code

Considering the report of PPR 13, MEPC:

- Concurred with the ESPH conclusion to allow short-term re-establishment of tripartite agreements (until 31 December 2026) for products removed during the mandatory review (called for by PPR.1/Circ.10).
- agreed to draft amendments to the IBC Code being prepared by PPR to incorporate entries in List 1 of the MEPC.2 circular, which are valid for all countries and have no expiry date. Ultimately these amendments will be approved by MEPC and MSC.
- Concurred with the evaluation of two cleaning additives (Lumi-Seaclean and Lumi-Solv) and their inclusion in the next revision of the MEPC.2/Circ.32, to be issued in December 2026.
- Noted the completion of the review of products in Lists 2 and 3 of the MEPC.2 circular prescribed by PPR.1/Circ.10 and approved the revised PPR.1/Circ.10.

Development of a legally binding framework for biofouling

MEPC concurred with the recommendation that the legally binding framework on the control and management of ships' biofouling should take the form of a standalone instrument and approved the draft terms of reference for its development.

Identification and protection of Special Areas, ECAs and PSSAs

Nasca Ridge (Peru) PSSA Associated Protective Measure (APM)

MEPC 83 agreed in principle the designation of the Reserva Nacional Dorsal de Nasca in Peru as a Particularly Sensitive Sea Area, subject to the further development and approval of the proposed associated protective measures. The PSSA will apply to all types and sizes of ship.

Prohibition on ballast water exchange and discharge operations within the geographical boundaries of the Nasca Ridge PSSA

MEPC did not agree to the prohibition of ballast water exchange and discharge within the PSSA. Noting that PSSA APMs should provide additional protection to that already provided by requirements already in force under existing instruments (in this case the Ballast Water Management Convention). The intent of the APM was supported but further work was deemed necessary prior to acceptance, including consideration of potential operational implications. Therefore, refinements were invited to be submitted at a future session.

Designation of MARPOL Special Area Status for Nasca Ridge (Peru)

MEPC referred the proposal to consider designating the Nasca Ridge National Reserve as a MARPOL Special Area under Annexes I, II, IV and V, complementing its prior approval in principle as a Particularly Sensitive Sea Area (PSSA) to PPR 14 with a view to advising MEPC how to proceed. If ultimately approved the designation would apply existing MARPOL Special Area discharge restrictions within the boundaries of the PSSA, without creating new technical standards. This would strengthen the protection of this ecologically significant seamount system from operational and accidental ship-source pollution.

Strengthening the PSSA framework

MEPC deferred consideration of proposals to strengthen the PSSAs' legal basis, expanding protections, fostering indigenous and community participation, and aligning with the BBNJ Agreement. These topics may be addressed later under a new output supporting UNCLOS implementation for marine biodiversity in areas beyond national jurisdiction.

Ship strikes on cetaceans

The MEPC noted a proposal for the urgent review and enhancement of existing ship-strike policies and measures. The objective is to utilise the best available scientific knowledge, advanced data collection methods, and risk-modelling tools to support environmentally sustainable shipping practices and improve protection for endangered cetacean populations. This initiative arises in response to observed increases in ship strike incidents involving marine mammals.

New Arabian Sea PSSA on coast of Oman

MEPC noted the proposal supporting the future designation of a Particularly Sensitive Sea Area (PSSA) along the Arabian Sea coast of Oman to address growing environmental risks from international shipping, particularly ship strikes on cetaceans. A suite of associated protective measures are under development including offshore rerouting of transit traffic, areas to be avoided, recommended routes, voluntary speed reductions, and possible adjustments to existing traffic separation schemes.

Decisions of other bodies

Outcome of FAL 49

MEPC noted the report from FAL 49 and

- Concurrently approved FAL-LEG-MEPC-MSC.1/Circ.1 *Guidelines for the use of electronic certificates*.
- Noted the work to progress the IMO Strategy on Maritime Digitalisation and the draft work plan for its development.

Outcome of MSC 110

Regarding the report of MSC 110, MEPC:

- Concurrently approved:
  - draft MSC-MEPC.2/Circ.15/Rev.3 *Guidelines for the development, review and validation of model courses* (revising MSC-MEPC.2/Circ.15/Rev.2).
- Endorsed the actions taken at MSC 110 in relation to the International Safety Management Code and related matters.
- Agreed to become a parent organ, together with MSC, for the outputs on:
  - "Comprehensive revision of the guidelines on the implementation of the ISM Code by Administrations and companies".
  - "Development of guidelines addressing the implementation of provisions left 'to the satisfaction of the Administration', or equivalent, in the relevant mandatory IMO instruments". Submissions were invited to a future session of III on this matter.
- Referred the request to consider any relevant environment-related aspects of the use of ammonia, as shipping fuel to PPR 14 for consideration with a view to advising MEPC on the way forward.
- Referred the information on Barrier B-1 regarding Fatty-acid methyl ester (FAME) on the identified potential inconsistency regarding cargo in MARPOL annexes I and II, which might prohibit the, otherwise, safe use of FAME as fuel, to PPR 14 for further consideration.

Reports from other sub committees

Implementation of IMO Instruments (III 11)

Noting the report of III 11, MEPC:

- Endorsed:
  - The issuance of III.3/Circ.14 Lessons learned from marine casualties, and III.3/Circ.15 Casualty analysis and statistics – Observations on the quality of casualty investigation reports, subject to concurrent decision by MSC.

- III recommendation that the new output on "Development of guidelines addressing the implementation of provisions left 'to the satisfaction of the Administration', or equivalent, in the relevant mandatory IMO instruments" be moved from the Committees' post-biennial agendas to the 2026-2027 biennial agenda and be included in the provisional agenda for III 13. This is subject to concurrent decision by MSC.
- The proposed development of the IMO Hong Kong Ship Recycling convention (HKSRC) survey guidelines to be developed by III and incorporated into the HSSC Survey Guidelines.

- Noted:
  - The invitation for interested Member States to submit proposals to the Committees for a new output on a review of the marine casualties and incidents (MCI) taxonomy in accordance with the provisions of MSC-MEPC.1/Circ.5/Rev.6.
  - The three-date criterion in MEPC.392(82) on MARPOL Annex VI amendments for ECA designation in the Canadian Arctic and Norwegian Sea does not need to be emphasised in the Survey Guidelines under HSSC.

- Approved:
  - draft MSC-MEPC.5 circular on Guidance on assessments and applications of remote surveys, ISM Code audits and ISPS Code verifications, subject to concurrent decision by MSC.
  - draft MSC-MEPC.5/Circ.3/Rev.1 on Unified interpretation of the date of completion of the survey and verification on which the certificates are based, subject to concurrent decision by MSC.

- Agreed to a proposed project to create a single, overarching Port State Control (PSC) database with a web service, building on and improving the existing PSC module in the Global Integrated Shipping Information System (GISIS). The secretariat was instructed to develop a project document to do this for consideration by the committees and the council.

Carriage of Cargoes and Containers (CCC 11)

Noting the report of CCC 11, MEPC:

- Concurrently endorsed (with MSC) the work plan for the development of a safety regulatory framework to support the reduction of GHG emissions from ships using new technologies and alternative fuels
- Concurrently approved (with MSC):
  - the updated biennial status report of the Sub-Committee for the 2024-2025 biennium
  - the proposed biennial agenda of the Sub-Committee for the 2026-2027 biennium
  - the proposed provisional agenda for CCC 12

Any Other Business

Addressing marine light pollution from ships

MEPC considered a proposal inviting Member States and stakeholders to collaborate on addressing marine light pollution from ships. Based on growing scientific evidence this is identified as an emerging issue, disrupting light-sensitive marine species such as seabirds, turtles, fish and corals. There is currently a lack of harmonised international guidance on the subject.

MEPC noted that cooperative work that could lead to voluntary guidelines covering shipboard lighting practices, technical specifications, voyage planning near sensitive areas, crew training and monitoring.

Ship Recycling

Developments at the Basel Convention COP

There were updates from the Secretariat of both the IMO and Basel Convention on the outcome of Basel Convention COP-17 (April–May 2025) in relation to ship recycling and its interaction with the Hong Kong Convention. COP-17 adopted Decision BC-17/23, welcoming the entry into force of the Hong Kong Convention, taking note of the IMO's provisional guidance (HKSRC.2/Circ.1) on the transboundary movement of ships for recycling, and requested Parties to submit comments for further consideration by the Basel Convention's Open-ended Working Group (OEWG; the next session will take place in June 2026). It is anticipated that the OEWG will make a recommendation to COP-18 on how to proceed.

New EU Ship Recycling Regulation certificates

It was noted that the European Commission has adopted updated EU certificate formats for the Inventory of Hazardous Materials (IHM) and the Ready for Recycling Certificate following the entry into force of the Hong Kong Convention in June 2025. The revised formats allow one single certificate to be used to meet the requirements of both the EU Ship Recycling Regulation and the Hong Kong Convention, ensuring legal certainty and administrative simplification without lowering EU standards.

Other topics

MEPC noted:

- The update on the IMO Secretariat's interagency cooperation with the UN system on marine environmental protection and requested the secretariat to continue updating MEPC on its work.

- The forthcoming publication of the following ICS industry best-practice publications (2025–2026) that support environmental compliance and safe ship operations:
  - Deck Procedures Guide (1st ed., 2026),
  - Shipping and the Environment: A Guide to Environmental Compliance (6th ed., expected 2026),
  - Tanker Safety Guide (Chemicals) (6th ed., expected 2026),
  - updates to guidance on ship-to-ship transfers, biofouling and hull cleaning, underwater radiated noise, helicopter/ship operations, and greenhouse gas compliance.

- The planned IMO Research and Development Forum titled "From Fossil to Future: Marine Pollution Preparedness in the Age of Alternative Fuels", to be held in Singapore on 21–22 September 2026. The Forum will address preparedness and response to pollution incidents involving alternative and low-carbon marine fuels (such as LNG, methanol, ammonia, hydrogen and bio/e-fuels), identifying knowledge gaps, sharing research, and strengthening global response capacity. It aims to produce a global roadmap, capacity-building framework and improved cooperation mechanisms, supporting implementation of the IMO 2023 GHG Strategy.

- The adoption of a standard procedure under the 1992 Civil Liability Convention (CLC) to determine when a ship ceases to be a "ship". This clarifies that where tank cleaning and discharges are carried out in accordance with MARPOL Annex I and properly recorded, a completed and master-countersigned Oil Record Book serves as evidence that the vessel is free of persistent oil residues and therefore not subject to the 1992 CLC.

Work Programme

New outputs

MEPC considered its work programme and that of its subsidiary bodies, for the 2027-2028 biennium. MEPC agreed:

- Amendment regulation 12 of MARPOL Annex VI to close a regulatory gap that currently allows ships to reintroduce ozone-depleting substances (HCFCs, notably R-22) into equipment that was originally designed for non-ODS refrigerants.
- To support the treatment of maritime autonomous surface ships (MASS) under MEPC instruments (e.g. MARPOL and BWM), noting that MSC, LEG and FAL have already completed regulatory scoping exercises (RSEs) and developed a roadmap for MASS, MEPC has not yet done so. MEPC tasked PPR to undertake a regulatory scoping exercise and develop a roadmap.

Coordination between IMO and the BBNJ agreement

To improve coordination between IMO instruments and the BBNJ Agreement, especially regarding ABMTs and MPAs in areas beyond national jurisdiction, a new output was proposed to align measures like MARPOL, PSSAs, ECAs, ballast water, biofouling, underwater noise, and dumping regimes with the BBNJ framework. Having considered this proposal for a new output MEPC agreed in principle to the inclusion of the draft terms of reference and work plan in the output of MEPC subject to further consideration by MEPC 85. The secretariat was instructed to assess technical administrative and financial implications of this new output, providing comments to MEPC 85 for consideration. Finally interested parties were invited to submit comments and proposals on the matter to MEPC 85.

MEPC 85 arrangements

MEPC 85 has been scheduled for 30 November - 3 December 2026.

Annex 1

Outcomes from ISWG-GHG 20 and 21 – Development of new and/or revision of existing guidelines, provisions, guidance and other documents, to support the uniform and effective implementation of the IMO net-zero framework

Draft Guidelines related to the GHG Fuel Intensity (GFI)

For any global fuel standard regulation there will need to be a calculation of the GHG intensity of the fuels and energy sources used onboard (GFI) as well as clarity on how data collected and calculations should be verified. MEPC noted the draft texts prepared on the:

- draft GFI calculation guidelines;
- draft amendments to the *2022 Guidelines for Administration verification of ship fuel oil consumption data and operational carbon intensity*; and,
- draft guidance on how to monitor, report and verify the energy derived from wind propulsion systems (WPS).

These base texts will be used as a basis for further work on the development of the GFI calculation, verification and reporting guidelines / guidance. More specifically ISWG-GHG expressed:

- general agreement on definitions of "energy from zero-emission energy sources"[1] and "energy from shore power"[2]
- general support for **conversion factors for zero-emission energy sources and shore power**, to reflect the emission reduction contribution of such energy sources. However, further work is needed to determine the default conversion factors. It was also understood that a method to determine ship specific and technology agnostic conversion factors is also needed.
- a willingness to **update the GFI calculation formula to incorporate OCCS-related emission reductions** in the calculation of the attained annual GFI at ship level. However, any approach must be technology neutral and not result in double counting of emissions/emission reductions.
- consensus that the **GFI calculation should not include an energy multiplier**, noting the GFI should be a measurement tool not an incentivisation scheme, and if included would break the link between the GFI and actual emission values calculated.
- agreement to retain the proposed adjusted **GFI methodology for ice-class vessels**, and invited further progress to be made intersessionally.
- general agreement that **nuclear power should be considered in the guidelines**, noting that there are safety regulatory concerns that will need to be addressed by the Maritime Safety Committee in due course.

[1] Energy from zero-emission energy sources is currently understood to mean "Energy from zero-emission energy sources means all energy for propulsion or for the operation of any equipment on board derived from wind propulsion systems, photovoltaic power generation systems, and other renewable primary energy sources installed on board a ship.

[2] Energy from shore power is currently understood to mean "*energy delivered to a ship:*

- from external electrical power supply, including ship-side and port-side installations, when feeding any of the ship's electrical distribution switchboards for powering hotel and service workloads or charging onboard energy storage methods such as batteries, and supercapacitors; or
- contained in replaceable energy storage methods providing electric energy, including swappable batteries and supercapacitors.

- general support for **including GFI verification requirements in MEPC.348(78)** 2022 Guidelines for Administration verification of ship fuel oil consumption data and operational carbon intensity and work on this would continue.
- an interest in the **role SEEMP can plan in documenting and supporting GFI compliance**, but that more regulatory certainty was needed before further progress could be made.
- The need for further regulatory certainty before being able to advance any other outstanding issues regarding the GFI calculation.
- general support for expanding **GFI calculation methodologies for estimating power from wind propulsion**, but further technical clarifications are still needed how the IMO should recognise and count wind propulsion in the GHG Fuel Intensity (GFI) system. Similarly, further technical work is also needed to develop the **guidance for solar photovoltaics and zero-emission energy sources**.

IMO Sustainable Fuel Certification Scheme

Sustainable Fuel Certification Schemes (SFCS) will be needed to certify the well-to-tank (WtT) greenhouse-gas intensity and sustainability characteristics of marine fuels. The certified outputs of SFCSs could then feed directly into an IMO regulatory system by providing key fuel data that are used to calculate a ship's attained GHG Fuel Intensity (GFI).

MEPC noted that text has been prepared which can be used as a basis for the further development of guidelines on requirements and procedures for recognition of sustainable fuel certification schemes and reporting of certification activities (SFCS guidelines). This includes draft terms of reference for the SFCS assessment group, which will be required to assess applicants to the IMO SFCS.

The ISWG-GHG 21 discussions on the SFCS generally focussed on who should be involved in approving fuel certification schemes, how should they be overseen, what data should they report, and how do we protect sensitive information, while still ensuring credibility. Specifically, ISWG-GHG 21:

- Converged towards an SFCS applying with support from a Member State and invited intersessional work on this to refine the process.
- Supported the inclusion of guidance on the principles for a continuous review of a recognised SFSC, which will ensure that regulatory integrity of a SFCS is protected, while ensuring revocation is fair, evidence-based, and not arbitrary.
- Supported in principle the establishment of a SFCS Assessment Group, but further work was needed to refine the terms of reference for such a group.
- Generally agreed that SFCS should submit data and information to IMO on an annual basis, ensuring that commercially sensitive content remains protected. Additional work is needed to develop this further.

IMO GFI Registry

The GFI Registry is central to any regulatory framework accounting for the GHG fuel Intensity (GFI) of ships. Its role is to record, track, and verify ships' annual GHG Fuel Intensity (GFI) performance and to manage the any lifecycle of compliance instruments (e.g. GFI surplus or/and remedial units), ensuring transparency, environmental integrity, and consistent global implementation.

The Secretariat was asked to provide more information on the possible costs involved in the establishment and operation of a IMO GFI Registry to a future session of ISWG-GHG, and to continue work on developing the functional requirements of the IMO GFI Registry taking into account interoperability with existing reporting requirements to the IMO DCS, cyber security, data governance and geographical inclusivity aspects.

ISWG-GHG 21 discussions noted that further regulatory clarity was also needed before decisions regarding administration fees for a GFI could be addressed. A fee may or may not be needed depending on whether the regulations have a financial element to them (or not).

Draft guidelines related to zero-/near-zero GHG (ZNZ) fuels and reward mechanisms

ZNZ fuels and technologies are a key part of shipping's long-term decarbonisation. Development of a ZNZ reward mechanism is a tool which could be developed to accelerate the uptake of such fuels, theoretically rewarding verified emission reductions, reducing early adoption costs and supporting scalable solutions for alternative fuel production.

MEPC considered the work that had been undertaken to progress the concept of zero-/near-zero GHG (ZNZ) fuels and reward mechanisms. Work will continue intersessionally on the development of the guidelines on ZNZ rewards and methodology to determine such rewards.

There was support for a modular approach to be taken to develop the guidelines with methodologies for differing across ZNZ categories (fuels/electricity, onboard renewables, OCCS, other technology). Any approach should technology and fuel neutral and not make any policy decisions regarding reward mechanisms that are in or out of scope at this stage.

IMO Net-Zero Fund

An IMO Net Zero Fund is a central pillar of the draft IMO Net-Zero Framework, intended to operate alongside the GHG Fuel Intensity (GFI) requirement and any associated economic mechanism. ISWG-GHG 21 confirmed the IMO Net-Zero Fund as conceptually central but politically sensitive, with deep differences remaining on timing, scope, and legal footing, meaning that further technical progress cannot happen until there is regulatory clarity on an overarching regulatory framework. Further discussions are required in relation to the proposed IMO Net-Zero Fund, including its governing provisions and possible disbursement of revenue, as well as possible measures to address food security.

Annex 2

Outcomes from ISWG-GHG 20 and 21 – Development of the 2024 LCA Guidelines

WtT calculation methodology (Section 4 of the 2024 LCA Guidelines)

A definition and methodology for quantification of avoided emissions in the e_{fecu} parameter.

Clarity is needed on how emission reductions achieved outside the immediate shipping fuel lifecycle (e.g. from replacing higher-emitting baseline activities) should be reflected within the IMO Life Cycle GHG Assessment (LCA) framework. MEPC agreed that avoided emissions were recognised as potentially valuable but methodologically and politically sensitive. No position was taken at this stage on defining a methodology, instead deferring to GESAMP for technical assessment.

Embodied emissions

Noting that the current LCA Guidelines are unclear about whether emissions embedded in equipment, infrastructure, and materials (for example, plant construction, capture equipment, electrolysers, storage tanks, or fuel processing facilities) are supposed to be included in default emission factors, it was decided that there should be no requirement to include a justification of why embodied emissions were not included in a submission for assignment of emission factors. Instead, embodied emissions beyond a cut-off criteria (to be described in the submission) may be reported to the GESAMP-LCA WG on a voluntary basis, for information only.

Ships using cargo as a fuel

The current 2024 LCA Guidelines assume a conventional bunkering model, i.e. that ships load fuel at a port and burn it later, but many ships burn part of the fuel they are transporting as cargo. This is not reflected in the existing WtT LCA values. MEPC invited the GESAMP-LCA WG to further consider possible approaches to ships using cargo as fuel in the LCA Methodology. This may include consideration of default or correction factors, adjustment of the parameter e_{td} (emissions from transport and distribution of the fuel to exclude shipping emissions thus avoiding double counting) or any other option to account for ships using cargo as fuel.

Accounting methodology for carbon capture and utilisation

Carbon capture and utilisation (CCU) sits in a middle ground in the LCA framework. Unlike carbon capture and storage (CCS), CCU does not necessarily remove CO_2 permanently from the carbon cycle, but reuses captured CO_2 to make synthetic fuels, chemicals, or materials that may later re-emit CO_2. MEPC noted the ongoing work and invited the GESAMP-LCA WG to continue its work on the development of an accounting methodology for CCU, considering relevant frameworks such as the IPCC Guidelines and IACO/CORSIA.

TtW calculation methodology (Section 5 of the 2024 LCA Guidelines)

Accounting of OCCS emissions

The 2024 LCA Guidelines already mention onboard carbon capture systems (OCCS), but in practice they do not yet work. The key OCCS term is set to zero, boundaries are unclear, and there is no agreed method for verification or certification. MEPC agreed to develop specific methodological guidance on OCCS emissions accounting, and that technologies that permanently mineralise CO_2 should be recognised in the OCCS value chain. Future work should build on the existing OCCS framework in the LCA Guidelines. The GESAMP-LCA WG

was invited to define system boundaries, and related issues will be addressed by the Air Pollution and Energy Efficiency group creating OCCS guidelines. It was agreed that onboard OCCS verification is the administration's responsibility, while onshore OCCS should be part of a Sustainable Fuel Certification Scheme (SFCS).

The effect of the fuel composition in the determination of methane slip value

Methane slip is a major climate concern, especially for LNG fuelled ships, because methane is a potent greenhouse gas. The LCA Guidelines already include methane slip in tank-to-wake (TtW) emissions, but they currently treat it in a simplified, generic way. New evidence shows that methane slip is not just about engine type or operating conditions. It is also influenced by the chemical composition of the gas itself. This means that two ships using LNG could have very different methane slip emissions, even if the engines are similar. Noting the diverse views and discussions on this matter during ISWG-GHG, the matter was referred to the Air Pollution and Energy Efficiency group. It was concluded that methane slip values must be corrected for fuel composition, and a reference-gas correction method based on an ISO 23306 average LNG composition. Additionally, with associated updates to the CH_4/N_2O measurement guidelines and future alignment of the LCA Guidelines.

Sustainability themes/aspects (Section 7 of the 2024 LCA Guidelines)

Existing sustainability themes/aspects, including ILUC

There is broad agreement that sustainability matters, but no agreement on how detailed, prescriptive, or globally standardised the IMO's sustainability assessment should be. The current 2024 LCA Guidelines include several sustainability themes (such as land-use change, water, air, soil, and conservation). However, there is a divergence of views, some consider that the sustainability themes are too vague or incomplete, especially in relation to ILUC, whilst others think they are too intrusive, quantitative or beyond IMO's mandate.

Noting this, changes to simplify the metric/indicator description for sustainability theme/aspect 4 of the LCA guidelines on Direct Land Use Change (DLUC) will be made. The general discussion on approaches to sustainability themes/aspects were also noted, but more time was needed to work intersessionally to appropriately implement these aspects. The risk-based classification approach for ILUC was supported in general and the GESAMP-LCA working group was asked to submit a more detailed report on the topic to MEPC 85.

Other social and economic themes/aspects

It was noted that there are divergent views on how to advance other social and economic themes/aspects.

Methodology to determine default emission factors (Section 9 of the 2024 LCA Guidelines)

The process for determination of WtT and TtW default emission factors, data quality requirements and overall GESAMP-LCA working group work arrangements and prioritisation: It is accepted that many default values are not truly global, especially for fuels like LNG and other fossil fuels where upstream emissions vary widely by region. There was support during ISWG-GHG to specify country of origin in the LCA guidelines list of default emission factors. However, concerns were also expressed over this approach. As such proposals on how to incorporate the country of origin in the list of default factors and assess the possible implications on the use of default emission values have been requested.

Additionally, the GESAMP-LCA working group is struggling to deliver default emission factors, and there is concern that the current process is unworkable given the number of fuel pathways, the variability in data

quality, and the urgency of implementing the LCA framework. On a formal, transparent data quality assessment (DQA) framework there were split views. Therefore, it was agreed, for now, that submissions should continue as per the current methodology outlined in MEPC.1/Circ.916. The GESAMP-LCA working group was invited to consider the proposed DQA framework proposed and assess if this could benefit their work, reporting back to a future session of MEPC.

The IMO Secretariat will liaise with the GESAMP-LCA working group on the prioritisation of its work.

The development of a common understanding of "representativeness" and "conservativeness", and determination of WtT emission values for fossil fuel pathways, including LNG

The GESAMP-LCA working group has concluded that much of the difficulty in agreeing default WtT emission values, especially for fossil fuels like LNG, is due to different interpretations of "representative" and "conservative." The GESAMP-LCA working group approach to the interpretation of "representativeness" (meaning the default emission factor should reflect standard global practices rather than exceptional cases) and "conservativeness" (meaning default emission factors should be designed to be conservative), and both ideas should be applied together was endorsed. GESAMP-LCA working group was asked to further refine its methodology using these definitions.

The third meeting of the GSAPM-LCA WG noted that for the LNG fuel pathway there is substantial regional variability and uncertainty across the upstream and logistical parts of the value chain—particularly methane leakage rates, transport distances, and transport modes—which makes it difficult at this stage to define a single value that is both representative and conservative. This challenge is made greater by the fact that fossil fuels are not permitted to use certified actual values under the LCA methodology, meaning that any default emission factor must be sufficiently robust to avoid underestimating emissions while still reflecting real-world practices. Given the current spread and quality of available data, the Group considered that selecting one global default value now could risk either misrepresentation or lack of defensibility.

Purely fossil fuel pathways, including LNG, have significant regional differences and uncertainties in upstream logistics (such as methane leakage, transport distances, and methods) which make it challenging to determine a single representative or conservative value for the LNG fuel pathway. There are divergent views of this topic and no consensus on the matter. The GESAMP-LCA WG will consider using statistical approaches (such as weighted averages or measures of central tendency) to resolve these challenges and determine global WtT emission factors for relevant fossil fuel pathways, and report back to MEPC 85 on their findings.

Methodology to determine actual emission factors (Section 10 of the 2024 LCA Guidelines)

Regarding ISO methodologies and frameworks

Whilst the LCA guidelines are more detailed about how to develop default emission factors, clarity on how to develop actual emission factors is lacking. Having considered the discussions of ISWG-GHG 21 on the matter of including ISO standards in the determination of actual emission factors its clear that there is a need to ensure a standardised and harmonised approach to determine actual emission factors. However, there was no consensus on the best way to do this, noting that IMO doesn't control the development and evolution of ISO standards. Refined proposals on how to resolve this matter were invited to a future session.

Certification of the GHG intensity of electricity

Electricity is becoming a critical input to many low and zero carbon marine fuels, but the LCA Guidelines are unclear on how the carbon intensity of that electricity should be proven and certified. More consideration on this issue is required intersessionally on this matter to share lessons from existing contractual mechanisms and associated certification aspects to determine eligibility criteria.

Chain of custody models

The credibility of the entire LCA and GFI system depends on knowing that claims about fuel origin, electricity use, and sustainability attributes can be traced and verified. Chain-of-custody rules define how that traceability works in practice. MEPC agreed that section 5.6 of the draft SFCS Guidelines was a good basis for further work and noted that further development was needed in various areas such as consistency with existing standards, enforcement functions, and balance between environmental integrity, practicability and inclusivity. Interested delegations were invited to continue to work informally on the further development of the SFCS guidelines with a view to submit draft guidelines to MEPC 85.

MEPC also agreed that a one-day GHG Expert Workshop (GHG-EW 7), ahead of ISWG-GHG 22 on chain of custody models should be organised, to facilitate the understanding of such models allowing for fuel supply chain traceability requirements under the IMO LCA framework. Further details on this will be circulated in due course by the Secretariat.

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