IMO News Flash
MEPC 80

The 80th session of Marine Environment Protection Committee (hereinafter referred to as MEPC) was convened as a hybrid meeting from 3rd to 7th July 2023 to discuss a wide range of issues under the purview of the Committee. This news flash briefs on the outcomes of MEPC 80 on major technical issues.

1. Adoption of amendments to mandatory IMO instruments (Agenda 3)

1.1 Amendments to Appendix II of BWM Convention in relation to the form of Ballast Water Record Book

MEPC 80 adopted Res.MEPC.369(80) containing draft amendments to Appendix II of BWM Convention in relation to the form of Ballast Water Record Book. These amendments were developed considering that the current form of the Ballast Water Record Book did not provide a sufficient clarity to meet the recording criteria of Appendix II of BWM Convention, noting that the most frequent deficiencies were related to the recording of the Ballast Water Record Book (more than 70%) among the key elements in the analysis report of EBP(Experience Building Phase). In particular, the introduction of these amendments is also expected to resolve the problems associated with the concern about duplicate entries of related items in the event of ballast water treatment by using BWMS as to whether items 3.1(ballast water intake) and 3.2(ballast water management) in the current form should be recorded simultaneously. These amendments will enter into force on 1 February 2025.

2. Ballast Water Management Convention (Agenda 4)

2.1 Final Approvals were granted

- BalClor® Smart BWMS (Denmark)
- EcoGuardian NF™ (Liberia)
- ERMA FIRST BWMS (extension for use in fresh water) (Greece)

2.2 Basic Approval was granted

- HiBallast 2.0™ (Republic of Korea)

2.3 Type approved BWMSs reported to MEPC 80 (total 3 units)

- BlueBallast II Plus NK-O3 BWMS (Liberia), ECS-HYCHLOR 2.0 BWMS (United Kingdom) and One-Pass Mode of the KBAL BWMS (Norway), they were type approved in accordance with BWMS Code adopted by resolution MEPC.300(72).

2.4 Guidance for the application of the BWM Convention to ships operating at ports with challenging water quality

It has been discussed that the ships may intake ballast water bypassing the BWMS when entering to a port area with high level of turbidity/total suspended solids (TSS) and then moving to an area where the BWMS can be

operated to exchange ballast water using water treated by BWMS.

Previous MEPC sessions generally supported for the BWE+BWT approach, while couldn't reach a consensus as there were divergent views with as to challenging water quality conditions such as BWMS not able to operate due to challenging water quality, aspects of BWE+BWT such as port States determines where ballast water exchange could take place and whether operation in PCWQ and BWE+BWT can be considered as a contingency measure or are part of anticipated operation which should be approved in the BWMP.

Moreover, it has also been discussed as to whether a substantial update to the existing guidance BWM.2/Circ.62(Guidance on Contingency Measures under the BWM Convention) should be made or a separate new guidance should be further developed, to address the challenged water quality, tank flushing to make normal operating condition of BWMS after bypass due to challenged water quality, and the locations and areas in which unmanaged ballast water can be discharged during BWE+BWT operation.

In particular, as the main elements to be taken into consideration when developing guidance for ships encountering challenging water uptake, it was agreed that BWMS bypass should only be as a last resort, communication with the coastal and/or port State receiving the challenging uptake water is crucial, and discharges following uptake in challenging water quality are expected to meet the D-2 standard at the next and subsequent ports of call, etc.

With above discussion backgrounds, MEPC 80 considered a concrete proposal containing the following outstanding elements on the development of these guidelines:

> .1 The Guidelines provide recommended steps that can be taken to restore or maintain effective operation of a BWMS when operating in challenged water quality. These include steps to identify when a system is inoperable owing to challenged water quality; actions to avoid bypass of the system; steps to recover from bypass to ensure compliance with the D-2 standard; and planning, record keeping, and communication principles.
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> .2 The guidelines do not address situations in which a BWMS is inoperable for reasons unrelated to challenged water quality, or in which inadequate performance is due to improper installation, operation or maintenance. Such situations should be addressed on a case-by-case basis in consultation with the Administration of the ship and implicated port States (See also BWM.2/Circ.62).
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> .3 Triggers for implementing challenged water quality procedures should be included in the BWMP and should be based on the performance and self-monitoring of the BWMS. The list of triggers should be developed in conjunction with the BWMS manufacturer, based on BWMS design and operational limitation(s).
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> .4 Challenged water quality triggers should be assessed on a voyage-by-voyage basis because water quality challenges may vary. Any pre-emptive bypass to manage challenged water quality should be agreed in advance by the Administration of the ship and the port State receiving the ballast water to ensure that the bypassed water is returned to D-2 compliance prior to discharge. Bypass should always

be considered as the last resort and the BWMS should be used as much as possible to treat ballast water with challenged water quality.

However, MEPC 80 couldn't reach a consensus on the proposed draft guidance for the application of the BWM Convention to ships operating at ports with challenging water quality due to the issues identified for further consideration such as the possible temporary nature of the guidance; pre-emptive bypassing of BWMS; crew familiarity with equipment and operations; stakeholder roles; and return to D-2 compliance following BWMS bypass.

Thus, due to the lack of consensus and the time constraints, and recognizing that if there was any further delay this work might be superseded by the potential consideration of a long-term solution under the EBP (Experience Building Phase), MEPC 80 agreed to further consider and finalize this matter at the next session as a final opportunity.

2.5 Temporary storage of treated sewage and grey water in the ballast water tanks under BWM Convention

Given that many ships in service have a need to store treated sewage or grey water in a ballast water tank due to port State requirements, it has been discussed as to whether temporary storage of treated sewage or grey water in a ballast water tank is permitted or not, if permitted, as to whether it is to be a guidance as an MEPC Circular or amendments to MARPOL Annex IV and BWM Convention to reflect this permission.

In addition, last MEPC 79 considered a draft guidance to provide uniform procedure, covering the technical and operational aspects of the temporary storage of grey water and treated sewage in the ballast water tanks as well as draft amendments to BWM Convention to provide a legal clarity for the use of dual purposes ballast water tank. In particular, the Committee agreed the need for guidance on temporary storage of treated sewage and grey water in ballast tanks as this practice was not prohibited by the BWM Convention nor by MARPOL Annex IV, and this practice was already taking place.

With above discussion backgrounds, MEPC 80 considered a concrete proposal containing the following outstanding elements on the developments of these guidelines:

.1 For ships with limited spaces to provide adequate tank arrangements for holding treated sewage and grey water generated onboard, the ballast tanks may be temporarily used as treated sewage and/or grey water holding tanks. In doing so, the technical and operational measures should be conducted to avoid the contamination of ballast tanks. Such operational and management method of the temporary storage of the treated sewage and/or grey water in the ballast tanks should be described in the Ballast Water Management Plan (BWMP) of the ship.

.2 To avoid possible spread of live organisms, prior to the transfer of treated sewage/grey water into the ballast water, the ballast tank should be properly emptied using BWMS to remove any residual ballast water and sediments as far as practicable. The ballast tank should be fully emptied to remove any residual treated sewage or grey water before being used as a ballast tank again.

.3 During the period in which the ballast tank is holding treated sewage/grey water, the Ballast Water Record Book (BWRB) should have an entry with the type of water being stored as well as date, time and location of change of the use of a ballast tank.

However, MEPC 80 couldn't reach a consensus on the proposed draft guidance due to the complexities in relation to the cross-referenced requirements for the BWM Convention and MARPOL Annex IV and the implication by the ongoing review of MARPOL Annex IV being conducted by the PPR Sub-Committee. Thus, MEPC 80 invited interested member States and international organizations to submit further concrete proposals to the next session for finalizing guidance on the temporary storage of grey water or treated sewage in ballast tanks.

2.6 Ballast water record-keeping and reporting

In relation to the adoption of BWM Convention concerning the revised form of Ballast Water Record Book (BWRB), as referred in paragraph 1.1 above, last MEPC 79 agreed that the proposed part II of the BWRB to facilitate record keeping and reporting under the BWM Convention should not be included in the draft amendments to the form of BWRB and thus it should be deemed as non-mandatory nature. It was further agreed that BWRB recording guidance and electronic record books under the BWM Convention will be further considered with more concrete proposals at MEPC 80.

In this respect, MEPC 80 approved BWM.2/Circ.80 on the Guidance on ballast water record-keeping and reporting with following outstanding elements.

.1 The guidance for completing entries in the Ballast Water Record Book (BWRB) was included as part of the guidance for record-keeping and reporting. The guidance clarifies when and how to record operations in the BWRB, and provides storage information, and sample entries in the BWRB covering the various operation scenarios undertaken by the ship during normal operation. The samples provided also cover the various scenarios on the operations as per contingency plan, discharge to a port-based or reception facility, and failure/inoperability of BWMS, etc.

.2 Ballast water reporting form and how to record this form were provided in the guidance as a separate section. A Ballast Water Reporting Form (BWRF) may be submitted prior to entry into a port State that requires specific information regarding the management of ballast water on ships bound for its port, offshore terminals or anchorage areas.

.3 Voluntary tank-by-tank log form and how to record this form were also provided in the guidance as a separate section. While tank-by-tank logs are not required by the Convention, keeping these records are recommended as a best practice to assist in completing any BWRF that may be required by a port State; demonstrating that entries in the BWRB reflect the actual ballast water situation on board during any inspection.

In addition, MEPC 80 further adopted Res.MEPC.370(80) and Res.MEPC.371(80) containing the consequential amendments to the *2017 Guidelines for ballast water exchange* (G6, Res.MEPC.288(71)) and the *Guidelines for*

ballast water management and the development of Ballast Water Management Plans (G4, Res.MEPC.306(73)) to refer the guidance approved as BWM.2/Circ.80 in the ballast water implementation related guidelines and delete the sample format of ballast water reporting provided in the appendix to the 2017 Guidelines for ballast water exchange (G6).

2.7 Experience Building Phase (EBP) and Convention Review Plan (CRP) under the BWM Convention

Experience Building Phase (EBP) which is constructed as three stages: a data gathering stage, a data analysis stage, and a Convention review stage has been carried out to monitor the overall implementation of the BWM Convention in accordance with BWM.2/Circ.67/Rev.1 on data gathering and analysis plan required for implementing EBP, and its subsequent analysis report was submitted to MEPC 78.

With this analysis report, taking also into account a proposal to develop a Convention Review Plan that could take into account the data analysis report, establish a clear scope for a feasible Convention review, focus attention on priority issues, and update the timeline for completing the EBP, MEPC 78 agreed to develop a BWM Convention Review Plan to identify the overarching issues, inter alia, areas for improving BWMS performance and reliability, including crew training and maintenance. In this respect, this agreement means that the EBP for the BWM Convention was extended by autumn 2026 and the non-penalization of early movers was also extended to the end of EBP.

A correspondence group was established to progress this task, and its report was submitted to MEPC 80 for consideration. After consideration, MEPC 80 approved BWM.2/Circ.79 on the *Convention Review Plan under the experience-building phase associated with the BWM Convention*, with following outstanding elements:

.1 The Convention review stage will develop amendments through a systematic and evidence-based approach, based on the data gathering and analysis report developed earlier in the EBP, and ensure that amendments are developed holistically, given any inconsistencies or ambiguities, through an objective, transparent and inclusive approach.

.2 The EBP includes the trial period associated with PSC guidelines (Res.MEPC.252(67)), with the goal of developing a suite of accepted procedures that can be used for sampling and analyzing ballast water in a globally consistent way. The results of the trial period and implementation experience gained will be considered, recalling an agreement that the PSC guidelines be kept under review after the trial period.

.3 The purpose of the review is to promote the development of suitable technology for ballast water management including the development of robust BWMS suitable for challenging conditions, and to encourage the development, selection, installation, operation and maintenance of BWMS suitable for the operational profile of the ship.

.4 The issues to be addressed for future consideration was identified as follows:
- How to improve the performance and reliability of BWMS to increase compliance to the D-2 standard;

- Mechanisms for ship compliance in circumstances in which a BWMS installed on a ship may not be suitable for the intended specific voyage or operations to be undertaken;
- Mechanisms for ship compliance in cases of BWMS failure need to be agreed to ensure the aims of the Convention are maintained in all situations;
- Mechanisms for ship compliance in situations other than BWMS failure or challenging water quality need to be agreed to ensure the aims of the Convention are maintained in all situations;
- BWMS may become temporarily inoperable when encountering challenging water quality; and
- The current type approval process does not support modifications to BWMS, etc.

Furthermore, MEPC 80 agreed to establish a correspondence group to define objectives for changes to specific Convention provisions and/or instruments, or the need for new provisions and/or instruments, to address the issues as referred in paragraph 2.7.4 above.

2.8 Modifications to BWMS after type approval

MEPC 80 considered a proposal on development of a guidance for approval after initial type approval of BWMS due to necessary modifications to the system. While approval of modifications to an already type approved BWMS due to changes or upgrades is not clearly defined in the BWMS Code, it is noted that such modifications to existing BWMS are sometimes carried out for system's upgrade purposes (e.g. a robust BWMS suitable for challenging water quality, or alternative filters), and thus it should be clarified whether the current procedures for type approval in accordance with BWMS Code should be carried out without simplified process (e.g. reduced test scope from BWMS Code such as omissions of land-based and/or shipboard testing, if necessary) or not.

After consideration, MEPC 80 invited interested Member States and international organizations to submit concrete proposals to the next session on guidance or a unified interpretation to address this matter including the potential linkage with the BWMS Code and the Convention Review Plan (see paragraph 2.7.4 above), given the views that while this issue was already covered by the BWMS Code and any matters should be considered under the Code not in a guidance document, it should be addressed in the guidance or a unified interpretation.

2.9 Ballast Water Electronic Record Book

Recalling that regulation B-2.1 of the BWM Convention stipulates that ballast water record book may be of an electronic record system, but there is no associated guidance in relation to the use of ballast water electronic record book to ensure a harmonized approach with the relevant requirements of MARPOL and the NOx Technical Code allowing the use of electronic record book system, MEPC 80 considered the proposals containing amendments to the BWM Convention and draft guideline as follows:

.1 A definition of the Electronic Record Book;
.2 Reference to the requirements for an electronic record book to be approved by the Administration, taking into account the necessary guidelines developed by the Organization; and

.3 A draft guidelines along the lines or Res.MEPC.312(74) on the *Guidelines for the use of electronic record books under the MARPOL Convention* to allow the use of electronic record system for ballast water record book.

After consideration, MEPC 80 adopted Res.MEPC.372(80) on the *Guidance for the use of electronic record books under the BWM Convention* and approved draft amendments to regulation A-1 and B-2 of the BWM Convention for providing a definition of electronic record book, approval requirements of electronic record book and a verification requirement by the ship's master, with a view to adoption by MEPC 81.

3. Air Pollution and Energy Efficiency (Agenda 5 and 6)

3.1 The implementation of the Global 0.5% sulphur limit, including matters relating to exhaust gas cleaning system (EGCS)

MEPC 79 considered the recommendations required to arrive at representative EGCS discharge emission factors, and a methodology to be agreed first before agreeing emission factors, as well as inconsistencies between UNCLOS and draft amendments to MARPOL Annex VI in relation to the discharge of discharge water from EGCS. In particular, given that UNCLOS refers that a state may impose environment requirements on international shipping when a ship is operating in a state's internal or territorial sea area, the Committee also considered draft amendments to MARPOL Annex VI for the purpose of aligning the definitions of water areas in the UNCLOS and MEPC.1/Circ.899 providing the procedures for risk assessment to ascertain whether EGCS wash discharge water can be discharged in their port limits.

MEPC 80 further considered related proposals on the inclusion of a draft definition of discharge waters in regulation 2.1 of MARPOL Annex VI and the inclusion of a new regulation in MARPOL Annex VI on the "discharge of discharge water from an equivalent compliant method under regulation 4 and 14" to justify the introduction of a regulation to control the discharge of discharge water from open loop EGCS in other sea areas under the jurisdiction beyond territorial sea.

However, considering the concerns raised from a technical aspect that the text proposals may convey misleading message to the Parties that all countries are required to regulate discharge of discharge water from EGCS regardless of performing the risk and impact assessment of the discharge water while the countries should implement regulations only in case that the assessment of discharge water of EGCS resulted in unacceptable level of risks or impacts according to MEPC.1/Circ.899, and from a legal aspect that a Party which intends to regulate discharge of discharge water from EGCS in their respective exclusive economic zone (EEZ) of a Party shall consult with any other Parties concerned through the Organization, MEPC 80 agreed to refer the proposals provided to PPR 11 for further consideration.

3.2 Matters relating to biofuels and biofuel blends

ISWG-GHG 15 and MEPC 80 considered following issues:

.1 Proposal for development of interim guidelines for the use of biofuels and blends of biofuels as fuels to provide with the industry with guidance related to procurement, storage and use of biofuel blends.

.2 A draft MEPC resolution on biofuel that is certified to conform to the sustainability aspects in the Lifecycle Assessment (LCA) guidelines being assigned a CO_2 emission conversion factor (C_f) as "zero" for use in IMO DCS and CII regulations and thus facilitate the uptake of biofuels and the reduction of GHG emissions from international shipping.

After consideration, MEPC 80 approved MEPC.1/Circ.905 on the interim guidance on the use of biofuels under regulation 26(SEEMP), 27(IMO DCS) and 28(Operational Carbon Intensity) of MARPOL Annex VI (DCS and CII), with the following outstanding elements:

.1 Pending the development of the comprehensive method to account for well-to-wake GHG emissions and removals based on the IMO LCA Guidelines, biofuels that have been certified by an international certification scheme, meeting its sustainability criteria, and that provide a well-to-wake GHG emissions reduction of at least 65% compared to the well-to-wake emissions of fossil MGO of 94 gCO_{2eq}/MJ (i.e. achieving an emissions intensity not exceeding 33 gCO_{2eq}/MJ) according to that certification, may be assigned a Cf equal to the value of the well-to-wake GHG emissions of the fuel according to the certificate (expressed in gCO_{2eq}/MJ) multiplied by its lower calorific value (LCV, expressed in MJ/g) for the purpose of regulations 26, 27 and 28 of MARPOL Annex VI for the corresponding amount of fuels consumed by the ship.

.2 In any case, the Cf value of a biofuel cannot be less than 0. For blends, the Cf should be based on the weighted average of the Cf for the respective amount of fuels by energy. A Proof of Sustainability or similar documentation from a recognized scheme should be provided along with the Bunker Delivery Note, to facilitate the verification of the reported biofuel consumption. For biofuels not certified as "sustainable" or not fulfilling the well-to-wake emission factor criterion above should be assigned a Cf equal to the Cf of the equivalent fossil fuel type.

3.3 Matters relating to Black Carbon

MEPC 80 considered following issues:

.1 Proposed six Black Carbon control measures were proposed such as switch to distillate fuel, fuel standard based on aromatic content, black carbon emission control area, engine certification, further work on Res.MEPC.342(77) – voluntary use of distillate or other cleaner alternative fuels in Arctic waters, mandatory installation of black carbon reduction technology and polar fuel standard.

.2 Proposed geographic scope of Arctic area with intention of reducing the impacts on the Arctic of black carbon emissions from international shipping, such as extending the current Arctic water defined under the POLAR Code to all waters north of 60 degrees North, as well as new introduction of black carbon emission control area via amendments to MARPOL Annex VI.

After consideration, MEPC 80 agrees that whilst voluntary black carbon reduction measures may be developed for ships sailing in or near the Arctic area in accordance with Res.MEPC.342(77) on "Protecting the Arctic from Shipping Black Carbon Emissions", consideration by the Committee of any potential mandatory measures to expand the geographical scope of application or the definition of the Arctic should only be given when such a proposal is co-sponsored by a Party to MARPOL.

3.4 NOx Tier III compliance strategy in low load point of the SCR operation

MEPC 80 considered a proposal encouraging the international cooperation to address a concern that the actual NOx emission levels may be exceeding the Tier III standards when ships with IMO NOx Tier III propulsion engine are operating within ECAs at low loads (below 25% Maximum Continuous Rating (MCR)), such as in port, coastal, and inland areas, ship speed reduction zones. It was based on that a Selective Catalytic Reduction (SCR) system does not work properly below 250˚C of exhaust gas from marine diesel engines.

In this respect, a potential modification to the certification scheme was also addressed such as an additional point corresponding to a low-load condition to be tested along with the standard E3(or E2) cycle, and the low-load point (10% or 15% of engine power) could be defined for different types of engines.

After consideration, MEPC 80 couldn't reach a consensus on this issue due to the concerns on inconsistency between the NOx emission in terms of g/kWh under the NOx Technical Code 2008 and the actual NOx emission volumes, and the safe operation of ships if they are required in the future to use SCR devices at low loads. Thus, MEPC 80 invited interested Member States and international organizations to provide any relevant information on engine emission testing and certification for NOx Tier III, including findings from recent studies, to a future session.

3.5 Amendments to MARPOL Annex VI related to gaseous and low-flashpoint fuels

While MEPC 79 adopted Res.MEPC.362(79) on the draft amendments to appendix V of MARPOL Annex VI on *Information to be included in the Bunker delivery Note* (regulation 18.5) to include "flashpoint" of fuels, concerns were raised that such amendments do not cover liquid low-flashpoint fuels such as methanol and ethanol due to the difference of fuel oil defined in between SOLAS II-2 as "oil fuel" based on liquid petroleum fuel and MARPOL Annex VI "fuel oil" containing gas and low-flashpoint fuels.

MEPC 80 considered proposals on the further amendments to MARPOL Annex VI to reduce such a regulatory gap between those definitions. After consideration, MEPC 80 approved draft amendments to regulations 2, 14, 18 and appendix I of MARPOL Annex VI with a view to adoption by MEPC 81 as follows:

.1 In defining "gas fuel" and "low-flashpoint fuels", it was agreed to add a new definition of "gas fuel" aligning with the definition of "gas" in IGF Code;
.2 It was agreed that in-use/onboard sampling point requirements according to regulations 14.10 and 14.11 of MARPOL Annex VI and MARPOL representative sample requirements according to regulation 18.8 of MARPOL Annex VI should not apply to gas/low-flashpoint fuel;

.3 Given that the minimum information such as sulphur content for low-flashpoint fuels still need to be documented by means of the bunker delivery note, it was agreed that the BDN requirements apply to low-flashpoint fuels for the purposes of MARPOL Annex VI; and

.4 It was agreed to replace references to "for combustion purposes for propulsion" by “for use” in the definition of fuel oil to keep a technology neutral definition.

3.6 EGCS Electronic Record Book

Recalling that Res.MEPC.340(77) on the 2021 Guidelines for exhaust gas cleaning system stipulates that EGCS record book may be of an electronic record system, but the guidelines do not contain specific provisions regarding approval of the ERB by the Administration or by recognized organizations acting on its behalf, MEPC 80 agreed that the proposed amendments to the Guidelines to introduce a footnote referring to Res.MEPC.312(74) on Guidelines for the use of electronic record books under MARPOL.

3.7 Revision of IMO Ship Fuel Oil Consumption Data Collection System (DCS)

MEPC 80 considered following issues:

.1 Widening the accessibility of IMO DCS data to increase the scope of the fuel consumption and data granularity for promoting future decision-making in the field of GHG emission reduction. In this respect, the rules for differentiated access preserving confidentiality of DCS data were also proposed to address commercial sensitivity reasons and keep a certain degree of data anonymization (IMO Secretariat with full accessibility to non-anonymized data, Parties with accessibility to non-anonymized data for their own analysis, and ROs with accessibility to non-anonymized data they submitted via delegation by a Party, etc).

.2 Proposed amendments and improvements to the 2022 *Guidelines for the development and management of the IMO Ship Fuel Oil Consumption Database* and the GISIS Ship Fuel Oil Consumption Database Module to improve the reliability and accuracy of data reporting in the GISIS module and reduce the administrative burden, such as a function to modify the data already entered in the GISIS module, etc.

.3 A proposal to transfer “Information to be submitted to the IMO Ship Fuel Oil Consumption Database” required from appendix IX of MARPOL Annex VI to new guidelines to support an effective and efficient review of the CII regulations and associated guidelines.

.4 Conducting a feasibility study on the use of the EEOI indicator accounting actual cargo volume carried in the calculation formula of the CII in order to assess its effectiveness in verifying the operational efficiency of the different types and sizes of ships.

.5 A proposal to amend the IMO Data Collection System for the use of a new transport work unit “TEU-mile” as the sole metric to quantify cargo carried by containerships in lieu of DWT under the current CII

calculation method.

After consideration, MEPC 80 approved the draft amendments to regulation 27 and appendix IX of MARPOL Annex VI on the granularity of reporting fuel consumption and additional data with a view to adoption by MEPC 81, with the following outstanding elements:

.1 On an ad-hoc basis and under strict confidentiality rules, IMO DCS data may be shared for the analysis and research purposes. On the request of a company, the fuel oil consumption reports of the company's owned ships can be shared to the public in a non-anonymized form; and
.2 The amendments set include data granularity for promoting future decision-making in the field of GHG emission reduction, but the matters on the rules for differentiated access preserving confidentiality of DCS data could not be agreed due to the concerns on the administrative burden, inequity of member States in their ability to exploit data and preserving the confidentiality of commercially sensitive data, notwithstanding the broad support to improving the accessibility of IMO DCS data. Thus, it was agreed to continue this issue at future session of the Committee.

3.8 Review of the short-term measure (EEXI, CII and SEEMP)

MEPC 80 considered following issues:

.1 IMO Secretariat's considerations on how the review of the short-term measure could be conducted in an effective and efficient way. Considering a structured framework for conducting Experience Building Phase and non-penalization associated with BWM Convention (Res.MEPC.290(71)), a similar frame and structure for conducting the review of the short-term measure to be completed by 1 January 2026 was proposed.

.2 A proposal to amend correction factors and voyage adjustments for CII calculations for self-unloading bulk carrier engaged in Ship-to-Ship (STS) transfer and transhipment of cargo due to shallow water and the lack of port facilities preventing large ships from berthing, with evidence that transloading and transhipment operations reduce carbon emissions compared to standard bulk carrier operations.

.3 Consideration of specific cases for application of the correction factors (correction factor for STS voyage on tanker in a case when a tanker loads at port A and partially discharges at location B through STS operation and proceeds to final discharge at port C, correction factors relating to boiler fuel consumption which may be generated by not only tankers but also gas carriers, and correction factor for fuel consumed in inert gas generator).

.4 A proposal to amend MEPC.1/Circ.876 (sample format for the Confirmation of compliance – SEEMP Part II) for the purpose of updating the reference to regulation 26.2 of MARPOL Annex VI in view of the revision adopted by Res.MEPC.328(76). It also contains the consequential changes of the reference to *2022 Guidelines for the development of a SEEMP* adopted by Res.MEPC.346(78) instead of the *2016 Guidelines for the development of the SEEMP* adopted by Res.MEPC.282(70).

.5 Proposed amendments to regulation 19.3 of MARPOL Annex VI to clarify the non-applicability of requirements of SEEMP under regulation 26.3 of MARPOL Annex VI for category A ships as defined in the Polar Code.

After consideration, MEPC 80 developed the review plan of the short-term GHG reduction measure which is aimed to ensure the review to be conducted by 1 January 2026, with the following outstanding elements:

.1 Effectiveness of the short-term measure in reducing the carbon intensity of international shipping;
.2 The need for enhancement of the ship fuel oil consumption data collection system (IMO DCS);
.3 Revision of the CII reduction rates as set out in the CII guidelines G3 and G2 to reduce the carbon intensity of international shipping in accordance with regulation 20 of MARPOL Annex VI;
.4 Consideration on further amendment to the CII metrics, as set out in the CII guidelines G1; and
.5 Application of the LCA Guidelines, etc.

In addition, MEPC 80 further agreed the timeline required for conducting the review of the short-term measures as follows:

.1 Data gathering stage: from MEPC 80 to MEPC 82 (Autumn 2024);
.2 Data analysis stage: Working Group at MEPC 82 to be continued by a Correspondence Group; and
.3 Convention and Guidelines review stage through an Intersessional Working Group between MEPC 82 and MEPC 83 (Spring 2025) as well as a Working Group at MEPC 83.

3.9 Matters related to the EEDI (Energy Efficiency Design Index) and EEXI (Energy Efficiency Existing Ship Index)

.1 Considering the *2021 Guidelines on the Shaft/Engine Power Limitation System to comply with the EEXI requirements and use of a power reserve* (Res.MEPC.335(76)) requires to maintain a record of any use of a power reserve and reporting by the Administration on annual basis of these records to IMO, draft amendments to the guidelines to include a sample format and clarity on evidence, period and deadline for reporting uses of a power reserve were proposed. After consideration, MEPC 80 adopted Res.MEPC.375(80) on the draft amendments to the *2021 Guidelines on the shaft/engine power limitation system to comply with the EEXI requirements and use of a power reserve* (MEPC.335(76)) providing a format for reporting of EPL/Shapoli override activation and a requirement that the Administrations should annually report uses of a power reserve to the Organization.

.2 Consideration on the application of an overridable engine power limitation to the EEDI calculation framework. It also contains the following concepts:
- Considering that the EEXI and EEDI design indices are fundamentally the same and intended to measure the same units, the same adjustment for an overridable power limitation may be calculated (P_{me} may be calculated as 75% of MCR, or 83% of MCR_{lim}, whichever is lower. In case where shaft generator is installed, 83% of MCR_{lim} should apply) for all ship types to which EEDI requirements apply; or

- Shapoli(Shaft Power Limitation) concept should only be applied to ships which are subject to the minimum propulsion power requirements according to MEPC.1/Circ.850/Rev.3 (Bulk, Tanker and Combination Carrier). Under this concept, P_{me} may be calculated as 75% of MCR_{lim} due to the reasons associated with NOx certification. It means that measurements for 25%, 50%, 75% and 100% of MCR_{lim} are to be performed on the testbed in terms of the NOx verification.
- MEPC 80 couldn't reach a consensus on whether use 75% of MCR_{lim}, or 83% of MCR_{lim} or 75% of *MCR*, whichever is lower for defining P_{ME} for use of ShaPoLi/EPL in the EEDI framework, since the using 75% of MCR_{lim} is for consistency with the current EEDI calculation guidelines associated with the current NOx certification framework (SFC(Specific Fuel Consumption) values can be directly obtained from the NOx certification test) and the using 83% of MCR_{lim} or 75% of *MCR*, whichever is lower is for consistency with the current EEXI calculation guidelines. Thus, MEPC 80 agreed to continue the discussion of this matter to future session of the Committee.

.3 Amendments to the *2022 Guidelines on the survey and certification of the EEDI* (Res.MEPC.365(79)) were proposed to clarify the term "filling rate for gas fuel tanks" used in paragraph 2.2.1 for f_{DFgas} of the *2022 Guidelines on the method of calculation of the attained EEDI for new ships* (Res.MEPC.364(79)). It was based on a confusion caused that IGF and IGC Code do not provide a definition on "filling rate", but provide each different definitions of "filling limit" meaning that maximum liquid volume in a fuel tank relative to the total tank volume when the liquid fuel has reached the reference temperature, and "loading limit" meaning that maximum allowable liquid volume relative to the tank volume to which the tank may be loaded, respectively. In this regard, paragraph 4.2.3.2 of Res.MEPC.365(79) refers that filling rate for tanks (0.95 for LNG) subject to verification of tank filling limit. Thus, since the "loading limit" depends on the temperature and density of gas fuel during bunkering, MEPC 80 adopted Res.MEPC.374(80) providing an amendment to clearly identify that the "filling rate" in the EEDI calculation should be subject to the verification of the tank loading limit in the IGF and/or IGC Code, where applicable, corresponding to the normal density used in the calculation of f_{DFgas}.

4. Reduction of GHG emissions from ships (Agenda 7)

4.1 Adoption of the 2023 Strategy on reduction of GHG emissions from ships (Res.MEPC.377(80))

The Initial IMO Strategy on Reduction of GHG Emissions from Ships (resolution MEPC.304(72)) was the first milestone set out in the Road map for developing a comprehensive IMO strategy on reduction of GHG emissions from ships (the Road Map) approved at MEPC 70. The Road Map identified that a Revised Strategy was to be adopted in 2023. MEPC 77 agreed to initiate the process of revision of the Initial IMO GHG Strategy, toward adopting a strengthened revised Strategy in mid-2023 at MEPC 80.

Starting with MEPC 77, through the ISWG-GHG 13~15 and MEPC 78~80, there had been lengthy technical and political debates with a view to establishing a more ambitious revised IMO GHG strategy which is in line with the Paris Agreement GHG reduction pathway. To reach a final agreement for the adoption of the 2023 revised Strategy within MEPC 80, ISWG-GHG 14, 15 and MEPC 80 particularly considered and discussed the following outstanding issues:

.1 Intermediate target for 2030 to add a 5% target for the uptake of "zero-emission" fuels while keeping the carbon intensity target at the current 2030 level of ambition (40% reduction of CO_2 emission per transport work);

.2 Additional interim level of ambition for 2030 in terms of the percentage (5%) of energy used by international shipping derived from alternative fuels;

.3 To ensure that zero or near-zero GHG emissions fuels represent at least 10% of the energy used by international shipping by 2030;

.4 37% GHG reduction in 2030, on 2008 levels, corresponding to 65% reduction in GHG intensity (e.g. gCO_{2e}/tnm);

.5 Specific percentage of the global fleet operating on fuels and technologies with zero or near-zero emissions to increase by 2030 and 2040 (5% of the global fleet with zero or near-zero fuels/technologies by 2030 and 50% of the global fleet by 2040);

.6 To reduce the total GHG emissions from international shipping by at least 29% by 2030 and by at least 83% by 2040, compared to 2008;

.7 96% GHG reduction in 2040, on 2008 levels, corresponding to 98% reduction in GHG intensity;

.8 Ambitious checkpoints for declining GHG emission by 2030 and 2040 and additional checkpoint, if necessary;

.9 Intermediate target for 2040 to add a 50% target for the reduction of WtW GHG emissions compared to 2008;

.10 GHG lifecycle emissions from international shipping to phase out to zero emissions by 2050 at the latest that is consistent with Paris Agreement temperature goal;

.11 Levels of ambition including an ambition for IMO Green Corridor[1] Programme;

.12 Incentives for the ships with uptake of zero-GHG fuels;

.13 The efficient production of zero-emission fuels and establishment of global port infrastructure to support ships operating on zero-emission fuels;

.14 Equitable transition, capacity-building, technical cooperation and R&D for supporting SIDS and LDCs; and

.15 In terms of the definition for zero-emission, the understanding 'net-zero', 'near-zero', 'absolute zero' and 'zero'.

During discussion, there were significant divergent views between member States on the vision and levels of ambitions in the GHG reduction strategy, such as full decarbonization by 2050, further assessment on feasibility to achieve a revised ambition, potential impacts on State before adoption of revised strategy and the necessity of intermediate GHG reduction targets being set for 2030 and 2040.

After sharp and political confrontations and negotiations, MEPC 80 adopted Res.MEPC.377(80) on the 2023 Revised Strategy on reduction of GHG emissions from ships containing the overarching elements as follows:

[1] **Green Corridors** Specific trade routes between major port of hubs for the ships using zero-emission solutions

Vision

IMO remains committed to reducing GHG emissions from international shipping and, as a matter of urgency, aims to phase them out as soon as possible, while promoting, in the context of this Strategy, a just and equitable transition.

Levels of ambition

.1 Carbon intensity of the ship to decline through further improvement of the energy efficiency for new ships

To review with the aim of strengthening the energy efficiency design requirements for ships;

.2 Carbon intensity of international shipping to decline

To reduce CO_2 emissions per transport work, as an average across international shipping, by at least 40% by 2030, compared to 2008.

.3 Uptake of zero or near-zero GHG emissions technologies, fuels and/or energy sources to increase

To accelerate the uptake of zero or near-zero GHG emissions technologies, fuels and/or energy sources to represent at least 5%, striving for 10%, of the energy used by international shipping by 2030.

.4 GHG emissions from international shipping reach net-zero

To peak GHG emissions from international shipping as soon as possible and to reach net-zero GHG emissions by or around, i.e. close to 2050, taking into account different national circumstances, whilst pursuing efforts towards phasing them out as called for in the Vision consistent with the long-term temperature goal set out in Article 2 of the Paris Agreement.

Indicative Checkpoint

Indicative checkpoints to reach net-zero GHG emissions from international shipping:
.1 To reduce the total annual GHG emissions from international shipping by at least 20%, striving for 30%, by 2030 compared to 2008; and
.2 To reduce the total annual GHG emissions from international shipping by at least by at least 70%, striving for 80% by 2040, compared to 2008.

4.2 Basket of candidate mid-term measures to further reduce GHG emission from international shipping

Recalling that the phase of assessment and selection of measures to further develop is due to be completed by spring 2023 before giving way to the development of measures to be finalized within an agreed target date in accordance with the work plan for development of mid- and long-term measures as a follow-up action of the initial IMO Strategy on reduction of GHG emissions from ships approved by MEPC 76, ISWG-GHG 14, 15 and MEPC 80 considered the outstanding elements contained in the proposed basket of candidate mid-term measures as

follows:

.1 Emission Cap-and-Trade System (ECTS) and associated amendments to MARPOL Annex VI and outline of a new ECTS Code. It also includes a carbon price ceiling mechanism to supplement the concerns regarding carbon price volatility, and limitation of the total amount of Ship Emission Units available every year through periodical auctions managed by the Ship Emission Trading Body between 2027-2050.

.2 Proposed basket of measures combining a GFS with a GHG Levy, and pathways to address the negative Impacts on developing countries, SIDS and LDCs by utilizing the funds.

.3 Zero-Emission Shipping Incentive Scheme (ZESIS) applicable to ships of 400 or 5,000GT and above engaged in the international voyage. It also includes a mechanism to incentivize first movers, using revenues raised through GHG contributions to reward shipowners using zero-emission fuels.

.4 GHG Fuel Standard with a voluntary flexible mechanism (Flexible Compliance Mechanism, FCM) that fosters innovation, incentivizes first movers, and maintains the level playing field. It also includes a remedial action that allows ships that cannot operate on low-GHG fuels to continue to operate, by using the Flexible Compliance Units (Over-compliant ships earn rewards by selling the units to non-compliant ships) or GHG Remedial Units (non-compliant ships buy GHG Remedial Units at a certain price from GFS Registry as a last resort compliance option).

.5 IMO Maritime Sustainability Fuels and Fund (IMSF&F) aiming at promoting sustainable marine fuels and energy transition and raising revenue for capacity building, negative impact mitigation and R&D. IMSF&F is to set up a required limit to the TtW GHG intensity indicator of fuels/energy used onboard ships (required GFI, in gCO_{2eq}/MJ). The actual GHG emissions of a ship can be calculated by multiplying the actual GFI with the actual annual fuels/energy consumption. It also provides a flexible mechanism allowing over-compliant ships to earn rewards by selling the units to non-complaint ships. Under this framework, the application of an independent levy is not required to avoid double taxation, and WtT GHG emissions are also addressed to provide the ships using sustainable fuels/energy in terms of lifecycle approach with the incentives.

.6 Simplified GHG Fuel Standard containing a requirement on the review of alternative fuel availability to be undertaken by 2028 (similar with IMO 2020 0.5% global sulphur limit) by introducing the required GHG Fuel Intensity. A flat rate contribution from ships as part of a fund and reward measure and the need to narrow the price gap between alternative and conventional fuels via a rewards programme for CO_2 or GHG emissions prevented by ships using eligible alternative fuels. It also proposes that an IMO Maritime Sustainability Fund and Reward (IMSF&R) could be used to fund rewards and to expedite an equitable transition.

.7 A carbon levy ($ 100) to be introduced in 2025 based on well-to-wake CO_2 equivalent emissions, in accordance with the draft guidelines on lifecycle GHG intensity of marine fuels (LCA guidelines). The levy contribution of each ship can be defined from data collected in IMO DCS. At each 5-year period the levy

rate (per tonne of CO_{2eq}/GHG) will be reviewed and increased as necessary to further reduce or eliminate the price gap between fossil fuels and low- and zero-GHG technologies and fuels.

.8 GHG Fuel Standard with a flexible mechanism utilizing only GHG Remedial Units for non-compliant ships with required GFS to continue ship's operation. This concept does not contain a voluntary Flexible Compliance Unit for over-compliant ships since it may cause the fluctuation of CO_2 or GHG price such as a similar framework to the emission trading system.

During the discussion, MEPC 80 particularly noted an increased support and convergence for a basket of measures combining technical and economic elements, i.e. a well-to-wake GHG intensity fuel standard in combination with a levy scheme imposing a set price on well-to-wake or tank-to-wake GHG emission. A levy scheme can also be combined with a rebate system where the revenues are provided to the ships using the zero emissions fuel and technologies to cover the price gap between fossil and zero emission fuels.

After lengthy and intensive discussions, ISWG-GHG 15 and MEPC 80 agreed to select **"GHG Fuel Standard"** which is a goal-based fuel/energy standard as a technical element. With respect to the economic element, there were various views raised, in particular, while there were supports on a universal GHG levy as the simplest economic measure to narrow the cost gap between conventional and zero-carbon fuels as well as raising significant revenue to support a just and equitable transition and reward early movers, there were also oppositions as the levy framework would cause significant negative impacts on developing States in terms of penalizing countries remote from the markets and countries with large trade volume of low-value commodities, hindering economic growth, food and energy security, and widening the gap between developed and developing countries. Having noted divergent views, MEPC 80 agreed that the review of the economic elements proposed so far and details on raising and disbursement of revenues by technical and economic elements will be further considered under the Phase III (Development of measures to be finalized within agreed target date) of the work plan for development of mid- and long-term measures as a follow-up action of the initial IMO Strategy on reduction of GHG emissions from ships approved by MEPC 76.

In accordance with the 2023 IMO GHG Strategy, the impacts on States of the basket of candidate mid-term GHG reduction measure(s) should be assessed before the adoption of the measures. A comprehensive impact assessment of the basket should be conducted as set out in the *Revised procedure for assessing impacts on States of candidate measures (MEPC.1/Circ.885/rev.1).*

Therefore, MEPC 80 further agreed to establish a timeline for the development of candidate mid-term measures and associated comprehensive impact assessment, with the scheduled earliest date of entry into force of the mid-term measures as of **1 May 2027**, as follows:

.1 MEPC 80 (July 2023): Initiation of Comprehensive impact assessment of the basket of candidate mid-term measures;
.2 MEPC 81 (April 2024): Finalization of development of the basket of candidate mid-term measures;
.3 MEPC 82 (October 2024): Finalization of comprehensive impact assessment of the basket of candidate mid-term measures;

.4 MEPC 83 (April 2025): Approval of the MARPOL amendments for implementing the basket of candidate mid-term measures;
.5 Extraordinary session of MEPC: Adoption of measures (6 months after MEPC 83); and
.6 **16 months after adoption (May 2027): Entry into force of the measures.**

4.3 Guidelines on Life Cycle GHG Intensity of marine fuels

ISWG-GHG 15 and MEPC 80 considered a final report of the Correspondence Group on Marine Fuel Lifecycle GHG Analysis as follows:

.1 The initial list of fuel pathways (HFO, LFO, Diesel/Gas oil, LPG, LNG, CNG, Ethane, Vegetable oil-based fuel, Diesel, DME, Methanol, Ethanol, Hydrogen, Ammonia, Electricity and Wind propulsion) with a view to its inclusion in the draft LCA guidelines;

.2 Necessity for a continuous scientific review of the LCA Guidelines to ensure the consideration of new technological advances and scientific knowledge, in particular through the review of WtT[2], TtW[3] and WtW default emission factors, and the inclusion of new proposed fuel pathways and the corresponding default emission factors;

.3 The elements for which further technical work would be needed in terms of the methodological refinement for the quantification were identified as follows:
- e_l (annualized emissions (over 20 years) from carbon changes caused by direct land-use change);
- e_{sca} (annualized emissions savings (over 20 years) from soil carbon accumulation via improved agricultural management);
- e_{fug} (accounting for the fuel which escapes between the tanks up to the energy converter which is leaked, vented or otherwise lost in the system);
- e_{ccu} (emission credits from the used captured CO_2 as carbon stock to produce synthetic fuels in the fuel production process)
- e_{occs} (emission credit from carbon capture and storage, where capture of CO_2 occurs onboard);
- e_{fCO2} emission factor for fuels other than those contained in Res.MEPC.364(79); and
- e_{fCH4} and e_{fN2O} emissions factors for fuels other than those contained in Res.MEPC.346(79) (for which default values are provided for certain energy converters).

.4 The need to develop further guidance on the certification schemes/standards (for WtT, including the evaluation of sustainability themes/aspects), procedures for the evaluation and recognition of the certification schemes/standards, and third-party verification and certification for WtT and TtW.

After consideration, MEPC 80 approved Res.MEPC.376(80) on the draft Guidelines on Life Cycle GHG Intensity of Marine Fuels containing the following outstanding elements:

[2] Well-To-Tank emissions factor, also known as upstream or indirect emissions, is an average of all the GHG emissions released into the atmosphere from the production, processing and delivery of a fuel or energy vector.
[3] Tank-To-Wake(Propeller) emissions factor, also known as downstream or direct emissions, is an average of all the GHG emission released into the atmosphere from a fuel consumption to operate a ship.

.1 These Guidelines provide guidance on assessment of life cycle GHG intensity assessment for all fuels and other energy carriers (e.g. electricity) used on-board a ship, and aim at estimating GHG emissions for whole fuel life cycle from feedstock extraction/cultivation/recovery, feedstock conversion to a fuel product, transportation as well as distribution/bunkering, and fuel utilization on-board a ship.

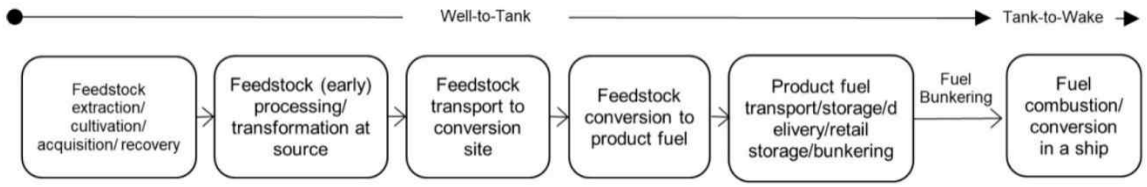


Figure 1 Generic well-to-wake supply chain

.2 The guidelines provide calculation methods to address Well-to-Tank (WtT), Tank-to-Wake (TtW), and Well-to-Wake (WtW) GHG intensity related to marine fuels/energy carriers used for ship propulsion and power generation onboard, as well as default GHG emission values for various marine fuels, and its corresponding sustainability criteria which is to be assessed considering particular aspects on a life cycle basis such as GHG, carbon source, source of electricity/energy, DLUC and ILUC, etc. The WtW GHG emission factor (gCO_{2eq}/MJ_{LCV} fuel or electricity) is calculated as follows:

$$GHG_{WtW} = GHG_{WtT} + GHG_{TtW}$$

Term	Units	Explanation
GHG_{WtW}	gCO_{2eq}/MJ_{LCV}	Total Well-to-Wake GHG emissions per energy unit from the use of the fuel or electricity in a consumer on board the ship
GHG_{WtT}		Total Well-to-Tank GHG upstream emissions per energy unit of the fuel provided to the ship
GHG_{TtW}		Total Tank-to-Wake GHG downstream emissions per energy unit from the use of the fuel or electricity in a consumer on board the ship

Table 1 Explanation on GHG emission factors

$$GHG_{WtW} = e_{fecu} + e_l + e_p + e_{td} - e_{sca} - e_{ccs} + \frac{1}{LCV}\left(\left(1 - \frac{1}{100}\left(C_{slip\_ship} + C_{fug}\right)\right) \times \left(C_{fCO_2} \times GWP_{CO_2} + C_{fCH_4} \times GWP_{CH_4} + C_{fN_2O} \times GWP_{N_2O}\right) + \left(\frac{1}{100}\left(C_{slip_{ship}} + C_{fug}\right) \times C_{sfx} \times GWP_{fuelx}\right) - S_{Fc} \times e_c - [S_{Fccu} \times e_{ccu}] - [e_{OCCS}]\right)$$

Figure 2 Equation for calculating WtW GHG emission factor

.3 To establish a WtT default emission factor, at least three reference values from three different, representative, sources should be considered. Among these values, the upper emission value should be selected as default. Emissions related to carbon stock changes caused by direct land-use change (DLUC)(e_l) and emission savings from soil carbon accumulation via improved agricultural management (e_{sca}) are

considered "zero" for the establishment of the initial default emission factors.

.4 TtW default emission factors, including slip factors per fuel type and per converter types, for the fuels and converters for which such factors are available in Res.MEPC.364(79) on the EEDI calculation guidelines for new ships and 4th IMO GHG Study are also provided in the Guidelines. Further TtW default values (except Cf_{CO2} provided in Res.MEPC.364(79)) may be established by following the same rules as for the WtT default emission factors referred in paragraph .3 above.

.5 While it is noted that future life cycle GHG emissions from international shipping can be estimated based on the default GHG emission values for various marine fuels provided in these guidelines, actual emission factors of various marine fuels according to the production pathway can also be facilitated in lieu of the default GHG emission values as far as those are properly assessed and certified.

In this regard, MEPC 80 agreed to establish the correspondence group to complete the identification of default emission factors for the existing pathways and to further consider specific methodological issues that are relevant for measuring actual emission factors. In addition, MEPC 80 further agreed to hold a dedicated expert workshop to consider the more detailed way to implement LCA Guidelines and to facilitate the development of procedures and criteria to recognize certification schemes and guidance for third-party verification as well as the operationalization of the sustainability criteria.

4.4 Onboard CO_2 capture (CO_2 removal)

Previous MEPC sessions considered onboard CO_2 capture system and particularly noted that development of a specific work plan to initiate a holistic consideration on how to best reflect onboard CO_2 capture in various IMO instruments and a careful approach would be required on this issue, such as accounting, storage, disposal, and relevant certification schemes, to ensure effective implementation so that carbon captured would not be released back into the atmosphere.

MEPC 80 considered the proposals relating to the onboard CO_2 capture system as follows:

.1 Proposed a new work stream on onboard CO_2 capture, as the first step, a structured review of the current IMO regulatory framework should be undertaken as part of the development of a work plan to accommodate onboard CO_2 capture within IMO's regulatory framework. Work plan for the development of a regulatory framework for the use of OCCS contains the various elements as follows:

- Regulations in MARPOL Annex VI as appropriate;
- Guidelines for testing, surveying and certification of onboard CO_2 capture systems;
- Guidelines for the development and approval of a ship CO_2 management plan;
- Form of the CO_2 record book; and
- An approval or certification/accreditation scheme for CO_2-terminals to ensure that the CO_2 is not emitted to the atmosphere; and safe storage and utilization of CO_2 which is consistent with international environmental law and international standards.

2. Draft amendments to EEDI and CII related technical guidelines (Res.MEPC.308(73), Res.MEPC.254(67) and Res.MEPC.352(78)) to revise the EEDI and CII calculation formula for reflecting GHG reduction effect from onboard CO_2 capture system.

.3 A newly proposed MEPC Circular on sample format for the information to be included in the CO_2 receipt note, providing evidence for the quantity of CO_2 delivered ashore;

.4 It was proposed that onboard CO_2 capture and the system's effectiveness for reduction of GHG emission should be reflected in all relevant frameworks relating to the GHG emissions such as EEDI, EEXI, CII as well as LCA guidelines to remove regulatory barriers to innovative technology.

.5 An analysis of technical and economic aspects of onboard CO_2 capture technology applied to different ship types and sizes (container, bulk and tanker) for main carbon-based fuels (LSFO, LNG and Methanol), and partial/full application as part of a retrofit or newbuild. The analysis also concluded that onboard CO_2 capture system with chemical absorption is technically feasible and expected to reach commercial availability by 2030, additional energy consumption for operating onboard CO_2 capture would be up to a 45% increase for maximum carbon capture rate of 82%, the installation of the system is space demanding and may result in loss of cargo space, depending on ship type and size.

After consideration, MEPC 80 couldn't reach a consensus on how to incorporate onboard CO_2 capture in the IMO regulatory framework due to the various views expressed that whilst recognizing that onboard CO_2 capture can play an important role in the reduction of GHG emissions from international shipping, a more holistic approach was needed as part of the further development of the LCA framework due to the technical immaturity with various safety issues.

However, MEPC 80 agreed to a dedicated work stream on CO_2 capture and its inclusion in the agenda for ISWG-GHG 16, and that all the proposals including other relevant information submitted to this session are forwarded to ISWG-GHG 16 for further consideration.

5. Marine Plastic Litter from ships (Agenda 8)

MEPC 80 noted PPR Sub-Committee's consideration of how to proceed in relation to reducing the environmental risk associated with the maritime transport of plastic pellets as follows:

.1 Due to a lack of clarity on the most appropriate mandatory instrument to reduce the environmental risk associated with the maritime transportation of plastic pellets in freight containers, the following two-step approach was provided:
- Developing a voluntary MEPC circular containing recommendations for the carriage of plastic pellets by sea in freight containers, addressing packaging, stowage and labelling requirement. The circular will be further developed by PPR 11 and then subsequently submitted to MEPC 81 for approval; and
- Developing of a mandatory instrument informed by experience gained from the voluntary measures proposed in the circular mentioned above following the agreement by MEPC.

.2 The agreement of the PPR Sub-Committee that plastic pellets should not be carried on bulk, and invitation to interested member State and international organizations to submit relevant proposals to a future session of PPR Sub-Committee on potential regulatory changes that may be needed to prevent the shipment of plastic pellets in bulk.

MEPC 80 further noted the progress made by the Sub-Committee in relation to marking of fishing gear and with regard to facilitating and enhancing reporting of the loss or discharge of fishing gear as provided for in regulations 7.1.3 and 7.1.4 of MAPROL Annex V. The PPR 11 will continue to develop a draft circular to promote a fishing gear marking system and the FAO(Food and Agriculture Organization) voluntary guidelines on the marking of fishing gear, and the draft amendments to MARPOL Annex V and associated guidelines for a goal-based fishing-gear marking requirements.

MEPC 80 considered the proposals relating to the measures to reduce the loss of fishing gear as follows:

.1 Development of a new requirement for fishing vessels to be provided with a ship-specific "Plan for onboard management of fishing gear ship";

.2 Amendments to the guidelines annexed to Res.MEPC.220(63)(2012 Guidelines for the development of Garbage Management Plan) and/or Res.MEPC.295(71)(2017 Guidelines for the implementation of MARPOL Annex V), or to develop new guidance to address the plan for management of fishing gear and onboard equipment deployed in fishing activities;

After consideration, MEPC 80 instructed the PPR Sub-Committee to further consider the proposals as referred above for further consideration and advise the Committee on the best way forward.

6. Report of PPR Sub-Committees (Agenda 9)

6.1 Outcomes of ESPH 28 (Revision to the carriage requirements for "Creosote (coal tar)")

MEPC 80 concurred with the recommendation of ESPH 28 and of the Sub-Committee that the assignment of ship type 2 from ship type 1 is appropriate for "Creosote (coal tar)" based on expert judgement. The Committee further agreed for the expiry date associated with "Creosote (coal tar)" to be changed to "none" in the MEPC.2/Circular29 on *Provisional categorization of liquid substances in accordance with MARPOL Annex II and IBC Code* to be issued on 1 December 2023. The Committee noted the consequential amendments to the *Decisions with regard to the categorization and classification of products* (PPR.1/Circ.7) and to the entry for "Creosote (coal tar)" in the next revision of chapter 17 of the IBC Code.

6.2 Re-evaluation of "RBHC (Exxon Mobile)"

MEPC 80 noted that the trade-named product "RBHC (Exxon Mobile)" has been re-evaluated and found to meet the criteria for complex mixtures in paragraph 9.2 of MEPC.1/Circ.512/Rev.1 and consequently will be deleted from

the MEPC.2/Circ.29 to be issued on 1 December 2023. This means that the cargo "RBHC (Exxon Mobile)" should be transported in accordance with carriage requirements for MARPOL Annex I as an oil cargo and not the entry for "Benzene and mixtures having 10% benzene or more" in chapter 17 of the IBC Code.

6.3 Operational Guide on the Response to Spills of Hazardous and Noxious Substances (HNS)

MEPC 80 approved the draft Operational Guide on the Response to Spills of Hazardous and Noxious Substances (HNS), for subsequent publication. This guide has been divided into two parts. Volume 1 of the guide provides guidance on preparedness for any spills, and volume 2 provides guidance on response to the spills.

6.4 Guidelines for the control and management of ships' biofouling to minimize the transfer of invasive species

It is noted that Biofouling is being made from the transfer of invasive aquatic species and known as a significant threat to the local aquatic environment, economic and social activities. While MEPC 62 adopted Res.MEPC.207(62) on *2011 Guidelines for the control and management of ships' biofouling to minimize the transfer of invasive aquatic species*, MEPC 72 decided to review the Guidelines in order to assess the uptake and effectiveness of the Guidelines and identify any required actions.

The relevant studies carried out so far have shown that biofouling can be a significant vector for the transfer of invasive aquatic species, and the ships attached with fouling entering the waters of States may result in the establishment of invasive aquatic species, which may pose threats to human, economic activities and the aquatic environment. To reduce such a treat to the aquatic environment in a consistent and effective manner, MEPC 80 adopted Res.MEPC.378(80) on *2023 Guidelines for the control and management of ships' bio-fouling to minimize the transfer of invasive species*.

These guidelines are a version of draft revised 2011 Biofouling guidelines, which included an updated Biofouling Management Plan and Record Book templates. The guidelines are intended to provide the recommendations for measures to minimize biofouling for all type of ships as a non-mandatory instrument. Design and Construction requirements were provided in terms of ensuring long-lasting means to minimize ship biofouling risks such as avoidance of small niche areas and designing rounding of corners to promote more effective coverage of anti-fouling coating, etc.

A section "Anti-fouling system installation and maintenance" provides considerations for choosing an AFS in terms of ship design and construction, active ingredient of anti-fouling coating and cleaning/maintenance method, etc. A section "Installing the AFS" provides the recommended way to apply AFS on the sensitive areas such Sea-chest, Bow-thruster, Rudder hinges and propeller and shaft, etc.

A ship-specific Contingency action plans need to be established to identify whether there may be an increased risk of biofouling accumulation. When monitoring identifies possible increase of biofouling accumulation, the ship is at a higher risk level which should lead to contingency plans. The contingency measure plan should provide a procedure triggering a reaction to be conducted in line with Biofouling Management Plan.

In order to assess the extent of fouling on inspection area, a table of rating scale was also provided in the guidelines. This table will help decide which recommended cleaning level should be selected as per macrofouling coverage of area inspected. The rating 2 and above will trigger the cleaning with capture and shortening the interval until next inspection and, if necessary, re-application of AFS.

While it is recommended that every ship has a ship-specific Biofouling Management Plan under the responsibility of ship owners, operators and masters, the plan needs not to be approved unless expressly provided otherwise by the relevant ship flag Administration. A form of Biofouling Record Book is also provided in the guidelines for recommending the record of all relevant biofouling management activities such as maintenance of AFS, repair of MGPS, hull-cleaning in water and/or in drydock, etc

The entire process of these guidelines and identification of risk areas are shown in figure 3 and 4 below.

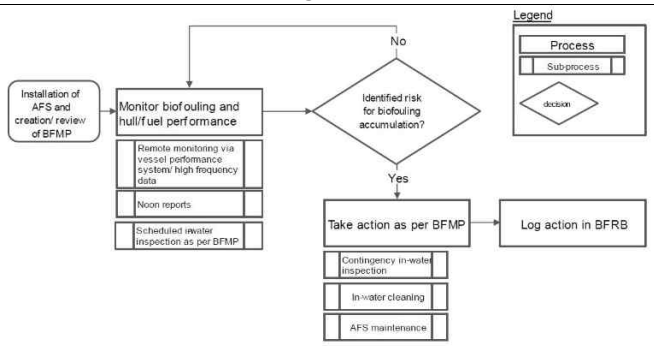


Figure 3 Simplified flow chart visualizing the biofouling management activities of a ship

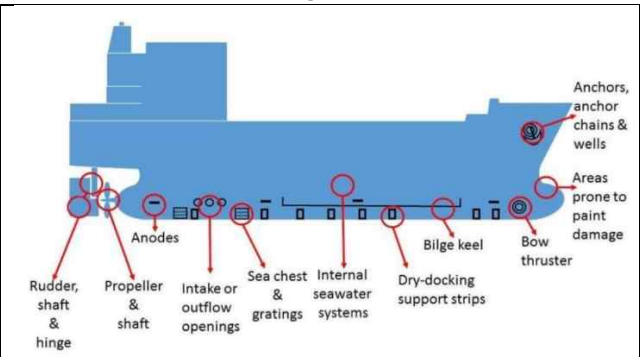


Figure 4 Hull with typical niche areas susceptible to biofouling (Source: Eugene Conduct of land-based biofouling surveys for domestic vessels)

6.5 Change of the title of output 1.21

MEPC 80 agreed to change the title of output 1.21 from *"Review of the 2011 Guidelines for the control and management of ships' biofouling to minimize the transfer of invasive species (Res.MEPC.207(62))"* to "Development of guidance on matters relating to in-water cleaning" and to set the target completion year of the new output to 2025. This is to develop an approval guidance on the in-water cleaning device and/or equipment for biofouling.

6.6 Guidelines for thermal waste treatment devices

MEPC 80 adopted Res.MEPC.373(80) on the draft 2023 guidelines for thermal waste treatment devices. The guidelines are relevant to all ships fitted with thermal waste treatment devices as equivalent to shipboard incinerators under Regulation 16 of MARPOL Annex VI and can be applied to any thermal waste treatment device using gasification, hydrothermal carbonization, pyrolysis, plasma or other thermal means for the disposal of permitted garbage and other shipboard wastes generated during a ship's normal service.

As an alternative to conventional incinerators and as a means of disposal of garbage and other shipboard wastes, these thermal waste treatment devices remain subject to the same prohibitions as to those materials which are

not to be so disposed of as given by regulation 16.2 of MARPOL Annex VI.

6.7 A marine diesel engine replacing a steam system

In order to clarify that a marine diesel engine replacing a steam system (main boiler and steam turbine) should be considered as a "replacement" of marine engine in terms of "major conversion" implying the applicable Tier standard at the time of the replacement or addition of the engine according to regulation 13.2.2, MEPC 80:

.1 Approved the draft amendments to regulation 13.2.2 of MARPOL Annex VI with a view to adoption at MEPC 81;

.2 Deferred the adoption of the draft 2023 *Guidelines as required by regulation 13.2.2 in respect of non-identical replacement engines not required to meet the Tier III limit* to MEPC 81 with a view to adoption in conjunction with the adoption of the above-mentioned amendments to regulation 13.2.2; and

.3 Consequential updates to unified interpretation to amended regulation 13.2.2 mentioned above will be included in a future revision of MEPC.1/Circ.795 when the amendments enter into force.

6.8 Unified Interpretation to MARPOL Annex VI (electronic bunker delivery note)

MEPC 80 approved MEPC.1/Circ.795/Rev.8 on the draft unified interpretation to regulation 18.5 and 18.6 of MARPOL Annex VI concerning electronic bunker delivery note. A new interpretation is to allow the use of electronic bunker delivery note in lieu of the hard-copy bunker delivery note.

6.9 Unified Interpretation to BWM Convention (date of major conversion)

MEPC 80 approved BWM.2/Circ.66/Rev.5 on the draft unified interpretation to regulation B-3 and Appendix I of BWM Convention concerning the date of major conversion. While the BWM Convention provides definitions for both "Constructed" and Major conversion", the form of International Ballast Water Management Certificate (IBWM) only provides an entry for the "Date of construction". Thus, it is unclear whether the entry for the "Date of construction" originally indicated as the keel-laid date of the ship should be updated to reflect the actual "Date of major conversion" when a ship undergoes a major conversion according to regulation A-1.5 of the Convention. Moreover, the time of the major conversion will also affect the implementation schedule to meet the D-2 standard for the ship in accordance with regulation A-1.4.4 of the Convention.

A set of new interpretations as follows will be expected to resolve a confusion associated with above matter.

.1 A ship constructed before 8 September 2017, which has undergone a major conversion on or after 8 September 2017, should be deemed as a ship constructed on or after 8 September 2017 and should comply with D-2 standard.

.2 If the major conversion has occurred before the date to meet D-2 standard (the first of second IOPP

renewal survey on or after 8 September 2017), the ship should meet the D-2 standard from the date of completion of the major conversion.

.3 If the major conversion has occurred after the date to meet D-2 standard (the first of second IOPP renewal survey on or after 8 September 2017), the ship should meet the D-2 standard from the date to meet D-2 standard.

.4 For a ship that has undergone a major conversion, the date of the commencement of the major conversion should be filled in the item "Date of construction" of IBWM Certificate.

6.10 Protocol for verification of ballast water compliance monitoring devices (CMDs)

MEPC 80 approved BWM.2/Circ.78 on the protocol for verification of ballast water compliance monitoring devices. The objective of this protocol is to provide a framework for the verification of the performance of ballast water CMDs intended for use in the implementation of the BWM Convention. These devices may be used for a variety of purposes:

.1 during commissioning testing of ballast water management systems (BWMS);
.2 during port State control inspections; and
.3 during ships' self-monitoring.

The protocol relies on laboratory and field tests conducted in accordance with standard test procedures such as those under development or published by the International Organization for Standardization; additional test (e.g. vibration, humidity, etc) may be carried out when applicable.

6.11 Revision to 2015 Guidelines for the development of the Inventory of Hazardous Materials (IHM)

MEPC 80 adopted Res.MEPC.379(80) on the draft 2023 Guidelines for the development of the Inventory of Hazardous Materials to include a reference to "Cybutryne" as a hazardous material as per the entry into force of the revised AFS (Anti-Fouling System) Convention which introduced controls on the material as of 1 January 2023. A reference clarifying that average values of "Cybutryne" should not be present above 1,000 mg of cybutryne per kilogram of dry paint when samples are directly taken from the hull was included in Table 1 of the Guidelines.

7. Report of other Sub-Committees (Agenda 10)

7.1 Report of CCC 8

Recalling that CCC 8 finalized draft amendments to SOLAS chapter V regulation 31 (danger message) and 32 (information required in danger messages) and Article V of Protocol I of the MARPOL Convention in relation to the loss or observation of freight containers, MEPC 80 approved draft amendments to Article V of Protocol I of MARPOL Convention to avoid duplication of the SOLAS reporting requirements, stipulating that in case the loss

of freight containers, the report required by article II (1)(b) shall be made in accordance with the provisions of SOLAS regulations V/31 and V/32. This amendment will be adopted by MEPC 81.

7.2 Report of SDC 9

MEPC 80 approved MEPC.1/Circ.906 on the revised Guidelines for the reduction of underwater radiated noise from shipping to address adverse impacts on marine life. It was being recognized that a significant portion of the underwater noise generated by commercial shipping activities may have negative impacts on marine mammals.

These guidelines focus on identifying primary contributors to underwater radiated noise generated by ships and a general approach that designers, shipbuilders, shipowners and ship operators can undertake. The guidelines also provide the underwater radiated noise reduction management planning and its sample templates as a tool that can be applied to the operation, design, construction and modification of ships. A summary of design, technical, operational and maintenance underwater radiated noise reduction approaches applicable to new and existing ships is also provided for recommendation.

MEPC 80 further approved MEPC.1/Circ.907 on the Guidelines for underwater radiated noise reduction in Inuit Nunaat and the Arctic for utilization in the future by interested parties. These guidelines are intended to provide and supplement additional information and guidance to operators transiting Inuit Nunaat and the Arctic.

8. Identification and protection of Special Areas, ECAs and PSSAs (Agenda 11)

8.1 North-Western Mediterranean Sea Particularly Sensitive Sea Area

MEPC 79 agreed in principle to designate the North-West Mediterranean as a PSSA (Particularly Sensitive Sea Area). Mediterranean Sea is recognized to an area of significant shipping activities which pose a risk to the diverse natural marine habitats as well as large marine mammals. As the Committee agreed that the associated protective measures need to be further developed before the area is designated as a PSSA, it was further agreed to request NCSR Sub-Committee to further consider the appropriate protective measures for the area.

NCSR 10 agreed to the following Additional Protective Measures (APMs), of a recommendatory nature:

.1 Mariners should navigate with particular caution within the North-Western Mediterranean PSSA, in areas where large and medium cetaceans are detected or reported, and reduce their speed to between 10 and 13 knots as voluntary speed reduction (VSR). However, a safe speed should be kept, so that proper and effective action could be taken to avoid collision and any possible negative impacts on ship's manoeuvrability;

.2 Mariners should keep an appropriate safety distance or speed reduction measure from any large and medium cetaceans observed or detected in close quarter situation. The safety distance or speed reduction measure should be adapted to the actual navigation circumstances and conditions of the ship;

.3 Mariners should broadcast on VHF or other available means on scene, the position of medium and large cetaceans observed or detected within the designated PSSA and transmit the information and the position to the designated coastal Authorities; and

.4 Mariners should report any collision with cetaceans to the designated coastal Authorities, which should forward this information to the International Whaling Commission (IWC) global cetacean ship strikes database.

MEPC 80 adopted Res.MEPC.380(80) on designation of the North-Western Mediterranean Sea as a Particularly Sensitive Sea Area (PSSA), and the resolution also contains the recommendatory additional protective measures referred above.

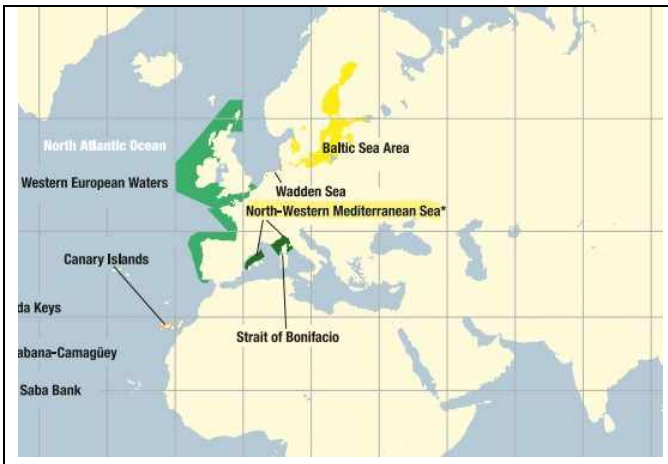


Figure 5 Worldwide Particularly Sensitive Sea Area (North-Western Mediterranean Sea), Source: IMO

Figure 6 Designation of North-Western Mediterranean Sea as a Particularly Sensitive Sea Area, Source: IMO

8.2 Establishment of effective date for special areas of the Red Sea and the Gulf of Aden areas

It was recognized that Red Sea and Gulf of Aden area provides a vital route for maritime commerce and is currently estimated to carry around 10% of world trade. The increasing shipping and port activities in the region increase the pollution from ship-generated wastes and residues of all types, especially from oily mixtures, plastics and other synthetic materials, which pose serious threats as they can cause serious damage to the marine and coastal environments. It was also noted that the States in the Red Sea and Gulf of Aden areas have all ratified the Convention, except Eritrea and Yemen, and thus have provided adequate reception and arrangements, including treatment facilities for MARPOL Annexes I and Annex V ship-generated wastes and residues in ports, terminals, and ship repair ports in the areas.

Given that all the necessary reception facilities for MARPOL Annexes I and V wastes and residues are available and cover all the ports and terminals within the RSGA areas, MEPC 80 adopted Res.MEPC.381(80) on the establishment of an effective date for special areas of the Red Sea and the Gulf of Aden area under MARPOL Annex I and V on 1 January 2025.

9. New work program (Agenda 14)

9.1 Amendments to the 2017 SCR Guidelines addressing additional aspects of the NOx Technical Code 2008 with regard to particular requirements related to marine diesel engines fitted with Selective Catalytic Reduction (SCR) system (Res.MEPC.291(71), as amended by Res.MEPC.313(74))

MEPC 80 approved a new output on "Amendments to the 2017 SCR Guidelines addressing additional aspects of the NOx Technical Code 2008 with regard to particular requirements related to marine diesel engines fitted with Selective Catalytic Reduction (SCR) system (Res.MEPC.291(71), as amended by Res.MEPC.313(74)), assigning the PPR Sub-Committee as the associated organ.

The objective of this new output is to clarify the relevant provisions in relation to the determination of deterioration rate of SCR performance, where feedback or a feed forward reductant control strategy is incorporated with a NOx measurement device or without a NOx measurement device, given that no specification for the NOx analyzers/measurement devices is described in the guidelines, and the guidelines do not specify if the spot check after installation is required in cases when the applicant does not define the spot check as a method of assessing the catalytic NOx reduction efficiency. Moreover, while the guidelines allow other strategies on monitoring the catalyst condition/degradation subject to the approval of the Administration, no clarification on the criteria to be used to evaluate those alternative designs is provided. It also includes a clarification request as to whether and what information and materials can be accepted or need to be submitted and declared by the applicants in case of engine systems fitted with SCR and the parameter check method established as onboard verification procedures.

It is further commented that the scope of the proposed new output should include the development of additional guidance for the certification of marine diesel engines fitted with SCR systems, where more than one engine is connected to a common SCR unit, given that there is no guidance on how to conduct the certification of such a system within the existing framework, such as whether to apply the equivalent provisions in regulation 4 of MARPOL Annex VI or not to certify the existing NOx Tier II engines with the SCR system fitted to the NOx Tier III standard.

Following consideration, MEPC 80 agreed to update the 2017 SCR Guidelines to remove ambiguities and ensure consistent application, including clarifying the pre-certification procedure and developing additional guidance for certifying SCR arrangements where more than one engine is connected to a common SCR system, assigning the PPR Sub-Committee as the associated organ, with one session needed to complete the work.

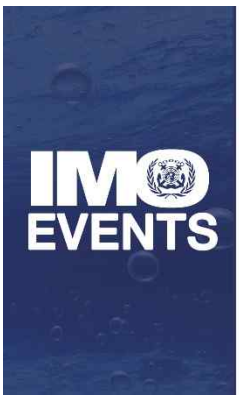
9.2 Revision to NOx Technical Code 2008 with regard to re-certification procedures of existing marine diesel engines onboard ships

MEPC 80 approved a new output on "Revision to NOx Technical Code 2008 with regard to re-certification procedures of existing marine diesel engines onboard ships, assigning the PPR Sub-Committee as the associated organ. The objective of this new output is to amend the procedure within the NOx Technical Code 2008 to improve the re-certification of existing diesel engines onboard ships for retrofitting with modern engine technologies when improving their energy efficiency, while maintaining the levels for nitrogen oxide emission regulations.

The relevant examples of retrofit include, but are not limited to, retrofits of the engines for dual fuel or multi-fuel operation, i.e. operation on alternative fuels, extensive derating of engines, cut-off of turbochargers or complete engine cylinders or retrofit of new NOx abatement technologies to optimize fuel consumption.

Following consideration, MEPC 80 agreed to consider the revision of NOx Technical Code 2008 with regard to re-certification procedures of existing marine diesel engines onboard ships following the retrofit of modern engine technologies to enhance energy efficiency and reduce GHG from ships, assigning the PPR Sub-Committee as the associated organ, with one session needed to complete the work.

Should you have inquiries, please contact P.I.C. Thank you.



Source: IMO (MARPOL at 50[4] – Our commitment goes on)

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[4] The theme reflects the organization's long history of protecting the environment from the impact of shipping via a robust regulatory framework and emphasizes its ongoing commitment to this important work. The theme "MARPOL at 50 – Our commitment goes on" also spotlights the International Convention for the Prevention of Pollution from Ships (MARPOL), which covers prevention of pollution of the marine environment by ships from operational and accidental causes.