



Outcome of MEPC 78

Korean Register

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Outcome of MEPC 78

1. MARPOL Amendments (MARPOL Annex I and IBC Code)

2. Ballast Water Management

3. Air Pollution and Energy Efficiency

4. Green House Gas from international shipping

1. MARPOL Amendments



1. MARPOL Annex I and IBC Code

MEPC 78 adopted Res.MEPC.343(78) and Res.MEPC.345(78) in relation to the watertight door



CHAPTER 4 – REQUIREMENTS FOR THE CARGO AREA OF OIL TANKERS

PART A – CONSTRUCTION

Regulation 28 – Subdivision and damage stability

1 Paragraph 3.1 is replaced by the following:

- "1 The final waterline, taking into account sinkage, heel and trim, shall be below the lower edge of any opening through which progressive flooding may take place. Such openings shall include air-pipes and those which are closed by means of weathertight doors or hatch covers and may exclude those openings closed by means of watertight manhole covers and flush scuttles, small watertight cargo tank hatch covers which maintain the high integrity of the deck, remotely operated sliding watertight doors, hinged watertight access doors with open/closed indication locally and at the navigation bridge, of the quick-acting or single-action type that are normally closed at sea, hinged watertight doors that are permanently closed at sea, and sidescuttles of the non-opening type."

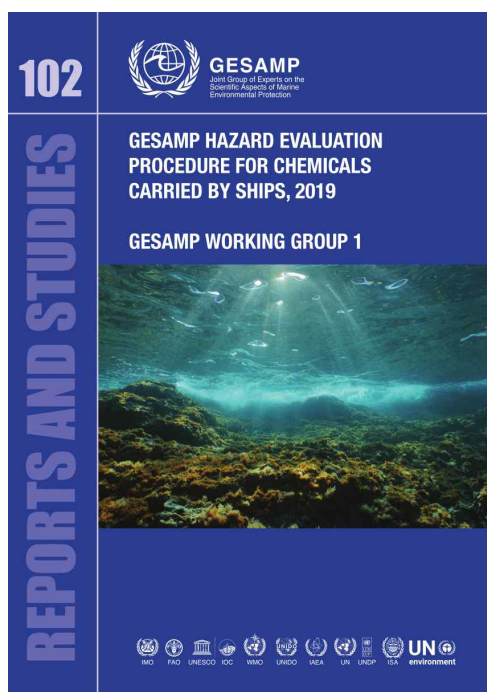
* It has been revised to align the SOLAS and MSC.1/Circ.1572/Rev.1, given that the types of watertight doors (Remotely operated sliding door, Sliding door, Hinged door) fitted on watertight bulkhead for cargo ships depend on the frequency of use while at sea (Used, Normally closed, Permanently closed). But there is a reference to remotely operated sliding door as used while at sea in MARPOL Annex I and IBC Code

1. MARPOL Amendments



2. MARPOL Annex II

MEPC 78 adopted Res.MEPC.344(78) in relation to the GESAMP Hazard evaluation procedure



C Acute Mammalian Toxicity					
Numerical Rating	C1 Oral Toxicity	C2 Dermal Toxicity	C3 Inhalation Toxicity		
	LD ₅₀ /ATE (mg/kg)	LD ₅₀ /ATE (mg/kg)	C3a		C3b
			vapour/mist LC ₅₀ /ATE (mg/L)	mist only LC ₅₀ /ATE (mg/L)	vapour only LC ₅₀ /ATE (mg/L)
0	ATE >2000	ATE >2000	ATE >20	ATE >5	ATE >20
1	300 < ATE ≤ 2000	1000 < ATE ≤ 2000	10 < ATE ≤ 20	1 < ATE ≤ 5	10 < ATE ≤ 20
2	50 < ATE ≤ 300	200 < ATE ≤ 1000	2 < ATE ≤ 10	0.5 < ATE ≤ 1	2 < ATE ≤ 10
3	5 < ATE ≤ 50	50 < ATE ≤ 200	0.5 < ATE ≤ 2	0.05 < ATE ≤ 0.5	0.5 < ATE ≤ 2
4	ATE ≤ 5	ATE ≤ 50	ATE ≤ 0.5	ATE ≤ 0.05	ATE ≤ 0.5

E Interference with other Uses of the Sea			
Numerical Rating	E1 Flammability Flashpoint (°C)	E2 Physical effects on wildlife and benthic habitats	E3 Interference with Coastal Amenities
		Fp - Persistent Floater F - Floater S - Sinker G - Gas E - Evaporator D - Dissolver and combinations thereof	
0	(not flammable, does not burn)		no interference no warning
1	Fp >93		slightly objectionable warning, no closure of amenity
2	60 < Fp ≤ 93		moderately objectionable possible closure of amenity
3	23 ≤ Fp ≤ 60		highly objectionable closure of amenity
4	Fp < 23		

* It This was to reflect two changes in the GESAMP Hazard Profile, namely sub-categorization of column C3 and the reassignment of column E1, in accordance with the finalized GESAMP Reports and Studies No.102

Outcome of MEPC 78

1. MARPOL Amendments

2. Ballast Water Management (EBP, PCWQ, Sewage and Grey water in BWT, BWRB)

3. Air Pollution and Energy Efficiency

4. Green House Gas from international shipping

2. Ballast Water Management

1. Experience Building Phase (EBP)

MEPC 78 agreed to develop a Convention Review Plan (CRP) that could take into account the data analysis report, establish a clear scope of a feasible Convention review, focus attention on **priority issues**

Key elements in the analysis report of EBP:

- Data from 16,199 ships were collected by 21 flags and 13,971 ships were subject to D-2 standard (7,329 ships with BWMS, **93.6% used UV or electrolysis**)
- Data from 45,710 surveys from flags with a total of 512 deficiencies, representing an estimated minimum **98.9% rate of compliance**
- The most frequent deficiencies were related to the recording of **BWRB** and **no valid certificate** on ships
- 68% compliance with D-2 standard of the 123 detailed analysis. Failure to meet the D-2 standard were most common for the **$\geq 50\mu\text{m}$** organism size

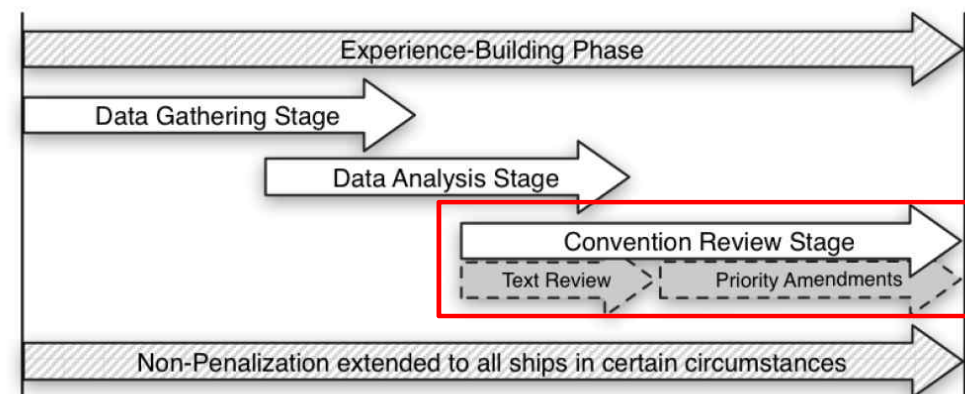


Figure 1: Stages of the ballast water experience-building phase and non-penalization

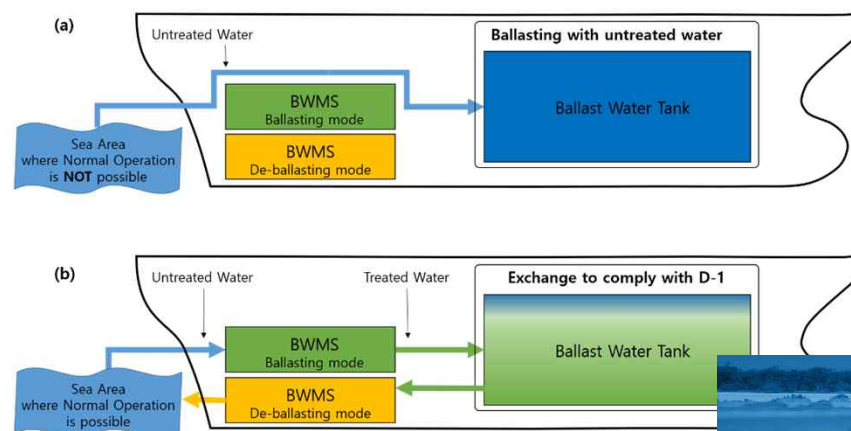
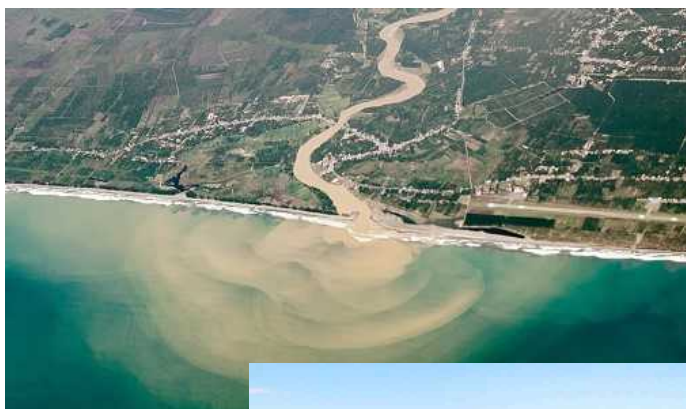
MEPC 82	Autumn 2024	- targeted discussions as recommended by the CG - determine if any amendments should be adopted under article 19(2) or 19(3), and revise timeline if needed - continued work by the CG with a view to drafting of amendments to provisions and/or instruments
MEPC 83	Spring 2025	- targeted discussions as recommended by the CG - re-establish the CG with a view to completing drafting of priority amendments, and to developing an approach to addressing any remaining non-priority issues after the EBP
MEPC 84	Spring 2026	- targeted discussions as recommended by the CG - approval of the package of amendments - determine approach to addressing any remaining non-priority issues
MEPC 85	Autumn 2026	- drafting group - adoption of amendments to provisions and/or instruments

* This agreement also 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

2. Ballast Water Management

2. Guidance for Ports with Challenging Water Quality (PCWQ)

MEPC 78 considered various aspects of BWE+BWT when operating ports with challenged water quality



Point at issue : whether the operation in PCWQ and BWE+BWT can be considered a contingency measure or are part of anticipated operation which should be approved in the BWMP ?



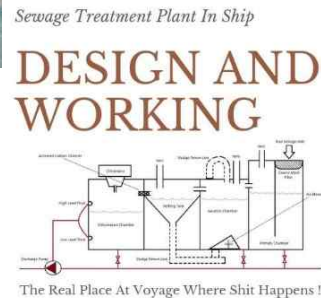
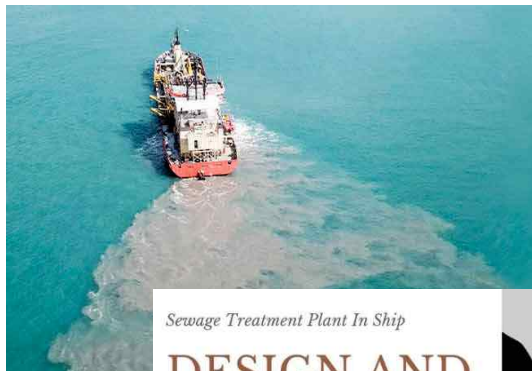
* MEPC 78 generally agreed the BWE+BWT concept, while couldn't reach a consensus as there were divergent views with as to water quality conditions such as BWMS not able to operate due to challenge water quality, aspects of BWE+BWT such as port State determines where ballast water exchange could take place. It will be revisited at MEPC 79

2. Ballast Water Management



3. Temporary Storage of treated sewage and grey water in ballast water tank under BWM Convention

MEPC 78 considered a proposal asking clarifications as to whether temporary storage of treated sewage and grey water in a ballast water is permitted or not



Recalling outcomes from MEPC 63 and 64

- BWM Convention has not yet entered into force
- Grey water is not regulated by MARPOL Annex IV
- There is a need to address the difficulties (not allowed to discharge sewage in port? Have to use additional tanks for temporary storage of sewage?)
- Untreated sewage should be prohibited to be transferred to ballast water tanks as operational problem will be expected

** MEPC 78 agreed that ballast water discharges from ballast water tanks used also for other purposes should be compliant with the BWM Convention, while other issues should be addressed in the context of MARPOL Annex IV. But, the Committee couldn't confirm that whether the temporary storage of treated sewage and grey water in the ballast water tanks can be allowed or not*

Source : Shipfever

2. Ballast Water Management



4. Unified Interpretation of Appendix I to BWM Convention (Form of IBWM Certificate)

MEPC 78 approved BWM.2/Circ.66/Rev.3 providing a UI specifying how to complete IBWM Certificate

Appendix I of the BWM Convention reads as follows:

"...Method of ballast water management used
Date installed (if applicable) (dd/mm/yyyy)
Name of manufacturer (if applicable)"

The principal ballast water management method(s) employed on this ship is/are:

- ☐ in accordance with regulation D-1
- ☐ in accordance with regulation D-2
- (describe)
- ☐ the ship is subject to regulation D-4
- ☒ other approach in accordance with regulation....."



Interpretation

1 For a ship which is occasionally engaged in an international voyage and is not intending to discharge ballast water back to the original location, having been granted an exemption by its Administration taking into account BWM.2/Circ.52/Rev.1, on the condition that the ship implements the D-1 standard in lieu of the D-2 standard, the principal ballast water management method(s) employed is:

"☒ other approach in accordance with regulation D-1 taking into account BWM.2/Circ.52/Rev.1."

2 For a ship granted an exemption in accordance with regulation A-4 of the BWM Convention, the principal ballast water management method employed on the ship is:

"☒ other approach in accordance with regulation A-4."

3 For a ship which is fitted with a BWMS on board and is certified in accordance with the D-2 standard, even if the ship will also use other ballast water management methods as contingency measures, as reflected in its Ballast Water Management Plan, the principal ballast water management method employed on this ship is:

"☒ in accordance with regulation D-2
(describe)"

4 For a ship which has employed an "other approach" in accordance with regulation B-3.6 or B-3.7 of the BWM Convention, the Ballast Water Management Plan should describe the other approach that has been approved for the ship.

* It provides how to complete the Certificate for a ship which is occasionally engaged in an international voyage in accordance with BWM.2/Circ.52/Rev.1; granted an exemption in accordance with regulation A-4 of the Convention; fitted with a BWMS but using other methods as contingency measures; and has employed an "other approach" in accordance with B-3.6(reception facility) and 3.7(other methods subject to the approval by MEPC (not discharging ballast water or not carrying ballast water – not decided yet)

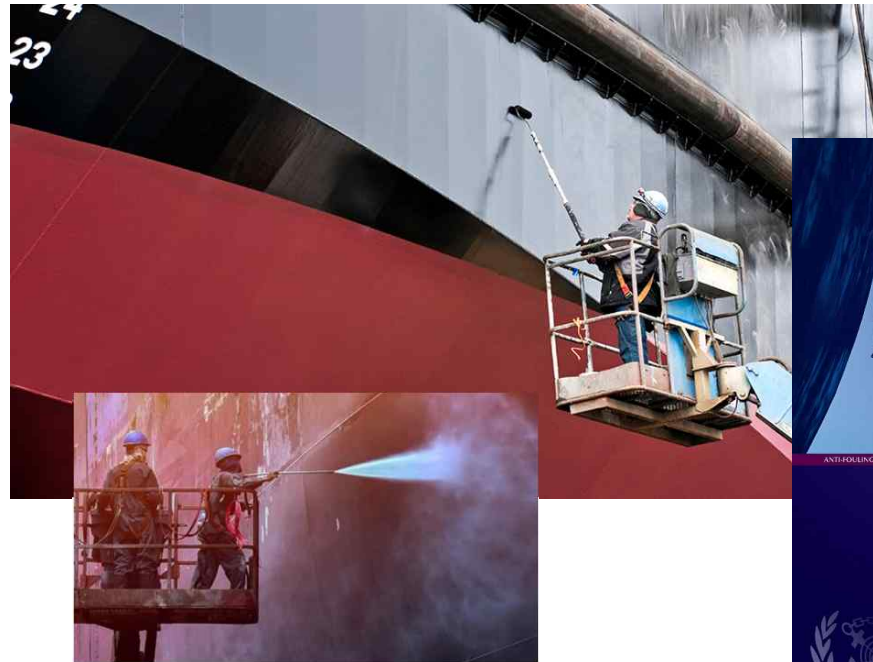
2. Ballast Water Management

5. Guidelines for the implementation of International Anti-Fouling Convention

MEPC 78 adopted guidelines* to support the revised IAFS Convention for regulating **Cybutryne**

Provide additional details for confirming compliance, such as:

- Compliance – sampling of the anti-fouling system paint should not be present above 1,000mg cybutryne per kg of dry paint and 250mg cybutryne per kg of wet paint
- Tolerance Range – the tolerance range is 250mg cybutryne per kg of dry paint (25%) in addition to the threshold value



* Res.MEPC.356(78), 2022 Guidelines for brief sampling of anti-fouling systems on ships; Res.MEPC.357(78), 2022 Guidelines for inspection of anti-fouling systems on ships; and Res.MEPC.358(78), 2022 Guidelines for survey and certification of anti-fouling

Outcome of MEPC 78

1. MARPOL Amendments

2. Ballast Water Management

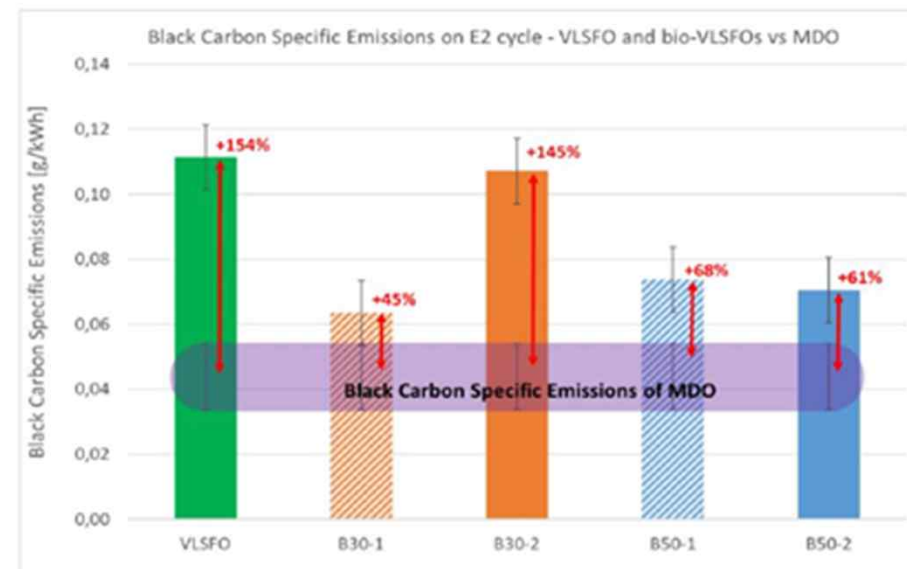
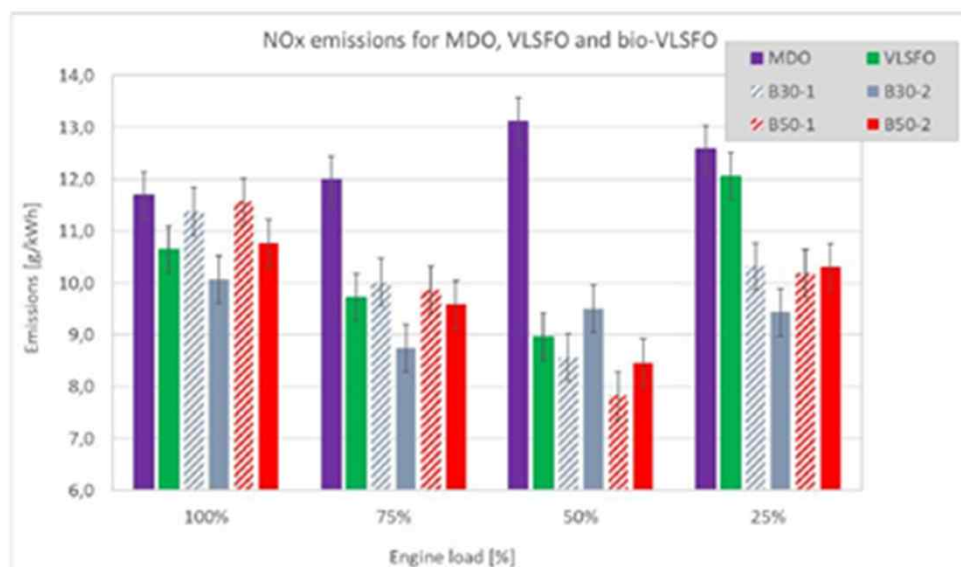
3. Air Pollution and Energy Efficiency (EGCS discharge, flashpoint in BDN, Bio-Fuels and IBTS)

4. Green House Gas from international shipping

3. Air Pollution & Energy Efficiency

1. Unified Interpretation of regulation 18.3 of MARPOL Annex VI (Fuel Oil Quality)

MEPC 78 approved MEPC.1/Circ.795/Rev.6 providing a UI on the use of biofuels



* Less than 30% by volume of biofuel should be **permitted to use such a fuel oil without onboard NOx verification** and more than 30% by volume of biofuel, the onboard simplified measurement method or direct method in accordance with NOx Technical Code 2008 should be conducted. A biofuel is a fuel oil which is derived from biomass and hence includes, but not limited to, processed used cooling oils, fatty acid methyl esters (FAME) or fatty acid ethyl esters (FAEE), straight vegetable oils (SVO), hydrotreated vegetable oil (HVO), glycerol or other biomass to liquid (BTL) type products

3. Air Pollution & Energy Efficiency



2. Amendments to Appendix V of MARPOL Annex VI (Flashpoint in Bunker Delivery Note)

MEPC 78 approved draft amendments to MARPOL Annex VI to add the flashpoint or a statement that flashpoint has been measured at or above 70°C to be reported in BDN

Appendix V

Information to be included in the bunker delivery note
(Regulation 18.5)

The following new item and associated footnote are added to the list, below "Sulphur content (% m/m)":

"Flashpoint (°C) or a statement that flashpoint has been measured at or above 70°C**"

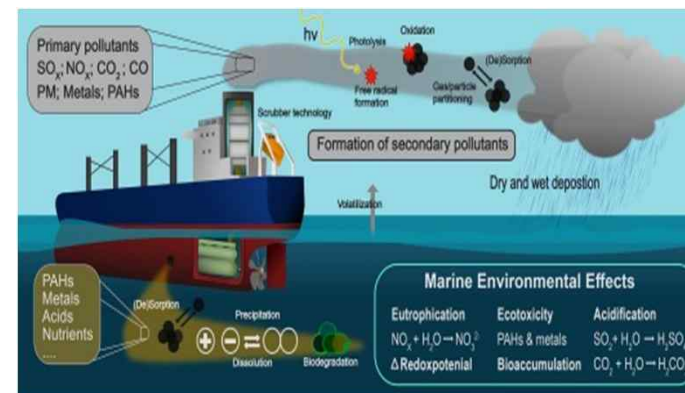
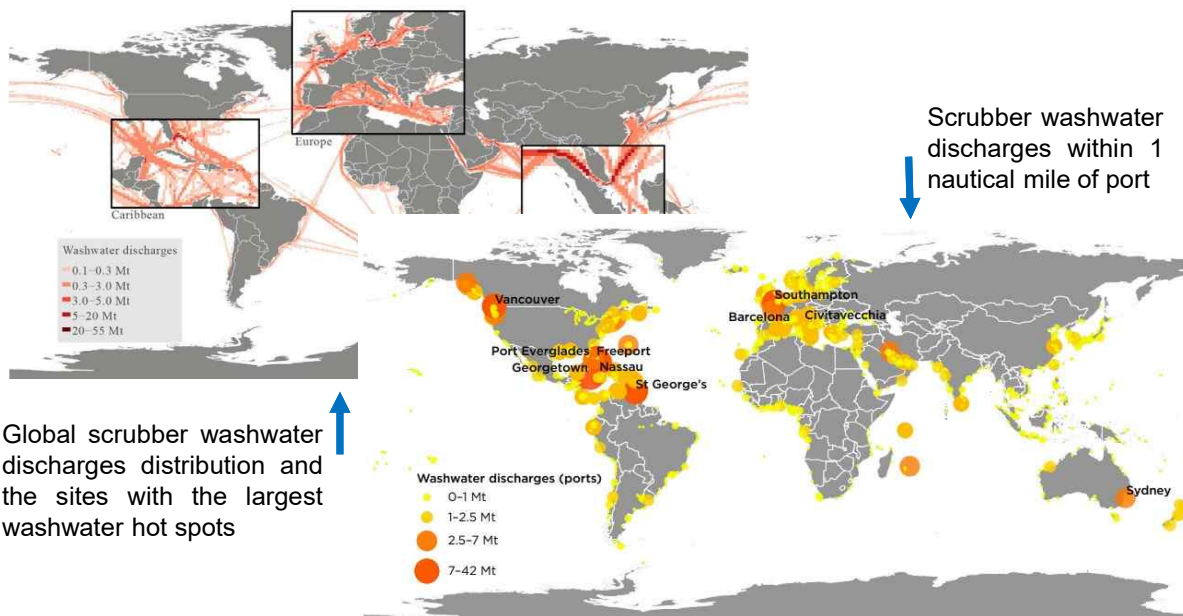
** ISO 2719:2016, Determination of flash point – Pensky-Martens closed cup method, Procedure A (for Distillate Fuels) or Procedure B (for Residual Fuels). "

* The Committee agreed that information on the flashpoint of fuel oil should be included in the bunker delivery note under MARPOL Annex VI, recalling the decision taken from MSC 105 in relation to the approval of draft amendments to SOLAS II-2 on development of further measures to enhance the safety of ships relating to the use of fuel oil

3. Air Pollution & Energy Efficiency

3. Guidelines for Exhaust Gas Cleaning System (EGCS) in relation to the discharge water and residues

MEPC 78 approved MEPC.1/Circ.899 – 2022 Guidelines for risk and impact assessments of the discharge water from EGCS and MEPC.1/Circ.900 – 2022 Guidance regarding the delivery of EGCS residues to port reception facilities



* The former guidelines are for member States when undertaking risk assessments to ascertain whether EGCS discharge water can be discharged in their port limits with notification of local regulations on the discharges of discharge water from EGCS and latter guidance refers that ships fitted with EGCS should keep their discharge water in dedicated holding tanks for delivery to port reception facilities in the port area where the discharge of EGCS discharge water is prohibited

Source : ICCT

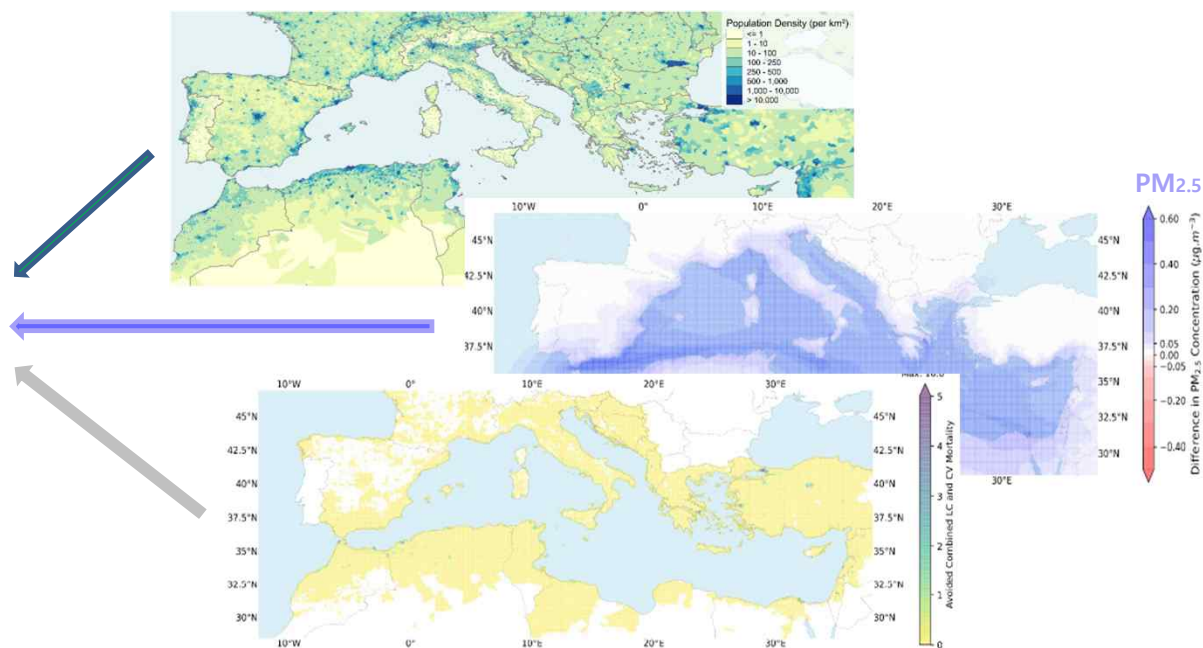
3. Air Pollution & Energy Efficiency

4. Designation of new Emission Control Area for Sulphur Oxides (Med SOx ECA)

MEPC 78 approved draft amendments to MARPOL Annex VI designating Mediterranean Sea as an Emission Control Area for Sulphur Oxides with a view to adoption at MEPC 79



Med SECA (in dark blue)



* Given that the effective date of ECA was proposed to January 2025, but the earliest possible effective date would be in the middle of 2025 in accordance with the amendments procedures in MARPOL Convention and 1-year grace period for ECA in accordance with regulation 14.7, the effective date will be revisited at MEPC 79

Outcome of MEPC 78

1. MARPOL Amendments

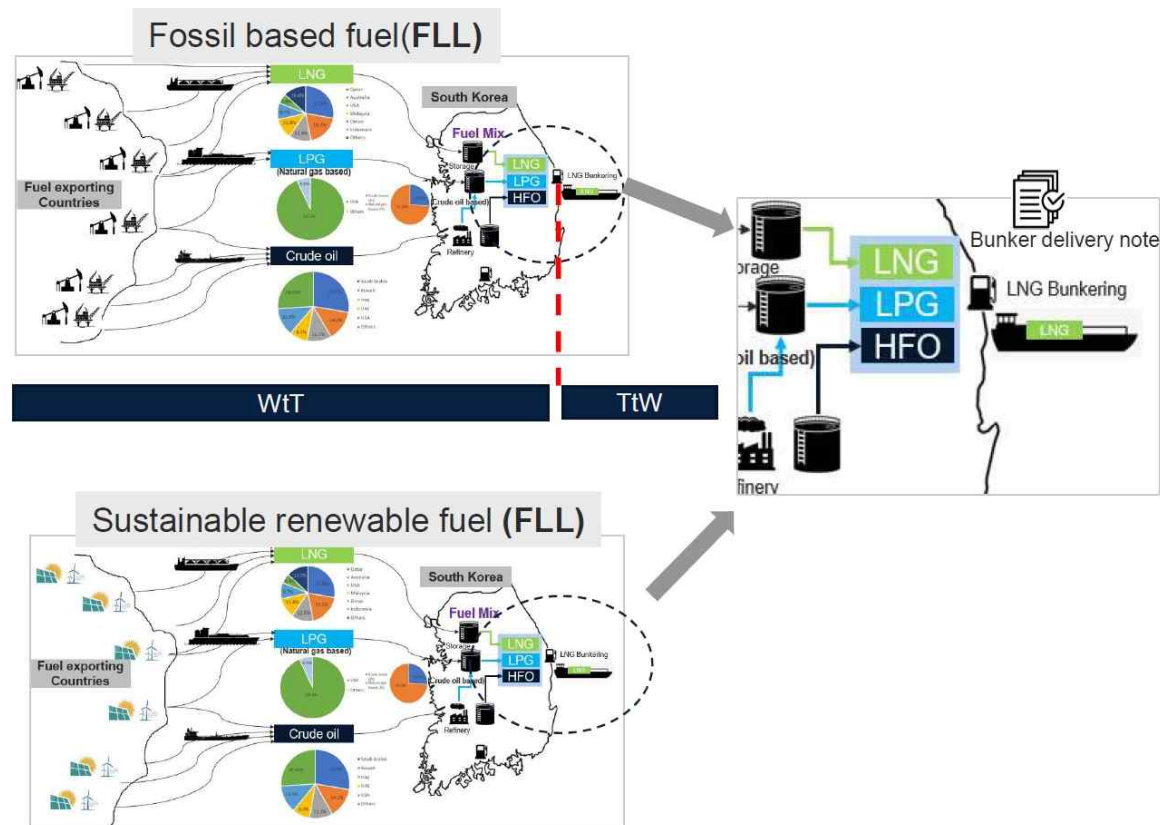
2. Ballast Water Management

3. Air Pollution and Energy Efficiency

4. Green House Gas from international shipping (2050 decarbonization, Mid-term measures)

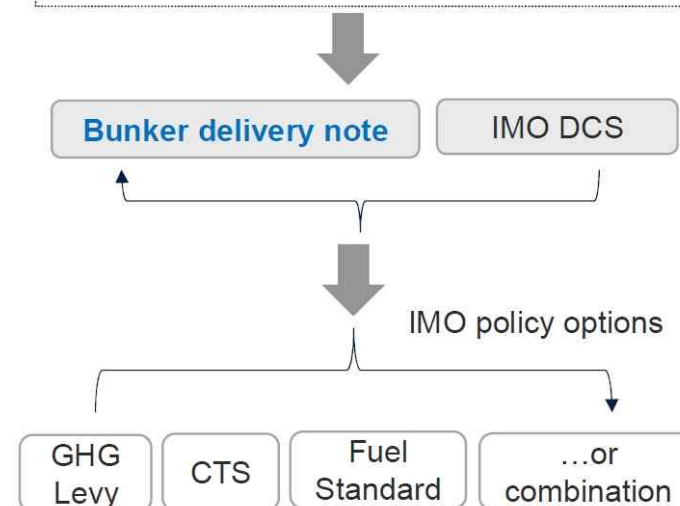
4. Green House Gas from international shipping

1. Outcomes from ISWG-GHG 11 (Life Cycle Assessment Guidelines for Marine Fuels)



IMO LCA Guidelines for marine fuel (Well-to-Wake Basis)

- Fuel Lifecycle Label (FLL)
- WtT(or WTW) GHG emission factor
 - Default emission factor
 - Certified emission factor by Certification Scheme



* The scope of these guidelines is to address WtW and TtW GHG emissions and sustainability criteria related to all fuels used for combustion and energy conversion (fuel cell) as well as electricity, for propulsion and operation on board a ship. The GHGs included are carbon dioxide(CO_2), methane(CH_4), and nitrogen oxide(N_2O)

4. Green House Gas from international shipping



1. Outcomes from ISWG-GHG 11 (Life Cycle Assessment Guidelines for Marine Fuels)

$$GHG_{WtW} [gCO_{2eq}/MJ] = GHG_{WtT} + GHG_{TtW}$$

Based on Global Warming Potential (GWP)₁₀₀

$$GHG_{WtT} [gCO_{2eq}/MJ] = e_{ec} + e_l + e_p + e_{td} - e_c - e_{sca} - e_{ccs} - e_{ccu}$$

$$GHG_{TtW} = [(1 - C_{slip}) \times (S_F \times C_{fCO_2} + C_{fCH_4} \times GWP_{CH_4} + C_{fN_2O} \times GWP_{N_2O}) + (C_{slip} \times GWP_{CH_4}) - e_{occs}] / LCV$$

Term	Units	Explanation
e_{ec}	gCO_{2eq}/MJ	emissions from the extraction or from the cultivation of raw materials
e_l	gCO_{2eq}/MJ	annualized emissions from carbon stock changes caused by land-use change (over 20 years)
e_p	gCO_{2eq}/MJ	emissions from processing, including electricity generation
e_{td}	gCO_{2eq}/MJ	emissions from transport and distribution
e_c	gCO_{2eq}/MJ	emissions credits generated by biomass growth
e_{sca}	gCO_{2eq}/MJ	emission savings from soil carbon accumulation via improved agricultural management
e_{ccs}	gCO_{2eq}/MJ	emission savings from CO ₂ capture and geological storage
e_{ccu}	gCO_{2eq}/MJ	emission savings from CO ₂ capture and utilization

Term	Units	Explanation
LCV	MJ/g fuel	Lower Calorific Value of the fuel (MJ/g fuel)
S_F	0 or 1	Carbon source factor
C_{slip}	% of fuel mass	Coefficient accounting for fuel (methane) slip (share of the total fuel in use)
C_{fCO_2}	gCO ₂ /g fuel	CO ₂ emission conversion factor (g CO ₂ /g fuel)
C_{fCH_4}	gCH ₄ /g fuel	CH ₄ emission conversion factor (g CH ₄ /g fuel)
C_{fN_2O}	gN ₂ O/g fuel	N ₂ O emission conversion factor (g N ₂ O/g fuel)
GWP_{CH_4}	gCO _{2eq} /gCH ₄	Global Warming Potential of methane over 100 set at 29.8 for fossil and at 27.5 for non-fossil methane (IPPC AR 6)
GWP_{N_2O}	gCO _{2eq} /gN ₂ O	Global Warming Potential of N ₂ O over 100 set at 273 (IPCC AR 6)
e_{occs}	gCO_{2eq}/MJ	emission savings from on-board CO ₂ capture and geological storage
LCV	MJ/g fuel	Lower Calorific Value of the fuel (MJ/g fuel)

* Given the technical complexity and professional expertise required for assessing the WtT and TtW default emission values for marine fuels, MEPC 78 establish a correspondence group with a view continuing the development of draft LCA Guidelines, as well as the measurement of actual methane slip emissions from LNG dual fuel diesel engines and how to calculate WtT carbon dioxide equivalent emissions from marine fuels using GWP100 and GWP20 for comparative purpose and inclusion of "Black Carbon" into GHG category

4. Green House Gas from international shipping



2. Outcomes from ISWG-GHG 12 (EEXI, CII and SEEMP related updates)

MEPC 78 adopted SEEMP related Guidelines* for updating how to implementing CII requirements

For the ships of 5,000 GT and above that are subject to regulation 26.3 and 28 of MARPOL Annex VI, SEEMP Part III should include:

- A description of the methodology that will be used to calculate the ship's attained CII and the processes that will be used to report this value to ship's Administration
- Required annual operational CIIs for next three years
- Implementation plan documenting how the required CIIs will be achieved during next three years
- A procedure for self-evaluation and improvement
- Part III of the SEEMP is further to include calculation methodologies and a plan of corrective actions for ships that are rated D for three consecutive years and rated as E

APPENDIX 3

STANDARDIZED DATA REPORTING FORMAT FOR THE DATA COLLECTION SYSTEM AND OPERATIONAL CARBON INTENSITY TO THE ADMINISTRATION

Name of the ship		IMO number	
Company		Year of delivery	
Flag		Ship type	
Gross tonnage		DWT	
Applicable CII		☐ AER : ☐ cbDIST	
Operational carbon intensity rating	☐ A : ☐ B : ☐ C : ☐ D : ☐ E		
CII for trial purpose (none, one or more on voluntary basis)	☐ EEPI : ☐ cbDIST : ☐ clDIST : ☐ EEOI		
Attained annual operational CII before any correction (AER in g CO ₂ /dwt.nm or cbDIST in g CO ₂ /gt.nm)			
Attained annual operational CII (AER in g CO ₂ /dwt.nm or cbDIST in g CO ₂ /gt.nm)			
End date for annual CII (dd/mm/yy)			
Start date for annual CII (dd/mm/yy)*			
Attained EEDI (if applicable)			
Attained EEXI (if applicable)			
EEPI (gCO ₂ /dwt.nm)			
cbDIST (gCO ₂ /berth.nm)			
clDIST (gCO ₂ /m.nm)			
EEOI (gCO ₂ /t.nm or others)			
.....			
IMO number			
End date for DCS (dd/mm/yy)			
Start date for DCS (dd/mm/yy)			

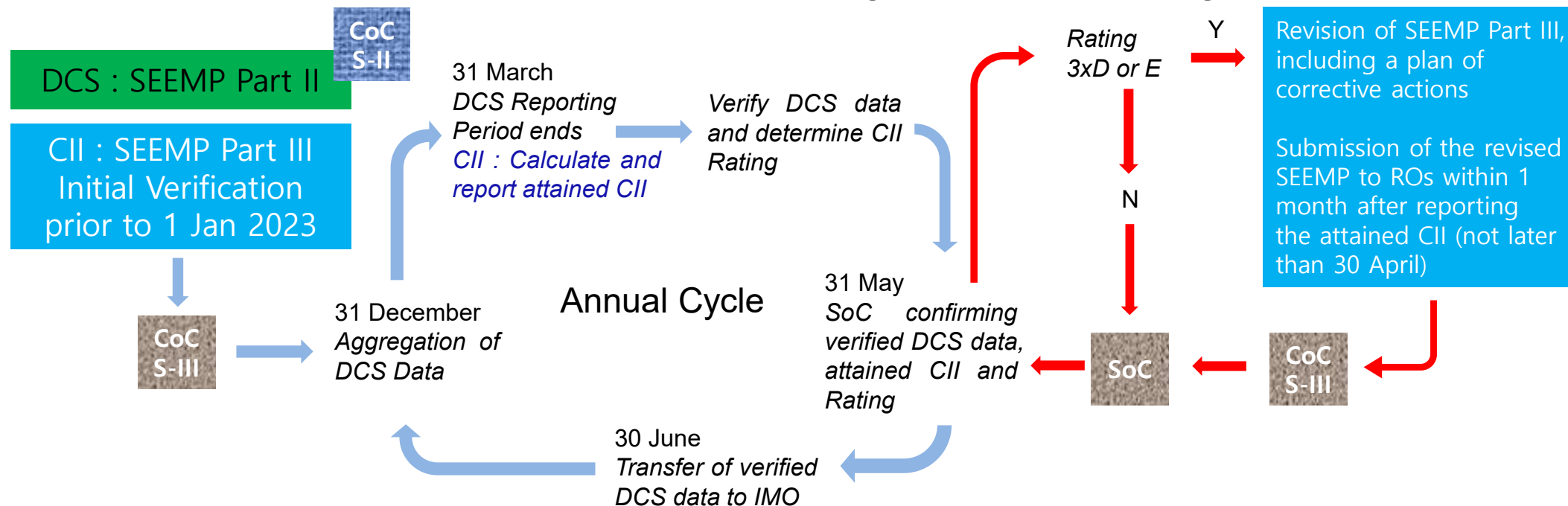
* Res.MEPC.346(78), 2022 Guidelines for the Development of a Ship Energy Efficiency Management Plan (SEEMP)
Res.MEPC.347(78), 2022 Guidelines for the Verification and Company Audits by the Administrations for Part III of the SEEMP

4. Green House Gas from international shipping



2. Outcomes from ISWG-GHG 12 (EEXI, CII and SEEMP related updates)

MEPC 78 adopted SEEMP related Guidelines* for updating how to implementing CII requirements



- * Initial Verification – methodology to calculate attained/required CII, and processes to report values to flags using the forms of guideline
- Periodical Verification – every three years, Part III should be monitored for effective implementation and updated when necessary
- Additional Verification – for a ship rated D for 3 years or E, Part III should be reviewed and updated by inclusion of corrective actions
- Company Audits – to validate that the company has implemented the procedures effectively by visiting company office. It should be carried out for the cases where CII rating is deteriorated from C to D, or ratings(Dx3 or E) required to include corrective actions

4. Green House Gas from international shipping



2. Outcomes from ISWG-GHG 12 (EEXI, CII and SEEMP related updates)

MEPC 78 adopted Data Collection System related Guidelines* for updating verification aspects of CII

Verification of the Attained Annual Operational CII and Determination of the CII Rating

- In case of multiple load lines, the highest deadweight value should be used to calculate and verify required/attained CII
- In case of permanent change of ship's DWT:
 - .1 required CII should be calculated using original DWT
 - .2 attained CII should be calculated using new DWT
 - .3 for the year when the conversion is made, attained CII should be calculated on average DWT weighted
- Change of flag/company, the data before transfer should be verified by losing flag, and attained CII should be verified by receiving flag using the data over an entire calendar year, without verification for data before transfer



* Res.MEPC.348(78), 2022 Guidelines for Administration Verification of Ship Fuel Oil Consumption Data and Carbon Intensity Indicator
Res.MEPC.349(78), 2022 Guidelines for the Development and Management of the IMO Ship Fuel Oil Consumption Database
MEPC.1/Circ.901, Guidance for submission of data to the IMO DCS of FOC of ships from a State not Party to MARPOL Annex VI

4. Green House Gas from international shipping



2. Outcomes from ISWG-GHG 12 (EEXI, CII and SEEMP related updates)

MEPC 78 adopted CII related Guidelines(G1, G2 and G4)* for updating CII requirements

GT instead of DWT
for Ro-Ro Cargo ship

Refrigerated cargo carrier	DWT	4600	0.557
Combination carrier	DWT	<u>5119</u>	<u>0.622</u>
LNG carrier	100,000 DWT and above	DWT	9.827
	65,000 DWT and above, but less than 100,000 DWT	DWT	14479E10
	less than 65,000 DWT	65,000	14779E10
Ro-ro cargo ship (vehicle carrier)	<u>57,700 GT and above</u>	<u>57,700</u>	<u>3627</u>
	<u>30,000 GT and above, but less than 57,700 GT</u>	GT	<u>3627</u>
	<u>Less than 30,000 GT</u>	GT	<u>330</u>
Ro-ro cargo ship	GT	<u>1967</u>	<u>0.485</u>
Ro-ro passenger ship	<u>Ro-ro passenger ship</u>	GT	<u>2023</u>
	<u>High Speed Craft designed to SOLAS Chapter X</u>	GT	<u>6167</u>
Cruise passenger ship	GT	930	0.383

Revised Rating boundaries
for Ro-Ro Cargo and
Passenger ship

Table 1 *dd* vectors for determining the rating boundaries of ship types

Ship type		Capacity in CII calculation	<i>dd</i> vectors (after exponential transformation)			
			exp(d1)	exp(d2)	exp(d3)	exp(d4)
Bulk carrier		DWT	0.86	0.94	1.06	1.18
Gas carrier	65,000 DWT and above	DWT	0.81	0.91	1.12	1.44
	less than 65,000 DWT	DWT	0.85	0.95	1.06	1.25
Tanker		DWT	0.82	0.93	1.08	1.28
Container ship		DWT	0.83	0.94	1.07	1.19
General cargo ship		DWT	0.83	0.94	1.06	1.19
Refrigerated cargo carrier		DWT	0.78	0.91	1.07	1.20
Combination carrier		DWT	0.87	0.96	1.06	1.14
LNG carrier	100,000 DWT and above	DWT	0.89	0.98	1.06	1.13
	less than 100,000 DWT	DWT	0.78	0.92	1.10	1.37
Ro-ro cargo ship (vehicle carrier)		GT	0.86	0.94	1.06	1.16
Ro-ro cargo ship		GT	<u>0.76</u>	<u>0.89</u>	<u>1.08</u>	<u>1.27</u>
Ro-ro passenger ship		GT	<u>0.76</u>	<u>0.92</u>	<u>1.14</u>	<u>1.30</u>
Cruise passenger ship		GT	0.87	0.95	1.06	1.16

Above values have been derived by the coordinators using anonymized and rounded DCS data. Note that the *dd* vectors are to be further adjusted by the IMO Secretariat using the non-anonymized and non-rounded DCS data.

Revised Reference line
values for Combination
Carrier, Ro-Ro Vehicle
carrier, new reference
line for HSC

• C represents the ship's capacity:

- For bulk carriers, tankers, container

ro-ro cargo ships, general cargo ships, refrigerated cargo carrier and combination carriers, deadweight tonnage (DWT)₁ should be used as Capacity;

- For cruise passenger ships, ro-ro cargo ships (vehicle carriers), ro-ro cargo ships and ro-ro passenger ships, gross tonnage (GT)₂ should be used as Capacity; and

• *D*_T represents the total distance travelled (in nautical miles), as reported under IMO DCS.

- * Res.MEPC.352(78), 2022 Guidelines on Operational CII and the Calculation Methods (CII Guidelines, G1)
Res.MEPC.353(78), 2022 Guidelines on the Reference Line for use with Operational CII (CII Reference Line, G2)
Res.MEPC.354(78), 2022 Guidelines on the Operational Carbon Intensity Rating of Ships (CII Rating, G4)

4. Green House Gas from international shipping



2. Outcomes from ISWG-GHG 12 (EEXI, CII and SEEMP related updates)

MEPC 78 adopted new CII related Guidelines(G5)* for Voyage Adjustment and Correction Factors

$$\sum_j C_{Fj} \cdot \left\{ FC_j - \left(FC_{voyage,j} + TF_j + (0.75 - 0.03y_i) \cdot (FC_{electrical,j} + FC_{boiler,j} + FC_{others,j}) \right) \right\} \cdot f_i \cdot f_m \cdot f_c \cdot f_{iVSE} \cdot Capacity \cdot (D_t - D_x)$$

Voyage Adjustment and Correction Factors

- Scenarios specified in regulation 3.1 of MARPOL Annex VI, which may endanger safe navigation of a ship;
- Sailing in ice conditions, which means sailing of an ice-classed ship in a sea area within the ice edge
- Tanker engaged in STS voyages and Shuttle Tankers equipped with Dynamic Positioning
- $FC_{electric}$ for power (refrigerated containers, cargo cooling/reliquefaction, discharge pump on tankers)
- FC_{Boiler} for boiler fuel consumption for discharge operation (cargo heating, steam driven cargo pump)
- FC_{others} for discharge pump on tankers (discharge pump powered by their own generator)

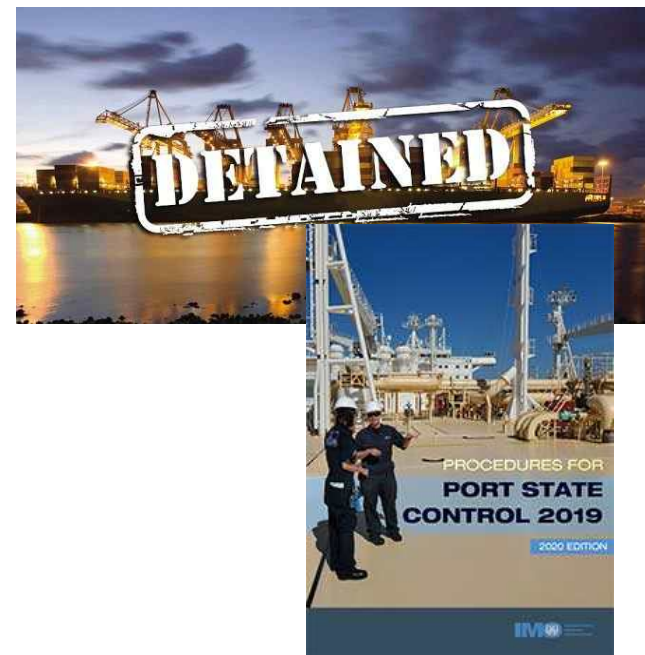
* Res.MEPC.355(78), 2022 Guidelines on Correction Factors and Voyage Adjustments for CII Calculation (CII Guidelines, G5)

* f_i (capacity correction factor for ice-classed ships), f_m (factor for ice-classed having IA Super and IA), f_c (cubic capacity correction factor for chemical tanker), $f_{i,vse}$ (factor for voluntary structural enhancement) – from EEDI framework

4. Green House Gas from international shipping

2. Outcomes from ISWG-GHG 12 (EEXI, CII and SEEMP related updates)

MEPC 78 noted the discussion at ISWG-GHG 12 regarding proposed amendments to the PSC Procedures as to whether not implementing corrective actions should be regarded as a detainable deficiency

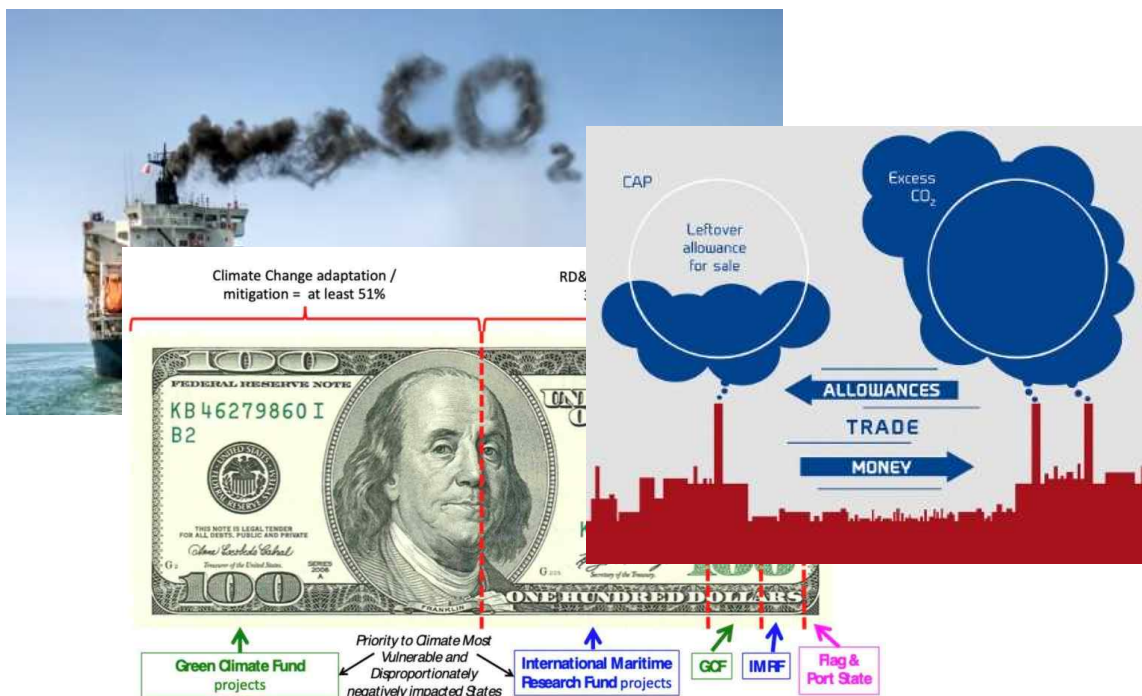


* MEPC 78 noted divergent views as to whether it should be regarded as a detainable deficiency if the CII implementation plan and/or the plan of corrective actions for the ships rated as D for 3 consecutive years and rated as E are not implemented at the time of the inspection. The Committee decided to refer this matter to III Sub-Committee for further consideration, noting it may difficult for PSCOs to assess, in the absence of unambiguous evaluation criteria, whether the the plans have been duly implemented

4. Green House Gas from international shipping

2. Outcomes from ISWG-GHG 12 (Mid-Term Measures for further reduction of GHG from ships)

MEPC 78 agreed that all proposals contain valuable elements to be further considered under Phase II



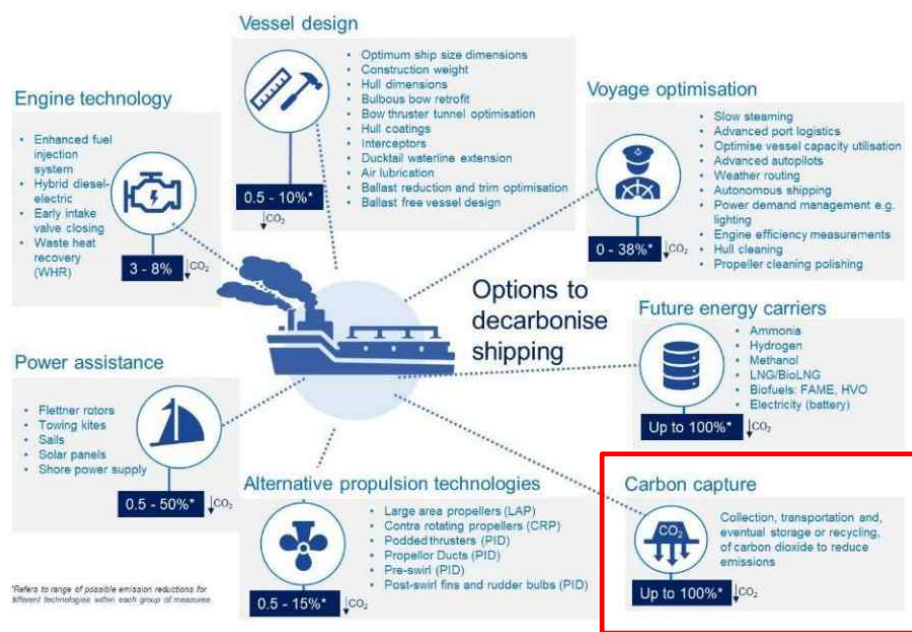
Proposal	Concept	Pros	Cons
GFS (GHG Fuel Standard)	Limitation of WtW GHG emission intensity	Confirm target of reduction, project zero carbon fuel	No fund based measures and incentive
ETS (Emission Trading Scheme)	Emission allowance by IMO, buy if excess of the allocation	Regulating all GHG by ships, incentives for first mover, funds auction	Difficult to predict carbon market price, uncertainty in investment
GHG Levy	Levy per GHG emission is imposed by managing funds	Easier to implement, generate substantial funds	Difficult to confirm whether reduction is achieve

* MEPC 78 agreed, in general, the development of a “basket of candidate mid-term measures” integrating both various technical and carbon pricing elements while recognizing the necessary flexibility mechanisms will be further discussed at ISWG-GHG 13 with a view to exploring how different of these proposals could be combined in the context of a basket of mid-term measure

4. Green House Gas from international shipping

3. Onboard CO₂ Capture (CO₂ removal)

MEPC 78 considered a proposal suggesting options to reflect CO₂ emission reduction by onboard CO₂ capture system by amending the current EEDI and EEXI calculation formulas



* MEPC 78 noted the views that, in particular, further work and more data from existing onboard CO₂ capture technologies are needed with a view to incorporating the effect of this technology into the framework of EEDI, EEXI and CII, while the technology should be addressed by operational measures such as IMO DCS and LCA Guidelines rather than EEDI/EEXI that are design related

Source : Riviera

4. Green House Gas from international shipping

4. Revision of Initial IMO GHG Strategy (2050 decarbonization, net-zero GHG emission)

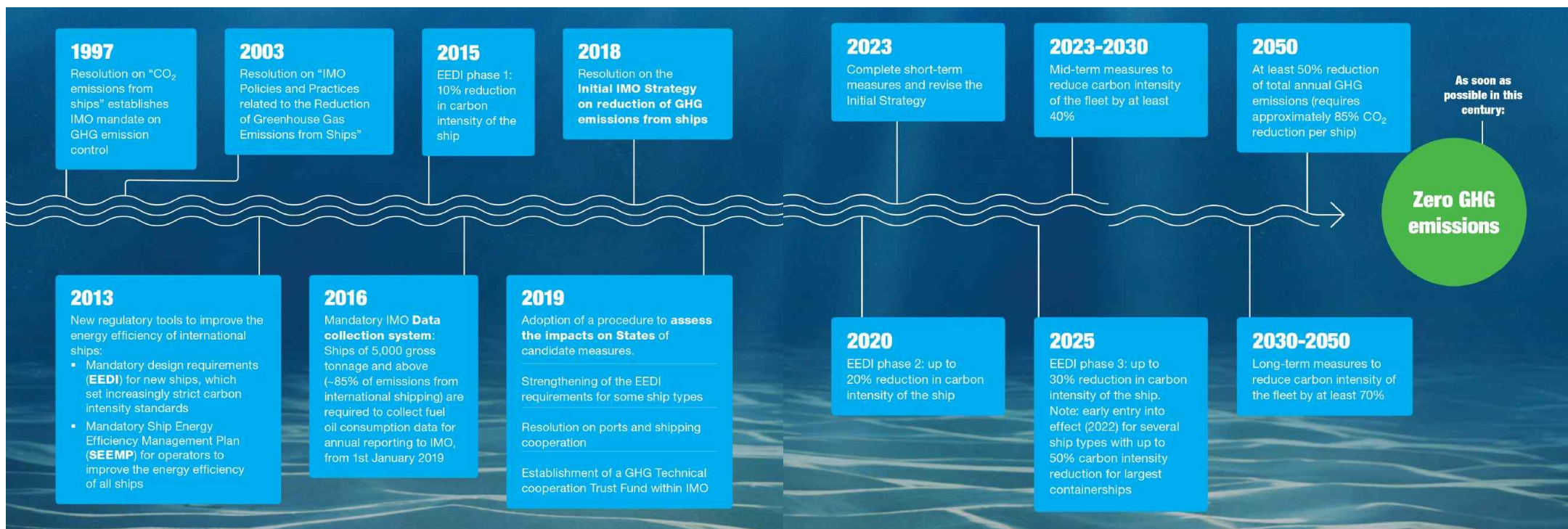


* Following the Rio Earth Summit of 1992, nations from around the world agreed to the principles and mechanisms for action set out in the [United Nations Framework Convention on Climate Change](#) (UNFCCC). Under the UNFCCC, the 1997 Kyoto Protocol committed developed nations to specific targets to reduce carbon emissions

4. Green House Gas from international shipping



4. Revision of Initial IMO GHG Strategy (2050 decarbonization, net-zero GHG emission)



* Prior to the signing in Dec' 1997 of the Kyoto Protocol to UNFCCC, the IMO International Air Pollution Conference in Sep' 1997 adopted conference resolution 8 which recognized that CO₂ emissions have an adverse impact on the environment, and noted that UNFCCC had recognized that GHG also originate from international shipping and contribute to the global inventory of emissions. The resolution invited MEPC to consider what CO₂ reduction strategies may be feasible in light of the relationship between CO₂ and atmospheric pollutants, especially NO_x, since NO_x emissions may exhibit an inverse relationship to CO₂ reduction

Source : IMO

4. Green House Gas from international shipping

4. Revision of Initial IMO GHG Strategy (2050 decarbonization, net-zero GHG emission)



Clidebank declaration (Green maritime Corridor for zero-emission shipping)

* The Glasgow Climate Pact which is an agreement reached at the 2021 United Nations Climate Change Conference ([COP 26](#)) is the first climate agreement explicitly planning **to reduce unabated coal usage** as well as a commitment to climate finance for developing countries. During COP 26, some declarations and pledges that would lead the shipping industry towards net-zero emissions in 2050 such as **Clidebank declaration**, Declaration on zero-emission shipping by 2050, CVF(Climate Vulnerable Forum) Dhaka-Glasgow declaration, etc. were presented

Source : Cero2050

4. Green House Gas from international shipping



4. Revision of Initial IMO GHG Strategy (2050 decarbonization, net-zero GHG emission)

MEPC 80 will adopt revised IMO GHG Strategy calling for full decarbonization by 2050

Proposals and information to revise the Initial IMO GHG Strategy and 2050 level of ambition:

- Amending the Strategy to reflect **a higher ambition of net-zero** for promoting zero carbon fuels to achieve 1.5°C goal aligned to Paris Agreement and Glasgow Climate Pact
- Thorough **impact assessment** on developing countries, LDC and SIDC, and mitigation of negative impacts on shipping
- **Revision to 2030 and additional 2040 target** to steer the shipping sector on 1.5°C aligned pathway to zero-emission
- AR6 report by IPCC refers that **a higher ambition in order to not exceed 1.5°C above pre-industrial level**
- The ship type-wise approach according to the **"polluter pays"** principle to ensure that some ship types which emit more GHGs than others reach to net-zero first



Carbon-Neutral or
Zero-Carbon?



** MEPC 78 couldn't reach a consensus on the proposals, while noted views between those calling for full decarbonization by 2050 and those calling for further assessments on feasibility and impacts on States prior to decisions on the revision of IMO Strategy. Further agreed to discuss at ISWG-GHG 13 on how to phase out GHG emissions with concrete proposals on revision of IMO Initial Strategy*



Any Questions ?



Thank you for your attention!

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