MARINE & OFFSHORE DIVISION MANAGEMENT
Regulatory & Institutional

76TH MEETING OF MARINE ENVIRONMENT PROTECTION COMMITTEE 10 TO 17 JUNE 2021 MAJOR OUTCOMES OF MEPC 76

SUMMARY

The seventy-sixth session of the Marine Environment Protection Committee (MEPC 76) was held remotely from 10 to 17 June 2021.

The MEPC 76 has been a meeting of great importance for the implementation of the **IMO initial strategy for reduction of GHG.**

MEPC 76 adopted :

- Resolution MEPC.328(76) amending MARPOL Annex VI concerning mandatory goal-based technical and operational measures to reduce carbon intensity of international shipping (EEXI and CII) (**item 3**) ;

Following the work carried out by correspondence group and ISWG GHG 8, MEPC 76 has adopted the technical guidelines supporting the EEXI framework (**item 7.2**):

- resolution MEPC.332(76) - 2021 Guidelines on the method of calculation of the attained Energy Efficiency Existing Ship Index (EEXI);
- resolution MEPC.333(76) - 2021 Guidelines on survey and certification of the Energy Efficiency Existing Ship Index (EEXI);
- resolution MEPC.334(76) - 2021 Guidelines on the shaft/engine power limitation system to comply with the EEXI requirements and use of a power reserve.

MEPC 76, finalizing the draft technical guidelines supporting the CII framework, has adopted (**item 7.2**) :

- resolution MEPC.335(76) - 2021 guidelines on operational carbon intensity indicators and the calculation methods (CII Guidelines, G1);
- resolution MEPC.336(76) - 2021 guidelines on the reference lines for use with operational carbon intensity indicators (CII reference lines guidelines, G2);
- resolution MEPC.337(76) - 2021 guidelines on the operational carbon intensity reduction factors relative to reference lines (CII reduction factor guidelines, G3);
- resolution MEPC.338(76) - 2021 guidelines on the operational carbon intensity rating of ships (CII rating guidelines, G4).

MEPC 76 also :

- reaffirmed, in line with the Procedure for assessing impacts on States of candidate

measures (MEPC.1/Circ.885), keeping the implementation and impacts of the short-term measure under review, so that any necessary adjustments may be made (**item 7.1**) ;

- agreed that a lessons-learned exercise should be undertaken to draw lessons from the comprehensive impact assessment of the short-term measure for the conduct of future impact assessments (**item 7.1**);
- approved the work plan as set out in annex IV of this report, and requested ISWG-GHG 9 to use the work plan as a basis and a guidance for its further work on the consideration of concrete proposals for mid- and long-term measures (**item 7.4**).

Due to lack of time, MEPC 76 could not finish the full consideration of the revised IMRB proposal and agreed that the discussion would be resumed at its next session (**item 7.2**). But it noted the proposal for a market-based measure based on a mandatory carbon levy and the diverging views expressed regarding the proposal, and agreed to further consider it, together with other future proposals for mid-term measures, at ISWG-GHG 9 and MEPC 77, in the context of phase I of the work plan (**item 7.5**).

MEPC 76 agreed to re-establish the Correspondence Group on Carbon Intensity Reduction and its draft terms of reference as well as the holding of the ninth and tenth meetings of the Intersessional Working Group on Reduction of GHG Emissions of Ships (ISWG GHG 9 and ISWG GHG 10).

Concerning the **other issues** addressed during the meeting :

MEPC 76 adopted following amendments to mandatory instruments :

- Resolution MEPC.330(76) amending MARPOL Annex VI exemption of UNSP barges from certain survey and certification requirements (**item 3**) ;
- Resolution MEPC.329(76) amending MARPOL Annex I regarding the prohibition on the use and carriage for use as fuel of heavy fuel oil by ships in Arctic waters (**item 3**) ;
- Resolution MEPC.331(76) amending annex I and IV of the International Convention on the Control of Harmful Anti-fouling Systems on Ships (AFS Convention) concerning controls on cybutryne and the form of the IAFS. (**item 3**).

MEPC 76 also :

- approved the final text of the Guidelines MEPC.1/Circ.892 for exemption of UNSP barges from the survey and certification requirements, in complement of amendments to Annexe VI abovementioned (**item 3**) ;
- adopted amendments to 2013 Interim guidelines for determining minimum propulsion power to maintain the manoeuvrability of ships in adverse conditions (**item 5**) ;
- adopted amendments to the 2018 Guidelines on the method of calculation of the attained Energy Efficiency Design Index (EEDI) for new ships (**item 5**) ;
- approved Work Plan to progress the work on the Shaft/Engine Power Limitation concept (**item 5**)
- adopted draft amendments to circular MEPC.1/Circ.795/Rev.4 on unified interpretation to clarify the dates related to EEDI Phase 2 and 3 for "new ships" (**item 5**) ;
- noted the 2020 industry guidelines on calculation and verification of Energy Efficiency Design Index (EEDI) (**item 6**) ;
- approved MEPC.1/Circ.893 on Provision of adequate facilities at ports and terminals for the reception of plastic waste from ships (**item 9**);
- approved MEPC.1/Circ.894 on Sharing of results from research on marine litter and encouraging studies to better understand microplastics from ships (**item 9**);
- approved MEPC.1/Circ.895 on Unified interpretations to the NOX Technical Code 2008 (**item 9**).

MEPC 76 has agreed to the following new outputs for the Committee :

- Review of the 2014 Guidelines for the reduction of underwater noise from commercial shipping to address adverse impacts on marine life (MEPC.1/Circ.833) (2014 Guidelines) and identify next steps (**item 12**).

Item 3 - Consideration and adoption of amendments to mandatory instruments

Amendments to MARPOL Annex VI – EEXI and CII

MEPC 76 has adopted Resolution MEPC.328(76) amending MARPOL Annex VI concerning mandatory goal-based technical and operational measures to reduce carbon intensity of international shipping (EEXI and CII).

These amendments shall be deemed to have been accepted on 1 May 2022 and shall enter into force on 1 November 2022.

MEPC 76 had for its consideration proposal for an exclusion for ice-classed ships in the draft amendments to MARPOL Annex VI. The operational reasons are related to the fact that ice-classed ships consume much more fuel when sailing in ice covered waters compared to sailing in the same area in open water conditions, which may have a big impact on their attained CII. But MEPC 76 decided that this matter should be considered as part of the ongoing discussion with regard to correction factors/voyage exclusions taking place in the dedicated Correspondence Group.

In accordance with draft regulation 22B.3, in an event of a flag/company change, the attained CII of the ship for the period of the calendar year immediately preceding the transfer shall be reported and verified, based on which an operational carbon intensity rating shall be assigned for use by this ship as the annual operational carbon intensity rating after transfer and until the next annual verification. To avoid increasing unnecessary administrative burden and to ensure consistent compliance, MEPC 76 agreed that the attained CII as well as the CII rating will always be based on the data for a complete calendar year.

Although this matter would be addressed in greater detail within the guidelines on the CII calculation in the case of a transfer of Administration or company that are to be developed, MEPC 76 agreed that some modifications were needed within the current amendments in order to address some of the identified aspects, and in particular to clarify that each ship calculates an attained annual operational carbon intensity indicator (CII) for a full calendar year, even in instances where the ship transfers Administrations or companies mid-year..

Consequently, the following wording of regulation 28.3 was adopted :

> 3.Notwithstanding 1 and 2 of this regulation, in the event of any transfer of a ship addressed in regulations 27.4, 27.5 or 27.6 completed after 1 January 2023, a ship shall, after the end of the calendar year in which the transfer takes place, calculate and report the attained annual operational CII for the full 12-month period from 1 January to 31 December in the calendar year during which the transfer took place, in accordance with regulations 28.1 and 28.2, for verification in accordance with regulation 6.6 of this Annex, taking into account guidelines to be developed by the Organization. Nothing in this regulation relieves any ship of their reporting obligations under regulation 27 or this regulation of this Annex.

The text of regulations 6.6 to 6.8 regarding the Statement of Compliance has been revised to bring it in line with the agreed changes to regulation 28.3. MEPC 76 agreed also on a number of modifications to regulation 26 to align the text related to the SEEMP with the agreed modifications to regulation 28.3.

The Committee noted the concerns with regard to the calculation of the CII, notably for a new ship delivered after 1 January in a year; or a ship purchased at a judiciary sale, where no information follows the ship; or a ship where the Administration responsible to calculate the CII after 31 December did not verify the data submitted for the entirety of the previous year and did not receive a copy of

that data at the time of transfer from the previous Administration. To solve this question, MEPC 76 adopted a new paragraph 10bis in regulation 27 to clarify that the Secretary-General of IMO shall grant access to an Administration of a ship, to which regulation 28 applies, to all reported data for the preceding calendar year required for the CII calculation of that ship.

Amendments to MARPOL Annex VI – exemption of UNSP barges

MEPC 76 has adopted Resolution MEPC.330(76) amending MARPOL Annex VI exemption of UNSP barges from certain survey and certification requirements.

These amendments shall be deemed to have been accepted on 1 May 2022 and shall enter into force on 1 November 2022.

Regulation 1 - Definitions

"40 Unmanned non-self-propelled (UNSP) barge means a barge that:

.1 is not propelled by mechanical means;

.2 carries no oil (as defined in regulation 1.1 of this Annex);

.3 has no machinery fitted that may use oil or generate oil residue (sludge);

.4 has no oil fuel tank, lubricating oil tank, oily bilge water holding tank and oil residue (sludge) tank; and

.5 has neither persons nor living animals on board."

Regulation 3 - Exemptions and waivers

"2 Particulars of any such exemption, except those under paragraph 7 of this regulation, granted by the Administration shall be indicated in the Certificate referred to in regulation 7 of this Annex."

"7 -The Administration may exempt a UNSP barge1 from the requirements of regulations 6.1 and 7.1 of this Annex, by an International Oil Pollution Prevention Exemption Certificate for Unmanned Non-self-propelled Barges, for a period not exceeding 5 years provided that the UNSP barge has undergone a survey to confirm that the conditions referred to in regulations 1.40.1 to 1.40.5 of this Annex are met."

In complement, MEPC 76 approved the final text of the Guidelines MEPC.1/Circ.892 for exemption of UNSP barges from the survey and certification requirements.

Amendments to MARPOL Annex I – Prohibition on use and carriage of HFO in the Arctic

MEPC 76 has adopted Resolution MEPC.329(76) amending MARPOL Annex I regarding the prohibition on the use and carriage for use as fuel of heavy fuel oil by ships in Arctic waters.

These amendments shall be deemed to have been accepted on 1 May 2022 and shall enter into force on 1 November 2022.

"Regulation 43A - Special requirements for the use and carriage of oils as fuel in Arctic waters

1. With the exception of ships engaged in securing the safety of ships or in search and rescue operations, and ships dedicated to oil spill preparedness and response, the use and carriage of oils listed in regulation 43.1.2 of this Annex as fuel by ships shall be prohibited in Arctic waters, as defined in regulation 46.2 of this Annex, on or after 1 July 2024.

2. Notwithstanding the provisions of paragraph 1 of this regulation, for ships to which regulation 12A of this Annex or regulation 1.2.1 of chapter 1 of part II-A of the Polar Code applies, the use and carriage of oils listed in regulation 43.1.2 of this Annex as fuel by those ships shall be prohibited in Arctic waters, as defined in regulation 46.2 of this Annex, on or after 1 July 2029.

(…)
4. Notwithstanding the provisions of paragraphs 1 and 2 of this regulation, the Administration of a Party to the present Convention, the coastline of which borders on Arctic waters, may temporarily waive the requirements of paragraph 1 of this regulation for ships flying the flag of that Party while operating in waters subject to the sovereignty or jurisdiction of that Party, taking into account the guidelines to be developed by the Organization. No waivers issued under this paragraph shall apply on or after 1 July 2029.

Some delegates raised concerns with regard to provisions for exemptions and waivers set out in paragraphs 2 and 4 of the proposed amendment and proposed that these be deleted from the text of the amendments to ensure adequate protection of the Arctic marine environment, but this point had been already arbitrated at a previous session.

Amendments to the AFS Convention

MEPC 76 adopted Resolution MEPC.331(76) amending annex I and IV of the International Convention on the Control of Harmful Anti-fouling Systems on Ships (AFS Convention) concerning controls on cybutryne and the form of the IAFSC.

These amendments shall be deemed to have been accepted on 1 May 2022 and shall enter into force on 1 January 2023.

The ruling to prohibit anti-fouling systems containing cybutryne (also known under its industry name Irgarol-1051) would apply to ships from 1 January 2023 or, for ships already bearing such an anti-fouling system, at the next scheduled renewal of the anti-fouling system after 1 January 2023, but no later than 60 months following the last application to the ship of such an anti-fouling system.

Item 5 - Air pollution prevention

MEPC 76 had for its consideration result of the Correspondence Group (CG) on Air Pollution and Energy Efficiency which was instructed to :

- review and amend, as appropriate, the indicative example of a licence for fuel oil supply
- consider the proxies and consider draft amendments to appendix IX on Information to be submitted to the IMO Ship Fuel Oil Consumption Database of MARPOL Annex VI;
- further consider the proposal for shaft power limitation, with a view to developing a work plan to progress the work on the shaft power limitation concept, finalizing the revision of the interim minimum power guidelines contained in MEPC.1/Circ.850/Rev.2;
- finalize the draft amendments to the 2018 Guidelines on the method of calculation of the attained Energy Efficiency Design Index (EEDI) for new ships,
- prepare a final draft of the unified interpretation to clarify the dates related to EEDI Phases 2 and 3 for "new ships", to be issued as a new MEPC circular following the entry into force of the corresponding amendments to MARPOL Annex VI;
- consider whether there is a need to further clarify the ship types that are subject to the provisions for "Attained EEDI" and "Required EEDI".

Indicative example of a licence for fuel oil supply

MEPC 76 approved draft amendments to the Guidance for best practice for Member State/coastal State, which contains the indicative example of a licence for fuel oil supply in its annex.

It must be recalled that this is a non-mandatory guidance.

Proxies for offshore and marine contracting vessels as well as cruise passenger ships under the IMO DCS

The CG considered the possible carbon intensity proxies for offshore and marine contracting vessels as well as cruise passenger ships under the IMO DCS.

Offshore and marine contracting vessels

The CG did not decide one proxy for offshore and marine contracting vessels at this stage, and instead considered the following possible way forward before determining the proxy:

- offshore and marine contracting vessels are encouraged to collect "engine running hours and installed power, for each engine" in addition to the IMO DCS data, if applicable, for trial on a voluntary basis;
- based on the above data, offshore and marine contracting vessels are encouraged to calculate both proxies A and B and report them to the IMO;
- the IMO will develop an anonymized dataset of proxies A and B for analysis and consideration by the Parties, with a view to amending MARPOL Annex VI, if necessary, following the aforementioned data analysis.

Cruise passenger ships

The CG came to the same proposal concerning pax vessels.

The use of "Available Lower Berth (ALB)" as the capacity of each cruise passenger was proposed. In case of using ALB, the carbon intensity proxy for cruise passenger ships may be defined as follows:

$$P_{ALB} = \frac{\text{Total kg } CO_2 \text{ emitted/year}}{ALB \times \text{distance travelled/year}} \quad [\text{kg CO2/ALB} - \text{mile}].$$

whereas ISWG GHG 8 has chosen cgDIST, defined as follows, as the Carbon Intensity Indicator (CII) to be applied to mandatory CII rating for cruise passenger ships:

$$\text{cgDIST} = \frac{\text{Total kg } CO_2 \text{ emitted/year}}{\text{gross tonnage} \times \text{distance travelled/year}} \quad [\text{kg CO2/GT} - \text{mile}] .$$

Consequently, the CG did not decide whether or not to use ALB as the capacity of each cruise passenger ship at this stage, and instead considered the following possible way forward before determining the proxy:

- cruise passenger ships are encouraged to collect "available lower berth (ALB)" in addition to the IMO DCS data, if applicable, for trial on a voluntary basis;
- cruise passenger ships are encouraged to report the collected ALB data to IMO;
- IMO will develop an anonymized dataset of proxies based on ALB for analysis and consideration by the Parties, with a view to amending MARPOL Annex VI, if necessary, following the above data analysis as well as consideration on the mandatory CII rating.

MEPC 76 noted the possible ways forward abovementioned before determining the proxy of offshore and marine contracting vessels and cruise passenger ship

Work Plan to progress the work on the Shaft/Engine Power Limitation concept

Guidelines on the Shaft/Engine Power Limitation System to comply with the EEDI requirements might be adopted at MEPC 77, following the outcome of consideration on "the draft guidelines on the

Shaft/Engine Power Limitation System to comply with the EEXI requirements and use of a power reserve".

MEPC 76 approved Work Plan (**annex I** to the present report) presented by CG to progress the work on the Shaft/Engine Power Limitation concept.

Revision of the minimum power guidelines

MEPC 76 adopted amendments to 2013 Interim guidelines for determining minimum propulsion power to maintain the manoeuvrability of ships in adverse conditions (resolution MEPC.232(65), as amended by resolution MEPC.255(67)) contained in circular MEPC.1/Circ.850/Rev.2, but decided to keep them under review.

Adverse weather conditions : noting that the revised adverse weather conditions are more stringent than the current conditions provided in circular MEPC.1/Circ.850/Rev.2, inclusion of the "Minimum power assessment" as a new assessment procedure was supported to be included in the draft revised guidelines.

Inclusion of the Minimum power assessment : the current simplified assessment (the current level 2 method) is replaced with the Minimum power assessment

Republic of Korea proposed that the forward speed provided in the draft revised guidelines be further considered with a conservative approach, such as 4.0 knots, taking into account the comparison between the required propulsion power across under the existing simplified assessment (existing assessment level 2) and under the proposed new minimum power assessment (new assessment level 2). This proposal met some consideration, and that the reason why the amended guidelines will be kept under review.

Amendments to the 2018 Guidelines on the method of calculation of the attained Energy Efficiency Design Index (EEDI) for new ships

MEPC 76 adopted amendments to the 2018 Guidelines on the method of calculation of the attained Energy Efficiency Design Index (EEDI) for new ships.

Amendments were developed in order to reflect the amendment to MARPOL Annex VI for the mandatory reporting of the attained EEDI values and related information, as adopted at MEPC 75.

Extract from these amendments are attached in **annex II** of this report.

Unified interpretation to clarify the dates related to EEDI Phase 2 and 3 for "new ships"

MEPC 76 approved draft unified interpretation to clarify the dates related to EEDI Phase 2 and 3 for "new ships", as draft amendments to circular MEPC.1/Circ.795/Rev.4.

These UIs are quoted in **annex III** of this report.

Item 6 - Energy efficiency of ships

MEPC 76 noted the 2020 industry guidelines on calculation and verification of Energy Efficiency Design Index (EEDI).

The first version of the industry guidelines, which provided the agreed procedures for the computation and verification of the EEDI to be used by the verifiers as well as the submitters when verifying and

computing the EEDI have been made part of IACS procedural requirement PR 38 "Procedure for calculation and verification of the Energy Efficiency Design Index (EEDI)".

The industry guidelines contain substantial items of the 2018 Guidelines on the method of calculation of the attained Energy Efficiency Design Index (EEDI) for new ships (resolution MEPC.308(73)) and the 2014 Guidelines on survey and certification of the Energy Efficiency Design Index (EEDI) (resolution MEPC.254(67)), as amended by resolutions MEPC.261(68) and MEPC.309(73)). Therefore, it became imperative to keep the industry guidelines updated each time the IMO guidelines are revised to maintain alignment of the former with the latter.

The 2020 industry guidelines introduce the following changes:

.1 deletion of items covered by the IMO guidelines and instead adding references to those IMO guidelines, as necessary;

.2 updates based on the latest IMO guidelines and references;

.3 clarification of the application of Electric Power Table (EPT) for passenger ships and ro-ro passenger ships, in particular, in order to facilitate the consistent implementation of the IMO guidelines contained in resolution MEPC.308(73), as amended, in aspects of calculation of PAE value and the use of EPT, as reflecting the industry practice.

Item 7 - Reduction of GHG emissions from ships

7.1. Comprehensive impact assessment of the short-term measure

Impacts on States deserves a specific section of the initial Strategy, providing some of the elements to assess the impacts: geographic remoteness of and connectivity to main markets; cargo value and type; transport dependency; transport costs; food security; disaster response; cost-effectiveness; and socio-economic progress and development. The Strategy provides that "disproportionately negative impacts should be assessed and addressed, as appropriate". Paragraph 4.10 of the Strategy provides that "the impacts on States of a measure should be assessed and taken into account as appropriate before adoption of the measure".

During MEPC 75 many delegations highlighted that, before adopting the short-term measure, it was essential to undertake a comprehensive assessment of its impacts on States, paying particular attention to the needs of developing countries, especially Small Island Developing States (SIDS) and least developed countries (LDCs), in accordance with the Initial IMO Strategy, the Procedure for assessing impacts on States of candidate measures (MEPC.1/Circ.885).

IMO established the Steering Committee on the conduct of the comprehensive impact assessment. The following tasks were identified :

- Task 1 Literature review (World Maritime University)
- Task 2 Assessment of the impact of the measure on the fleet
- Task 3 Assessment of the impact of the measure on States (UNCTAD)
- Task 4 Stakeholder analysis (Starcrest)
- Task 5 Identification of areas of missing data (Starcrest)
- Task 6 COVID-19 considerations (Secretariat);
- Task 7 Disproportionately negative impacts (Secretariat/Steering Committee).

Here are the main outcome of this impact assessment.

Task 1 Literature Review

- The data maturity, lack of data and uncertainty level had a significant effect on the accuracy of the results.

- The IMO Procedure for assessing impacts on States of candidate measures (MEPC.1/Circ.885) did not provide much guidance to the assessors. The identification of the parameters associated with each criterion and their interrelations is a crucial step for future qualitative or quantitative impact assessments. Calculation of the relative importance of each criterion and the assignation of a weight to each criterion would help when undertaking an overall impact assessment.
- Defining disproportionality negative impacts and its assessment remained very unclear. To identify the concept of "disproportionately negative impacts"; a holistic, systematic and transdisciplinary approach would be required to assess the direct and indirect impacts of the approved short-term measure alternatives.

Task 2 Assessment of the impact of the measure on the fleet

- New policies scenarios have been modelled and compared to a Current regulations scenario, in the time-period 2019 to 2030.
    - Current regulations: Regulatory scenario with only adopted EEDI
    - New policies – EEXI only
    - New policies – low reduction: Regulatory scenario including both EEXI and CII requirements, in addition to current regulations. For CII, a demand-based metric (emission per actual transport work: g CO2/tonne-nm)
    - New policies – high reduction: Regulatory scenario including both EEXI and CII requirements, in addition to current regulations. For CII, a supply-based metric (emission per transport capacity: g CO2/dwt-nm)
- Compared to the baseline year 2019, the cost intensity, measured in USD cents per tonne-mile, in all four scenarios was found to be lower in 2030. This is due to an assumed increase in average size of the analysed fleet, improvements in energy efficiency for newbuilds and improvements in logistical efficiency.
- Relative to the Current regulations scenario in 2030, there is an increased cost intensity in all simulated new policies scenarios.
- The main compliance measures for existing ships will be speed reduction and use of biofuel blends, while new ships will apply more energy efficiency measures and alternative fuels such as LNG and LPG. The *New policies – high reduction* scenario sees the highest uptake of biofuel blends in the fleet with around 7% of the total energy use in 2030 being biofuels, while in the *New policies – low reduction* the share is around 2%.
- In all scenarios fossil fuels still dominate the energy mix in 2030.
- The average transit speed is expected to drop in 2023, mainly due to the EEXI requirements.
- The cost intensity impacts of new policies relative to Current regulations in 2030 are estimated as follows :
    - New policies – EEXI only: 2% increase.
    - New policies – low reduction: 7% increase
    - New policies – high reduction: 16% increase

Task 3 Assessment of the impact of the measure on States

- As regards shipping costs, small-sized ships plying short-sea shipping routes have been found to be more negatively affected as compared with large ships travelling long distances. Some substitution between ship sizes may also occur when a deep-sea liner is required to go slower, potentially skipping a port and leading to more transhipment, adding to the use of smaller ships, and thereby leading to increased costs.
- The impact of sailing speed reduction and the potential for service-reconfiguration is more apparent in the case of the Pacific and Caribbean SIDS where short-sea shipping and the use of general cargo ships are more prevalent.
- UNCTAD's analysis has shown an upward average increase in maritime logistics cost across all three GHG reduction scenarios standing at 1.6%, 3.1% and 7.6% for the EEXI-Only scenario, the Low-GHG reduction scenario and the High-GHG reduction scenario, respectively.

- Much of the cost burden will take place at a later or more advanced stage of the implementation process when the operational carbon intensity reduction requirements become more stringent (nearing the end of the decade).
- Trade (imports plus exports) reduction at the global level will range between -0.10%, -0.49% and -0.21%, under the EEXI-Only scenario, the High-GHG reduction scenario and Low-GHG reduction, respectively.
- In the aggregate level, the normal volatility of freight rates is far higher than the changes that may result from the IMO short-term measure.
- Aggregate global impacts of the proposed IMO short-term measure on maritime logistics costs can be considered small when compared to typical market variability of freight rates. Also, the global impact on GDP and trade flows can be considered small when compared to the long-term impact of other disruptions such as a pandemic or climate change factors.

Task 7 Disproportionately negative Impacts

- The Steering Committee had an initial exchange of views on how to consider the concept of "disproportionately negative impacts". However, several members highlighted that it would be very difficult to solve this task.
- Following this exchange, the Steering Committee agreed not to include any findings with regard to disproportionate negative impacts in this report.

In view of the uncertainties reflected in the comprehensive impact assessment, Solomon Islands proposes that no general exemptions or waivers be adopted now, but that three years after entry into force of the short-term measure a review is performed to identify whether there are any disproportionately negative impacts on States, SIDS and LDCs in particular.

Solomon Islands also suggests that during that period, specific studies should be undertaken on the transport costs and economics of shipping for SIDS and LDCs, and the options for the IMO to ensure that the needs of developing countries, SIDS and LDCs are appropriately addressed.

Reversely, some delegations, in light of the number of negative impacts identified which could create serious problems for many developing countries, particularly SIDS and LDCs, proposed the inclusion of a waiver clause in MARPOL Annex VI. In cases where the transfer of a disproportionate burden has been demonstrated by the impact assessment on a developing country, in particular a SIDS or LDC, IMO should adapt one of the following action :

1. phased or delayed implementation of specific obligations;
2. exemption of specific obligations;
3. establishment of a compensatory funding mechanism in accordance with the practice of the Organization.

MEPC 76 could not support the inclusion of such a waiver clause, stating that data available did not lead to a clear conclusion in favor of an exemption, that flag-wise exemption or waiver was not feasible for international shipping considering its transnational nature, and that the application of a waiver clause would risk undermining the effective implementation of the measure.

Many delegations supported the proposal that impacts of the short-term measure should be kept under review in the period up to 2026 so that any necessary adjustments could be made. Many delegations also supported the conduct of a lessons-learned exercise on the basis of the comprehensive impact assessment of the short-term measure.

Hence, MEPC 76 :

- reaffirmed, in line with the Procedure for assessing impacts on States of candidate measures (MEPC.1/Circ.885), keeping the implementation and impacts of the short-term measure under review, so that any necessary adjustments may be made.

- agreed that a lessons-learned exercise should be undertaken to draw lessons from the comprehensive impact assessment of the short-term measure for the conduct of future impact assessments, including how disproportionately negative impacts can be identified
- agreed to modify the text of the MEPC resolution so as to reflect the concerns of certain delegations regarding assessment of impact on States :

> "7. AGREES to undertake a lessons-learned exercise from the comprehensive impact assessment of the amendments to MARPOL Annex VI, with a view to improving the procedure for conducting future impact assessments taking into account the Procedure for assessing impacts on States of candidate measures (MEPC.1/Circ.885) and the terms of reference for the impact assessment of the short-term measure;"

MEPC 76 invited Member States and international organizations to submit concrete proposals on how to keep the impacts of the short-term measure under review and how to undertake a lessons-learned exercise to MEPC 77.

7.2. Outcome of ISWG GHG 8

Bureau Veritas M&O has issued a comprehensive report of the ISWG GHG 8.which can be downloaded on its website.

Finalization of the draft technical guidelines supporting the EEXI framework

MEPC 76 has adopted without further discussion:

- resolution MEPC.332(76) - 2021 Guidelines on the method of calculation of the attained Energy Efficiency Existing Ship Index (EEXI)
- resolution MEPC.333(76) - 2021 Guidelines on survey and certification of the Energy Efficiency Existing Ship Index (EEXI)
- resolution MEPC.334(76) - 2021 Guidelines on the shaft/engine power limitation system to comply with the EEXI requirements and use of a power reserve

as finalized by ISWG GHG 8.

Finalization of the draft technical guidelines supporting the CII framework

Carbon intensity indicators and calculation methods

MEPC 76 has adopted resolution MEPC.335(76) - 2021 guidelines on operational carbon intensity indicators and the calculation methods (CII Guidelines, G1), as finalized by ISWG GHG 8..

CII reference lines

MEPC 76 has adopted resolution MEPC.336(76) - 2021 guidelines on the reference lines for use with operational carbon intensity indicators (CII reference lines guidelines, G2), as finalized by ISWG GHG 8.

CII reduction factors

MEPC 76 has adopted resolution MEPC.337(76) - 2021 guidelines on the operational carbon intensity reduction factors relative to reference lines (CII reduction factor guidelines, G3), following a long and lively debate between the delegates.

A majority of delegations supported the compromise proposal forwarded by ISWG-GHG 8, stating that the proposal represented a prudent and realistic target for international shipping. They insisted on the following points :

- All decisions had to be "evidence based", which is not the case for the most demanding reduction scenarios
- There is a review clause in 2026 which will adjust the effort and increase it if necessary for the last years of the decade.

Years	
2020	1.0%*
2021	1.0%*
2022	1.0%*
2023	2.0%
2024	2.0%
2025	2.0%
2026	2.0%
2027	
2028	
2029	
2030	

- phase 1(2020-22) is similar to business as usual carbon intensity improvement until entry-into-force ;
- phase 2 (2023-26) is defined as 2%;
- phase 3 (2027-30) will be further strengthened and developed taking into account the review of the short-term measure.

Some delegations, while expressing general support for the outcome of the Group on G3 in a spirit of compromise, highlighted that more ambitious GHG reduction efforts would be needed in order to achieve the levels of ambition set out in the Initial IMO Strategy.

Many other delegations expressed disappointment with regard to CII reduction rates, stating that the reduction rates set for phases 1 and 2 were insufficient to incentivize behavioural change and that keeping phase 3 blank until the review stage would generate significant uncertainties for the industry and could therefore not be supported. The trajectory presented is insusceptible to meet the objectives of the IMO GHG Strategy for 2030 and the Paris Agreement.

The USA, followed by many delegations, proposed as a compromise that the reduction amounts be increased so as to achieve a reduction of 22% by 2026. This proposal was not retained.

CII rating

MEPC 76 has adopted resolution MEPC.338(76) - 2021 guidelines on the operational carbon intensity rating of ships (CII rating guidelines, G4).

7.3. Revised proposal of an International Maritime Research and Development Board

MEPC 75 considered a proposal co-sponsored by several industry associations for the development of a research and development (R&D) programme to accelerate the introduction of low-carbon and zero-carbon technologies and fuels.

The proposed R&D programme would rely on the establishment by the Organization of an International Maritime Research and Development Board (IMRB) with responsibility for commissioning, coordinating and administering specific R&D projects, to be financed by a fund (IMO Maritime Research Fund, IMRF) to be established by the Organization. This would be expected to raise approximately $5 billion over the 10 to 15 year life of the programme via a proposed mandatory R&D contribution equivalent to $2 per tonne of fuel oil consumed.

MEPC 75 acknowledged the proposal by the industry and noted diverging views and concerns on the proposal, in particular with regard to various operational, administrative, legal and governance aspects. The co-sponsors have provided the following details :

- **The governance structure :** The funding (IMRF) for the R&D projects would be under the auspices of the IMRB. There should be a more transparent and better separation of responsibilities between the IMRF and the IMRB and this could be done by placing the IMRF

under the auspices of IMO which would provide the funding for the R&D programmes identified by the IMRB.

- **Impracticality of establishing the IMRB outside the IMO regulatory framework:** The R&D programmes required can only be created and succeed within the IMO framework. Establishing the IMRB outside of the IMO regulatory framework could only be voluntary, and the diversity and number of shipowners would make a voluntary programme infeasible and unable to generate the funds needed to support R&D programmes. there would be no mechanism to report and verify the necessary data for implementation of funding and enforcement of R&D contributions
- **The IMRB concept is not an MBM and, being a candidate short-term measure, should be considered separately to mid- and long-term measures:** The IMRB is already listed in the Initial IMO GHG Strategy as a short-term measure and the need to accelerate R&D efforts is acknowledged to be an urgent priority.
- **Administrative burden on flag States to ensure compliance:** The IMRF will be responsible, inter alia, for determining the R&D contribution to be made by each ship, the collection and processing of the R&D contribution, and the issuance of an IMRF Annual Account Statement. The responsibility of the flag State will be to confirm that the information provided in the IMRF Annual Account Statement is consistent with the ship's fuel consumption data as reported to the Administration in accordance with regulation 22A.3 of MARPOL Annex VI.

A comprehensive impact assessment, which has been produced with the assistance of Clarksons Research, conclusively confirmed that the IMRB proposal will have no disproportionately negative impact on States, including LDCs and SIDS, and States that are geographically distant from their markets. The proposed measure will not adversely impact transport costs to an extent beyond those impacts which already result from daily volatility of fuel oil prices.

Following concerns were expressed about IMRB/IMRF:

- IMRB/IMRF only support R&D but not the deployment or uptake of alternative fuels, and corresponding investments required in fuel production, port and bunkering infrastructures;
- The establishment of an international maritime R&D board would be a first but necessary step to support innovation and to accelerate the introduction of low-carbon and zero-carbon technologies and fuels for use in the international maritime sector, but would not incentivize behavioural change and therefore could not be categorized as an MBM;
- The IMRB proposal did not include an appropriate mechanism to ensure equitable access to the required technology, fuels and ship designs and could increase the gap between those developed countries who own the next generation technologies, and those developing countries who could not afford them, and therefore the transfer of technologies has to be insured;
- The provisions on intellectual property rights did not provide sufficient guarantees to ensure fair access to the results of research and development funded by the IMRB.

Due to lack of time, MEPC 76 could not finish the full consideration of the revised IMRB proposal and agreed that the discussion would be resumed at its next session.

7.4. Proposal for a work plan work plan for the development of mid and long-term measures

22 Member States representing both developed and developing States and various geographical regions, have put forward a concrete process on how to structure the IMO's discussion on mid- and long-term measures, including the consideration of impacts on States of candidate measures in three distinct phases : .

Phase I – Collation and initial consideration of proposals for measures;

Phase II – Assessment and selection of measures(s) to further develop; and

Phase III – Development of (a) measure(s) to be finalized within (an) agreed target date(s).

To make the collation and initial consideration of proposals for measures possible, the work plan should identify key issues to be considered for each proposed mid- and long-term measure.

The key issues should include, but not be limited to, the following elements:

- main characteristics and features of the measure
- identification of emissions reduction potential,
- potential implications on the shipping industry,
- implementation and enforcement aspects,
- legal aspects
- indication of the total workload for the Organization

Phase I should run until spring 2022, Phase II should at the latest be completed in conjunction with the adoption of the Revised Strategy, and Phase III should progress and reach a target date to be agreed in conjunction with the adoption of the Revised Strategy and the accompanying implementation schedules.

This proposal met a broad support, several delegations highlighting the importance for IMO to start immediately the consideration of concrete mid-term measures, with a view to agreeing on ambitious measures, as soon as possible but no later than 2025. In that sense, many delegates expressed the view that the work plan should be approved at this session so as to initiate concrete work on phase I immediately.

Several other delegations, while expressing support to organize future work on the basis of the work plan, proposed amendments to the work plan such that the assessment of impacts on States should be more prominent under phase II of the work plan and to also include a new phase IV to follow up on impacts on States.

MEPC 76 approved the work plan as set out in **annex IV** of this report, and requested ISWG-GHG 9 to use the work plan as a basis and a guidance for its further work on the consideration of concrete proposals for mid- and long-term measures.

Particular attention should be given to Para 5 “Once a measure is adopted and enacted, the Committee should keep its implementation and impacts under review, upon request of Member States, so that any necessary adjustments may be made.”

7.5. Proposal on the establishment of a universal mandatory greenhouse gas levy

MEPC 76 had for its consideration a proposal for mandatory levy on GHG emissions from international shipping as an immediate priority measure with a view to incentivizing a rapid shift away from fossil fuel. The co-sponsors propose an entry level by 2025 of $100 per tonne carbon dioxide equivalent on heavy fuel oil with upward ratchets in a 5-yearly review cycle.

The co-sponsors have reviewed all available work on the efficacy of international MBMs published since the last IMO debate on this matter was abandoned in 2013 and an ambitious, mandatory and universal levy is considered by experts, on available evidence, to be the best economic tool available to control GHG emissions from the international shipping sector.

There are two principal purposes for such a levy:

- to send the market an unequivocal signal that a transition to fully decarbonized shipping, leaving none behind, commensurate with the Paris Agreement temperature goals and science, is irrevocable and inescapable.

- to address the price differential between business-as-usual (BAU) emission-based technology options, including fuels, and decarbonized alternatives.

The levy could either be levied at point of bunker or emissions but the co-sponsors note that most evidence reviewed suggests efficiency and ease of a levy on bunker.

The co-sponsors propose that revenue collected be divided into :

1) a fund to support climate change mitigation and adaptation efforts in vulnerable countries, administered under the mandate of the UN Framework Convention on Climate Change (UNFCCC), for which a potential candidate could be the existing Green Climate Fund (GCF),

2) a separate fund to subsidize RD&D of new technologies and fuels administrated under the mandate of IMO. Support for the transaction costs incurred would take up the final portion of the revenue, both for port and flag States, in administering collection of revenues and administration of the disbursement.

The principle of CBDR-RC is addressed through the transfer of a significant portion of revenue generated to fund climate change projects in countries that are most vulnerable to the effects of climate change.

Several delegations welcomed the proposal and expressed support in principle for it, also recognizing the urgency of initiating discussions on concrete proposals for an MBM.

On the opposite, several other delegations expressed the view that the proposal was premature and would have considerable negative impacts on the maritime trade serving developing States; that the universal nature of the levy was incompatible with the implementation of CBDR-RC; that there were no sufficient alternative low- or zero-carbon fuels available at this stage that ships could revert to; that possible impacts on States of the proposal would have to be assessed in more detail

MEPC 76 noted the proposal for a market-based measure based on a mandatory carbon levy and the diverging views expressed regarding the proposal, and agreed to further consider it, together with other future proposals for mid-term measures, at ISWG-GHG 9 and MEPC 77, in the context of phase I of the work plan.

7.6. Working arrangements

MEPC 76 agreed to re-establish the Correspondence Group on Carbon Intensity Reduction and its draft terms of reference as well as the holding of the ninth and tenth meetings of the Intersessional Working Group on Reduction of GHG Emissions of Ships (ISWG GHG 9 and ISWG GHG 10).

Details on their terms of reference are given at the end of this report.

Item 9 - Pollution prevention and response

Actions to address marine plastic litter from ships

MEPC 76 approved :

- MEPC.1/Circ.893 on Provision of adequate facilities at ports and terminals for the reception of plastic waste from ships
- MEPC.1/Circ.894 on Sharing of results from research on marine litter and encouraging studies to better understand microplastics from ships

Unified interpretations to the NOX Technical Code 2008

MEPC 76 approved MEPC.1/Circ.895 on Unified interpretations to the NOX Technical Code 2008, as Amended.

This circular revokes MEPC.1/Circ.865.

Text of these UIs is in **annex V** of this report.

Item 12 - Work programme of the Committee and subsidiary bodies

New outputs

MEPC 76 has agreed to the following new outputs for the Committee :

- Review of the 2014 Guidelines for the reduction of underwater noise from commercial shipping to address adverse impacts on marine life (MEPC.1/Circ.833) (2014 Guidelines) and identify next steps

Date of next MEPC

MEPC 77 should be held from 8 to 12 Nov 2021 which unfortunately overlaps with Cop 26. Decision to misalign MEPC 77 from COP should be addressed by Council

MEPC 78 should meet in the first half of 2022

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Owing to time constraints, the Committee agreed to defer to MEPC 77 consideration of the following matters :

- Application of the BWM Convention to specific ship types
- Application of the BWM Convention to ships operating at ports with challenging water quality
- Review of the ballast water record book
- Approval of amendments to MARPOL Annex I and to the IBC Code, regarding watertight doors on cargo ships, and of the related amendments to the 1988 Load Lines Protocol and the IGC Code
- Process of updating the Survey Guidelines under the Harmonized System of Survey and Certification (HSSC)
- Draft 2020 guidelines for exhaust gas cleaning systems
- Discharge water from exhaust gas cleaning systems
- Reduction of the impact on the Arctic of Black Carbon emissions from international shipping
- Review of the IBTS Guidelines and amendments to the IOPP Certificate and Oil Record Book

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Terms of reference of working groups established by MEPC 76

Correspondence group on carbon intensity reduction

The CG is instructed to:

1. further consider and finalize the draft updated *Guidelines for the development of a Ship Energy Efficiency Management Plan (SEEMP)*,
2. further consider and update existing guidelines, procedures or guidance, taking into account comments and decisions made at ISWG-GHG 8 and MEPC 76, including
    a. 2017 Guidelines for administration verification of ship fuel oil consumption data (resolution MEPC.292(71));
    b. 2017 Guidelines for the development and management of the IMO Ship Fuel Oil Consumption Database (resolution MEPC.293(71));
    c. Procedure on Submission of data to the IMO data collection system of fuel oil consumption of ships from a State not Party to MARPOL Annex VI (MEPC.1/Circ.871); and
    d. Procedures for port State control, 2019 (resolution A.1138(31));
3. develop draft guidelines on correction factors for certain ship types, operational profiles and/or voyages for the CII framework (new G5)
4. develop in new or existing guidelines specific guidance on:
    a. the audit and verification processes of SEEMP including verification of revised SEEMP for ships required to develop a plan of corrective actions (PCA);
    b. report, verification and submission of data for trial CIIs on voluntary basis;
    c. aggregation and reporting of ship's fuel consumption data to the new Administration and/or company in the event of change from one Administration to another and/or from one Company to another
5. submit an interim report to MEPC 77, and a final report to MEPC 78 in 2022, to be first considered by ISWG-GHG 10

ISWG-GHG 9 (15-17 September 2021)

The ISWG is instructed to :

1. further consider concrete proposals to encourage the uptake of alternative low- carbon and zero-carbon fuels, including the development of lifecycle GHG/carbon intensity guidelines for all relevant types of fuels and incentive schemes, as appropriate;
2. further consider concrete proposals to reduce methane slip and emissions of Volatile Organic Compounds (VOCs).

ISWG-GHG 10 (18-22 October 2021)

The ISWG is instructed to :

1. consider any issue arising from the interim report of the Correspondence Group on Carbon Intensity Reduction;

2. further consider the scope of and timeline for development of a mandatory carbon intensity code;
3. consider concrete proposals on how to keep the impacts of the short-term measure under review and how to undertake a lessons-learned exercise of the comprehensive impact assessment of the short-term measure]; and
4. consider mid-term GHG reduction measures in the context of Phase I of the workplan for the development of mid- and long-term measures
5. submit a written report to MEPC 77.

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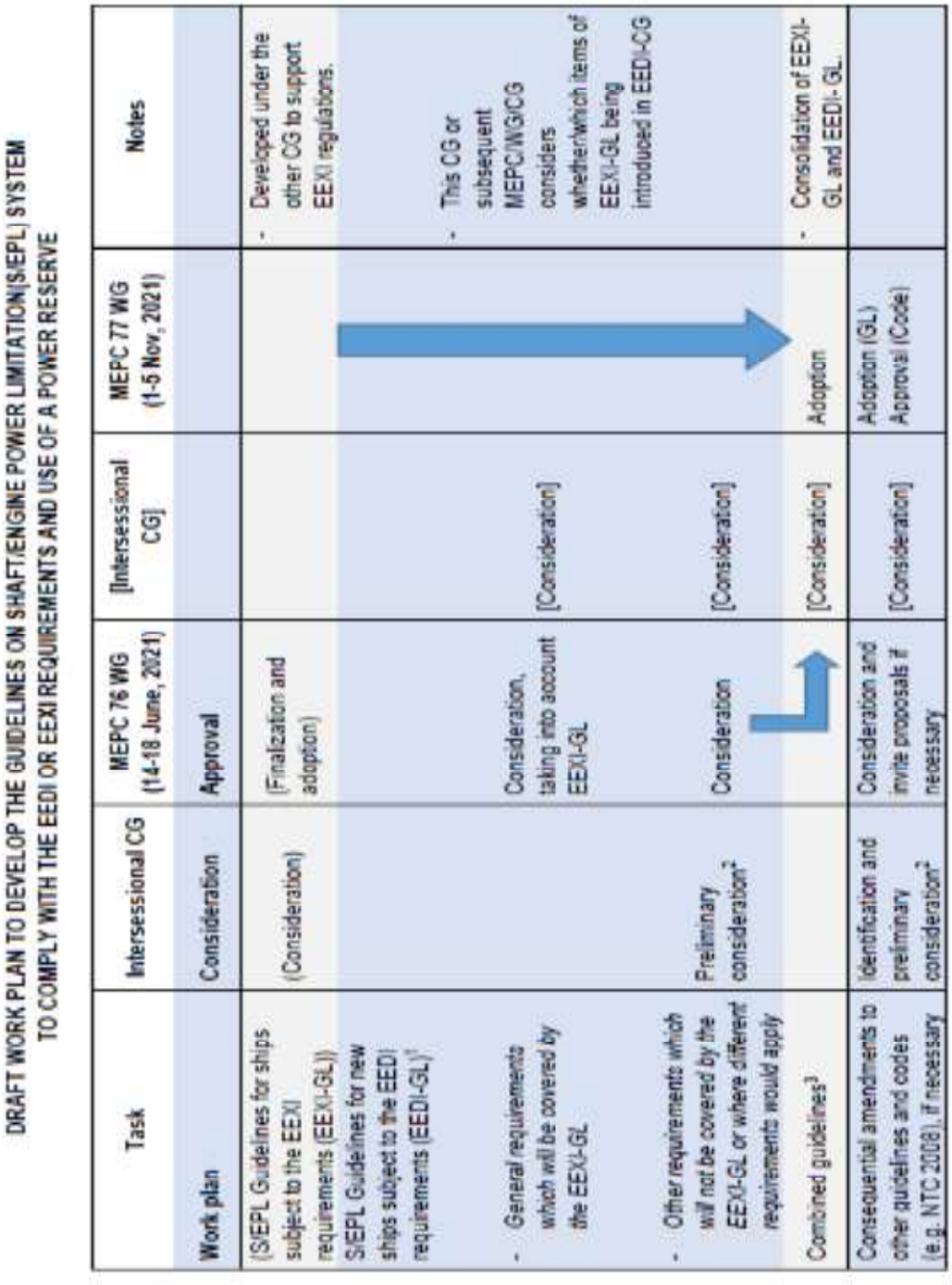
TABLE OF ANNEXES

ANNEX I

DRAFT WORK PLAN TO DEVELOP THE GUIDELINES ON SHAFT/ENGINE POWER LIMITATION(S/EPL) SYSTEM TO COMPLY WITH THE EEDI OR EEXI REQUIREMENTS AND USE OF A POWER RESERVE



DRAFT WORK PLAN TO DEVELOP THE GUIDELINES ON SHAFT/ENGINE POWER LIMITATION(S/EPL) SYSTEM TO COMPLY WITH THE EEDI OR EEXI REQUIREMENTS AND USE OF A POWER RESERVE

Task	Intersessional CG	MEPC 76 WG (14-18 June, 2021)	[Intersessional CG]	MEPC 77 WG (1-5 Nov, 2021)	Notes
Work plan	Consideration	Approval			
(S/EPL Guidelines for ships subject to the EEXI requirements (EEXI-GL)) S/EPL Guidelines for new ships subject to the EEDI requirements (EEDI-GL)[1]	(Consideration)	(Finalization and adoption)			- Developed under the other CG to support EEXI regulations.
- General requirements which will be covered by the EEXI-GL		Consideration, taking into account EEXI-GL	[Consideration]		- This CG or subsequent MEPC/WG/CG considers whether/which items of EEXI-GL being introduced in EEDI-CG
- Other requirements which will not be covered by the EEXI-GL or where different requirements would apply	Preliminary consideration[2]	Consideration	[Consideration]		
Combined guidelines[3]			[Consideration]	Adoption	- Consolidation of EEXI-GL and EEDI- GL.
Consequential amendments to other guidelines and codes (e.g. NTC 2008), if necessary	Identification and preliminary consideration[2]	Consideration and invite proposals if necessary	[Consideration]	Adoption (GL) Approval (Code)	

ANNEX II

AMENDMENTS TO THE 2018 GUIDELINES ON THE METHOD OF CALCULATION OF THE ATTAINED ENERGY EFFICIENCY DESIGN INDEX (EEDI) FOR NEW SHIPS (RESOLUTION MEPC.308(73), AS AMENDED BY RESOLUTION MEPC.322(74))

"**3 Mandatory Reporting of Attained EEDI Values and Related Information**

3.1 In accordance with regulation 20.3 of MARPOL Annex VI, for each ship subject to regulation 21, the Administration or any organization duly authorized by it shall report the required and attained EEDI values and relevant information taking into account these Guidelines via electronic communication.

3.2 Information to be reported are as follows:

.1 applicable EEDI phase (e.g. Phase 1, Phase 2, etc.);

.2 identification number (IMO Secretariat use only);

.3 ship type;

.4 common commercial size reference* (see Note (3) in appendix 5 to these Guidelines), if available;

.5 DWT or GT (as appropriate);

.6 year of delivery;

.7 required EEDI value;

.8 attained EEDI value;

.9 dimensional parameters (length L_{pp} (m), breadth B_s (m), and draught (m));

.10 V_{ref} (knots) and P_{ME} (kW);

.11 use of innovative technologies (4th and 5th terms in the EEDI equation, if applicable);

.12 short statement* describing the principal design elements or changes employed to achieve the attained EEDI (as appropriate), if available;

.13 type of fuel used in the calculation of the attained EEDI, and for dual fuel engines, the f_{DFgas} ratio; and

.14 ice class designation (if applicable).

3.3 The information in paragraph 3.2 is not required to be reported for ships for which the required and attained EEDI values had been already reported to the Organization.

3.4 A standardized reporting format for Mandatory Reporting of Attained EEDI Values and Related Information is presented in appendix 5."

ANNEX III

UNIFIED INTERPRETATIONS TO MARPOL ANNEX VI
(update to the unified interpretation provided in paragraph 1.2.4 of the annex to MEPC.1/Circ.795/Rev.4)
(shown as additions/~~deletions~~)

1 Definition of "new ship"

Regulation 2
Definitions

Regulation 2.23 reads as follows:

"New ship means a ship:

.1 for which building contract is placed on or after 1 January 2013; or

.2 in the absence of a building contract, the keel of which is laid or which is at a similar stage of construction on or after 1 July 2013; or

.3 the delivery of which is on or after 1 July 2015."

Interpretation:

1.1 For the application of the definition "new ship" as specified in regulation 2.23 to each phase specified in table 1 of regulation 21, it should be interpreted as follows:

.1 the date specified in regulation 2.23.1 should be replaced with the start date of each phase;

.2 the date specified in regulation 2.23.2 should be replaced with the date six months after the start date of each phase; and

.3 the date specified in regulation 2.23.3 should, for Phase 1, 2 and 3, be replaced with the date 48 months after the start date of each phase.

1.2 With the above interpretations, the required EEDI of each phase is applied to the following new ship which falls into one of the categories defined in regulations 2.25 to 2.31 and to which chapter 4 is applicable:

(.....)

.3 the required EEDI of Phase 2 is applied to the following new ship:

.1 for ship types where Phase 2 ends on 31 March 2022:

.1 the building contract of which is placed in Phase 2, and the delivery is before 1 April 2026; or

.2 the building contract of which is placed before Phase 2, and the delivery is on or after 1 January 2024 and before 1 April 2026; or

in the absence of a building contract:

.3 the keel of which is laid or which is at a similar stage of construction on or after 1 July 2020 and before 1 October 2022, and the delivery is before 1 April 2026; or

.4 the keel of which is laid or which is at a similar stage of construction before 1 July 2020, and the delivery is on or after 1 January 2024 and before 1 April 2026.

.2 for ship types where Phase 2 ends on 31 December 2024:

.1 the building contract of which is placed in Phase 2, and the delivery is before 1 January 2029; or

.2 the building contract of which is placed before Phase 2, and the delivery is on or after 1 January 2024 and before 1 January 2029; or

in the absence of a building contract:

.3 the keel of which is laid or which is at a similar stage of construction on or after 1 July 2020 and before 1 July 2025, and the delivery is before 1 January 2029; or

.4 the keel of which is laid or which is at a similar stage of construction before 1 July 2020, and the delivery is on or after 1 January 2024 and before 1 January 2029.

4 the required EEDI of Phase 3 is applied to the following new ship:

.1 for ship types where Phase 3 commences with 1 April 2022 and onwards:

.1 the building contract of which is placed in Phase 3; or

.2 the building contract of which is placed before Phase 3, and the delivery is on or after 1 April 2026; or

in the absence of a building contract:

.3 the keel of which is laid or which is at a similar stage of construction on or after 1 October 2022; or

.4 the keel of which is laid or which is at a similar stage of construction before 1 October 2022 and the delivery of which is on or after 1 April 2026.

.2 for ship types where Phase 3 commences with 1 January 2025 and onwards:

.1 the building contract of which is placed in Phase 3; or

.2 the building contract of which is placed before Phase 3, and the delivery is on or after 1 January 2029; or

in the absence of a building contract:

.3 the keel of which is laid or which is at a similar stage of construction on or after 1 July 2025; or

.4 the keel of which is laid or which is at a similar stage of construction before 1 July 2025 and the delivery of which is on or after 1 January 2029.

ANNEX IV

WORK PLAN FOR DEVELOPMENT OF MID- AND LONG-TERM MEASURES AS A FOLLOW UP OF THE INITIAL IMO STRATEGY ON REDUCTION OF GHG EMISSIONS FROM SHIPS

1 This work plan is developed to progress development of mid- and long-term measures in line with the *Initial IMO strategy on reduction of GHG from ships* and its Programme of follow-up actions.

2 The work plan aims at supporting the achievement of the vision and the levels of ambition agreed in the Initial Strategy.

3 The work plan consists of three main phases:

.1 Phase I – Collation and initial consideration of proposals for measures;

.2 Phase II – Assessment and selection of measures(s) to further develop; and

.3 Phase III – Development of(a) measure(s) to be finalized within (an) agreed target date(s).

4 The implementation of the work plan includes the assessment of impacts on States of the proposed measures in accordance with the *Procedure for assessing impacts on States of candidate measures* set out in MEPC.1/Circ.885, taking into account the outcome of the lessons-learned exercise from the comprehensive impact assessment of the short-term measure1.

5 Once a measure is adopted and enacted, the Committee should keep its implementation and impacts under review, upon request of Member States, so that any necessary adjustments may be made.

Phase I: Collation and initial consideration of proposals for measures

6 *Purpose*: To table various proposals for measures in order to be able to understand and compare their main features and implications.

7 *What to do:* Identify the key issues to consider in relation to each proposed measure, along with considerations of their potential impacts on States in application of MEPC.1/Circ.885. The key issues should include, but not be limited to, the following elements:

.1 main characteristics and features of the measure, including in particular the scope of application, the appropriate IMO legal framework envisaged (new or existing), whether alternative methods of compliance may be used, and all other relevant elements enabling its understanding and implications;

.2 identification of emissions reduction potential, when the measure will start taking effect, and reductions to be expected by 2050;

.3 potential implications on the shipping industry, in particular on technical and operational aspects, and on costs and investment needs for the maritime industry;

4. implementation and enforcement aspects, such as actions that would need to be taken by industry stakeholders, by national Administrations as flag States and port States, etc.;

.5 legal aspects and relationship with relevant international law; and

.6 indication of the total workload for the Organization including expected time frame for development, approval, adoption and implementation of the measure, and suggestions on how to expedite the work.

8 *Time period*: Spring 2021 to spring 2022. The first phase of the work plan may require frequent meetings between MEPC 76 and MEPC 78 and may entail an added workload both on the Committee and the Secretariat.

Phase II: Assessment and selection of measures to further develop

9 *Purpose*: To identify (a) candidate measure(s) to develop further in priority.

10 *What to do*: Build upon information from Phase I to select the measure(s) to further develop in priority. This decision should be based on an assessment of the proposed measures, in particular their feasibility, their effectiveness to deliver the long-term levels of ambition of the Initial Strategy and their potential impacts on States.

11 *Time period*: Spring 2022 to spring 2023. The Committee's decision on measures to develop in priority may be taken in conjunction with the revision of the Initial Strategy. The second phase of the work plan may also necessitate frequent meetings in a format to be decided by the Committee.

Phase III: Development of (a) measure(s) to be finalized within (an) agreed target date(s)

12 *Purpose*: In the case of amending existing legal instruments, prepare amendments as appropriate. In the case of developing a new legal instrument, prepare a framework for consideration by the Committee in order to decide on the way forward.

13 *What to do*: Develop and adopt the measure(s), along with the assessments of impacts on States in application of MEPC.1/Circ.8852. In order to support this process, a detailed outline of the framework supporting information and assessment of how the selected measure(s) will meet the long-term levels of ambition could be undertaken.

14 *Timeline*: Target date(s) to be agreed in conjunction with the IMO Strategy on reduction of GHG emissions from ships.

ANNEX V

UNIFIED INTERPRETATIONS TO THE NOX TECHNICAL CODE 2008, AS AMENDED

1 Paragraph 2.2.4.1

Paragraph 2.2.4.1 reads as follows:

> "There are engines which, due to their size, construction and delivery schedule, cannot be pre-certified on a test-bed. In such cases, the engine manufacturer, shipowner or shipbuilder shall make application to the Administration requesting an onboard test (see 2.1.2.2). The applicant must demonstrate to the Administration that the onboard test fully meets all of the requirements of a test-bed procedure as specified in chapter 5 of this Code. In no case shall an allowance be granted for possible deviations of measurements if an initial survey is carried out on board a ship without any valid pre-certification test. For engines undergoing an onboard certification test, in order to be issued with an EIAPP Certificate, the same procedures apply as if the engine had been pre-certified on a test-bed, subject to the limitations given in paragraph 2.2.4.2."

Interpretation:

1.1 Engines undergoing an on-board certification test should have a preliminary approved Technical File, pending the results of the emission test.

1.2 If the result of the emission test does not comply with the applicable NOX regulation, the engines should be re-adjusted to the compliance condition originally approved, if any, or the applicant should apply to the flag Administration for acceptance of further testing.

2 Paragraph 4.4.6.1

Paragraph 4.4.6.1 reads as follows:

> "The Engine Group may be defined by basic characteristics and specifications in addition to the parameters defined in 4.3.8 for an Engine Family."

Interpretation:

2.1 Paragraph 4.4.6.1 cross references paragraph 4.3.8 which provides guidance for selection of an engine family. For engines fitted with an SCR system to reduce NOX emissions, it is recognized that some of the parameters provided may not be common to all engines within a group, in particular paragraphs 4.3.8.2.3 and 4.3.8.2.4 state that:

> ".3 individual cylinder displacement:
> - to be within a total spread of 15%
>
> .4 number of cylinders and cylinder configuration:
> - applicable in certain cases only, e.g. in combination with exhaust gas cleaning devices"

2.2 For engines fitted with an SCR system to reduce NOX emissions, the number and arrangement of cylinders may not be common to all members of the engine group. These blocks, such as the SCR space velocity (SV), catalyst block geometry and catalyst material.

3 Paragraph 4.4.6.2

Paragraph 4.4.6.2 reads as follows:

"The following parameters and specifications shall be common to engines within an Engine Group

.1 bore and stroke dimensions;

.2 method and design features of pressure charging and exhaust gas system:

- constant pressure;
- pulsating system;

.3 method of charge air cooling system:

- with/without charge air cooler;

.4 design features of the combustion chamber that effect NOX emission;

.5 design features of the fuel injection system, plunger and injection cam or gas valve which may profile basic characteristics that effect NOx emission; and

.6 rated power at rated speed. The permitted ranges of engine power (kW/cylinder) and/or rated speed are to be declared by the manufacturer and approved by the Administration."

Interpretation:

3.1 For engines fitted with an SCR system to reduce NOX emissions it is recognized that some of the parameters provided may not be common to all engines within a group and that new parameters derived from the SCR chamber and catalyst blocks may be used instead, such as the SCR Space Velocity (SV), catalyst block geometry and catalyst material.

3.2 Whilst the provisions of paragraph 4.4.6.2.1 should remain common to all engines within the group, the remaining parameters listed in paragraph 4.4.6.2 may be replaced by alternative SCR parameters, provided that the applicant is able to demonstrate that these alternative parameters are suitable for defining the engine group.

3.3 The applicant remains responsible for selecting the parent engine and demonstrating the basis of this selection to the satisfaction of the Administration.

4 Paragraph 5.10.1

Paragraph 5.10.1 reads as follows:

"For every Individual Engine or Parent Engine tested to establish an Engine Family or Engine Group, the engine manufacturer shall prepare a test report which shall contain the necessary data to fully define the engine performance and enable calculation of the gaseous emissions including the data as set out in section 1 of appendix 5 of this Code. The original of the test report shall be maintained on file with the engine manufacturer and a certified true copy shall be maintained on file by the Administration."

Interpretation:

4.1 The "necessary data to fully define the engine performance and enable calculation of the gaseous emissions" should be incorporated, in accordance with 5.12, from the raw data units to the cycle weighted NOX emission value in g/kWh. The data set given under Appendix 5 should not be considered definitive and any other test data (i.e. engine performance or setting data, description of control devices) relevant to the approval of a specific engine design and/or on-board NOX verification procedures should also be given. For the engine fitted with SCR, under scheme A, the parameters listed in sub-paragraphs of paragraph 5.2.2 of IMO resolution MEPC. 291(71) should be measured and recorded in the engine test report. Under scheme B, the exhaust gas temperature at the intended inlet of the SCR chamber should be determined and recorded in the test report. For

Dual fuel engines, the ratio of liquid-to-gas, Gas fuel temperature and its measurement point position should be recorded during the testing.

4.2 With reference to appendix 5 of the Code, it should be further interpreted that:

.1 the term "Deviation" as given under "Sheet 3/5, Measurement equipment, Calibration" refers to the deviation of the analyser calibration and not the deviation of the span gas concentration; and

.2 the "Fuel properties" as given under "Sheet 3/5, Fuel Characteristics, Fuel properties" should, include sufficient data to justify the ISO 8217:2017 grade (i.e. DMA, DMB, etc.) as given on EIAPP Certificate Supplement 1.9.4 by considering other additional analysis results for the fuel oil characteristics, i.e. Cetane index (ISO 4264:2018), carbon residue (ISO 10370:2014).