



2023/2776

14.12.2023

**COMMISSION DELEGATED REGULATION (EU) 2023/2776**

**of 12 October 2023**

**amending Regulation (EU) 2015/757 of the European Parliament and of the Council as regards the rules for monitoring greenhouse gas emissions and other relevant information from maritime transport**

**(Text with EEA relevance)**

THE EUROPEAN COMMISSION,

Having regard to the Treaty on the Functioning of the European Union,

Having regard to Regulation (EU) 2015/757 of the European Parliament and of the Council of 29 April 2015 on the monitoring, reporting and verification of greenhouse gas emissions from maritime transport, and amending Directive 2009/16/EC <sup>(1)</sup>, and in particular Article 5(2) thereof,

Whereas:

- (1) Regulation (EU) 2015/757 lays down rules for the accurate monitoring, reporting and verification of greenhouse gas emissions and of other relevant information from ships arriving at, within or departing from ports under the jurisdiction of a Member State, in order to promote the reduction of greenhouse gas emissions from maritime transport in a cost-effective manner.
- (2) Annex I to Regulation (EU) 2015/757 lays down the methods for monitoring CO<sub>2</sub> emissions on the basis of fuel consumption. Annex II to Regulation (EU) 2015/757 lays down the rules for the monitoring of other relevant information.
- (3) Regulation (EU) 2023/957 of the European Parliament and of the Council <sup>(2)</sup> amended Regulation (EU) 2015/757, in particular to provide for the inclusion of maritime transport activities in the EU Emissions Trading System (the 'EU ETS') and for the monitoring, reporting and verification of methane (CH<sub>4</sub>) and nitrous oxide (N<sub>2</sub>O) emissions.
- (4) Part A of Annex I to Regulation (EU) 2015/757 provides that CO<sub>2</sub> emissions are to be calculated by multiplying emission factors by fuel consumption. Part A should be amended to provide revised formulae to take into account the inclusion of CH<sub>4</sub> and N<sub>2</sub>O emissions within the scope of Regulation (EU) 2015/757. Since CH<sub>4</sub> emissions can originate from amounts of fuels not combusted but released into the atmosphere as slipped emissions, the formulae under Part A of Annex I should be revised to take account of this possibility. In the light of technological and scientific developments in the maritime sector and most notably the future uptake of new fuel types, the list of standard fuels and emissions factors provided in Part A of Annex I should be updated.
- (5) Part B of Annex I to Regulation (EU) 2015/757 sets out monitoring methods to determine fuel consumption. To ensure the proper and effective operation of the EU ETS, it is necessary to differentiate between the calculation approach for greenhouse gas emissions provided for under methods A, B, and C set out in Part B of that Annex, and the measurement approach provided for under method D set out in that Part.
- (6) To further support the robustness of the monitoring system, in particular in light of the inclusion of maritime transport emissions in the EU ETS, and in accordance with the common principles for monitoring and reporting set in Article 4 of Regulation (EU) 2015/757, companies should establish procedures for data flow and control activities and include the relevant descriptions of such procedures in the monitoring plan referred to in Article 6 of that

<sup>(1)</sup> OJ L 123, 19.5.2015, p. 55.

<sup>(2)</sup> Regulation (EU) 2023/957 of the European Parliament and of the Council of 10 May 2023 amending Regulation (EU) 2015/757 in order to provide for the inclusion of maritime transport activities in the EU Emissions Trading System and for the monitoring, reporting and verification of emissions of additional greenhouse gases and emissions from additional ship types (OJ L 130, 16.5.2023, p. 105).

Regulation. Companies should further be provided with rules for the treatment of data gaps covering cases of missing data or temporary non-applicability of the monitoring plan. A new Part C on data management and control should therefore be added to Annex I to Regulation (EU) 2015/757.

- (7) Part B of Annex II to Regulation (EU) 2015/757 details rules on the monitoring of other relevant information on an annual basis by companies, in accordance with Article 10 of that Regulation. The amendments to Regulation (EU) 2015/757 introduced by Regulation (EU) 2023/957 brought CH<sub>4</sub> and N<sub>2</sub>O within the scope of Regulation (EU) 2015/757. The indicators to monitor the average energy efficiency of ships need to be adapted accordingly and further be expressed as CO<sub>2</sub>-equivalent values.
- (8) Article 10 of Regulation (EU) 2015/757 lists the parameters that companies are to monitor on an annual basis to comply with their reporting obligations pursuant to Article 11 of that Regulation. Article 10, point (k), of that Regulation states that companies are to monitor, on an annual basis, the total aggregated emissions of greenhouse gases covered by Directive 2003/87/EC of the European Parliament and of the Council <sup>(9)</sup> in relation to maritime transport activities in accordance with Annex I to that Directive. That monitoring is to be carried out in accordance with Part A of Annex I to Regulation (EU) 2015/757 and Part B of Annex II to that Regulation. It is necessary to add a new Part C to Annex II, setting out the rules for the monitoring on an annual basis of a ship's total aggregated greenhouse gas emissions. It is further appropriate to establish rules on the monitoring of the necessary information to justify the application of any relevant derogation from Article 12(3) of Directive 2003/87/EC provided for in Article 12(3-e) to (3-b) of that Directive.
- (9) For a given ship, the emissions of greenhouse gases covered by Directive 2003/87/EC might differ from the emissions of greenhouse gases covered by Regulation (EU) 2015/757, including because of the geographical scope referred to in Article 3ga of Directive 2003/87/EC. The rules for the monitoring of a ship's total aggregated emissions of greenhouse gases pursuant to Article 10, point (k) of Regulation (EU) 2015/757 should be based on the revised formulae in Part A of Annex I to that Regulation. To take into account the rules on the greenhouse gas emissions covered by Directive 2003/87/EC, Annex II to Regulation (EU) 2015/757 should provide for a set of derogations to be applied to the revised formulae in Part A of Annex I to that Regulation, as well as the order for their application as presented therein. To align Annex II to Regulation (EU) 2015/757 with the implementing acts adopted under Article 14(1) of Directive 2003/87/EC, rules should be established for the treatment of biomass, renewable fuels of non-biological origin and recycle carbon fuel, as a derogation to the general rule. Further derogations should be established to reflect the inclusion of maritime transport greenhouse gas emissions in the EU ETS, notably concerning the application of the geographical scope referred to in Article 3ga of Directive 2003/87/EC, the treatment of greenhouse gas emissions falling within the scope of Article 12(3a) and (3b) of that Directive, the treatment of greenhouse gas emissions falling within the scope of Article 12(3-d), (3-c) and (3-b) of that Directive, the application of the derogation provided for in Article 12(3-e) of that Directive, and the phase-in requirements provided for in Article 3gb of that Directive.
- (10) Regulation (EU) 2015/757 should therefore be amended accordingly.
- (11) Maritime transport greenhouse gas emissions will be included in the EU ETS from the reporting period starting on 1 January 2024 and methane and nitrous oxide emissions will be included in the scope of Regulation (EU) 2015/757 from the reporting period starting on 1 January 2024. It is therefore appropriate for the provisions of this Regulation to apply from 1 January 2024,

<sup>(9)</sup> Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a scheme for greenhouse gas emission allowance trading within the Community and amending Council Directive 96/61/EC (OJ L 275, 25.10.2003, p. 32).

HAS ADOPTED THIS REGULATION:

*Article 1*

Regulation (EU) 2015/757 is amended as follows:

- (1) Annex I is replaced by the text in Annex I to this Regulation;
- (2) Annex II is amended in accordance with Annex II to this Regulation.

*Article 2*

This Regulation shall enter into force on the third day following that of its publication in the *Official Journal of the European Union*.

It shall apply from 1 January 2024.

This Regulation shall be binding in its entirety and directly applicable in all Member States.

Done at Brussels, 12 October 2023.

*For the Commission*  
*The President*  
Ursula VON DER LEYEN

## ANNEX I

## ‘ANNEX I

**METHODS FOR MONITORING GREENHOUSE GAS EMISSIONS**

## A. CALCULATION OF GREENHOUSE GAS EMISSIONS (ARTICLE 9)

1. **Formulae for the calculation of greenhouse gas emissions**

For the purposes of calculating greenhouse gas emissions, companies shall apply the following formula:

$$\text{GHG}_{\text{MRV}} = \text{CO}_{2\text{MRV}} + \text{CH}_{4\text{MRV}} \times \text{GWP}_{\text{CH}_4} + \text{N}_2\text{O}_{\text{MRV}} \times \text{GWP}_{\text{N}_2\text{O}}$$

Companies shall calculate CO<sub>2</sub> emissions by adding the CO<sub>2</sub> emissions of all fuels *i* used, applying the following formula:

$$\text{CO}_{2\text{MRV}} = \sum_i (\text{M}_i - \text{M}_{i,\text{NC}}) \times \text{EF}_{\text{CO}_2, i}$$

Companies shall calculate CH<sub>4</sub> emissions by adding the CH<sub>4</sub> emissions resulting from the combustion of all fuels *i* used together with the emissions caused by CH<sub>4</sub> slippage, applying the following formula:

$$\text{CH}_{4\text{MRV}} = \left[ \sum_i (\text{M}_i - \text{M}_{i,\text{NC}}) \times \text{EF}_{\text{CH}_4, i} \right] + \text{CH}_{4\text{S}}$$

Companies shall calculate N<sub>2</sub>O emissions by adding the N<sub>2</sub>O emissions of all fuels *i* used, applying the following formula:

$$\text{N}_2\text{O}_{\text{MRV}} = \sum_i (\text{M}_i - \text{M}_{i,\text{NC}}) \times \text{EF}_{\text{N}_2\text{O}, i}$$

Fuel consumption shall be calculated separately for emissions from voyages between ports under a Member State’s jurisdiction, from voyages which departed from ports under a Member State’s jurisdiction, from voyages to ports under a Member State’s jurisdiction, and for emissions within ports under the jurisdiction of a Member State. Fuel consumption within ports under the jurisdiction of a Member State at berth shall be calculated separately.

Term	Explanation
GHG <sub>MRV</sub>	Greenhouse gas emissions to be reported under this Regulation, expressed in tonnes CO <sub>2</sub> equivalent, where “CO <sub>2</sub> equivalent” means the metric measure used to compute the emissions from CO <sub>2</sub> , CH <sub>4</sub> and N <sub>2</sub> O on the basis of their global warming potential, by converting amounts of CH <sub>4</sub> and N <sub>2</sub> O to the equivalent amount of carbon dioxide with the same global warming potential.
CO <sub>2MRV</sub>	Total aggregated CO <sub>2</sub> emitted.
CH <sub>4MRV</sub>	Total aggregated CH <sub>4</sub> emitted.
N <sub>2O</sub> <sub>MRV</sub>	Total aggregated N <sub>2</sub> O emitted.
GWP <sub>CH<sub>4</sub></sub>	Global warming potential of CH <sub>4</sub> over 100 years as referred to in the Annex to Delegated Regulation (EU) 2020/1044 (1).
GWP <sub>N<sub>2</sub>O</sub>	Global warming potential of N <sub>2</sub> O over 100 years as referred to in the Annex to Commission Delegated Regulation (EU) 2020/1044.
<i>i</i>	Index corresponding to the fuels used on board the ship in the reporting period.
<i>j</i>	Index corresponding to emission sources on board the ship. For the purpose of this Regulation the sources considered include at least the main engines, auxiliary engines, gas turbines, boilers and inert gas generators.

Term	Explanation
$M_i$	Fuel consumption, as total mass of the specific fuel i used (total for all emission sources).
$M_{i,j}$	Fuel consumption, as mass of the specific fuel i used in emission source j.
$C_j$	Tank to Wake emission factor of slipped fuel (slippage coefficient) as a percentage of the mass of the fuel i used by the emission source j [%]. $C_j$ includes fugitive and slipped emissions. Fugitive and slipped emissions are emissions caused by the amount of fuel that does not reach the combustion chamber of the emission source or that is not consumed by the emission source because they are un-combusted, vented, or leaked from the system.
$M_{i,NC}$	Total mass of fuel i not combusted but released into the atmosphere. $M_{i,NC} = \sum_i \sum_j M_{ij} \times C_j / 100$
$CH_{4S}$	Amount of $CH_4$ non combusted released into the atmosphere. For the purpose of determining such amount, companies shall apply the following formula: $CH_{4S} = M_{i,NC}$
$EF_{CO_2,i}$	Tank to Wake $CO_2$ emission factor by fuel i, as defined in the table under point 2 of this Part.
$EF_{CH_4,i}$	Tank to Wake $CH_4$ emission factor by fuel i, as defined in the table under point 2 of this Part.
$EF_{N_2O,i}$	Tank to Wake $N_2O$ emission factor by fuel i, as defined in the table under point 2 of this Part.

(<sup>1</sup>) Commission Delegated Regulation (EU) 2020/1044 of 8 May 2020 supplementing Regulation (EU) 2018/1999 of the European Parliament and of the Council with regard to values for global warming potentials and the inventory guidelines and with regard to the Union inventory system and repealing Commission Delegated Regulation (EU) No 666/2014 (OJ L 230, 17.7.2020, p. 1).

## 2. Default emission factors

In the following table:

- TBM stands for “to be measured”;
- N/A stands for “not available”;
- The dash means “not applicable”.

The default values, as contained in the table below, for emission factors for fuels and emission sources used on board the ship shall be applied for the purpose of this Regulation.

Where a cell indicates either TBM or N/A, the highest default value of the fuel class in the same column shall be used. Where, for a particular fuel class, all cells in the same column indicate either TBM or N/A, default value of the least favourable fossil fuel type shall be used. This rule does not apply to column 6 where TBM or N/A refers to non available values for the emissions source. In the case of no default value for  $C_j$ , a certified value in accordance with Article 10(6) of Regulation (EU) 2023/1805 of the European Parliament and of the Council\* shall be used.

Companies may diverge from the default values for the emission factors listed in the table below, following, as applicable, the application of the conditions and restrictions provided in Article 10(5) and (6) of Regulation (EU) 2023/1805.

For non-fossil fuels not listed in the table below, the company shall determine the emission factors in accordance with Articles 32 to 35 of Commission Implementing Regulation (EU) 2018/2066\*\*.

Where there is fuel blending, each fuel shall be considered separately.

1	2	3	4	5	6
Fuel Class	Type of Fuel	$EF_{CO_2}$ $\left[\frac{gCO_2}{gFuel}\right]$	$EF_{CH_4}$ $\left[\frac{gCH_4}{gFuel}\right]$	$EF_{N_2O}$ $\left[\frac{gN_2O}{gFuel}\right]$	$C_j$ As % of the mass of the fuel used by the emissions source
Fossil	HFO ISO 8217 Grades RME to RMK	3,114	0,00005	0,00018	—
	LFO ISO 8217 Grades RMA to RMD	3,151	0,00005	0,00018	—
	MDO MGO ISO 8217 Grades DMX to DMB	3,206	0,00005	0,00018	—
	LNG	2,750	0	0,00011	3,1 for LNG Otto (dual fuel medium speed)
					1,7 for LNG Otto (dual fuel slow speed)
					0,2 for LNG Diesel (dual fuel slow speed)
					2,6 for Lean-Burn Spark-Ignited (LBSI)
	LPG (Butane)	3,03	TBM	TBM	N/A
	LPG (Propane)	3,00	TBM	TBM	N/A
	H <sub>2</sub> (fossil)	0	0	— for Fuel Cells	—
TBM for Internal Combustion Engine (ICE)					
NH <sub>3</sub> (fossil)	0	N/A	TBM	N/A	
Methanol (fossil)	1,375	TBM	TBM	—	

1	2	3	4	5	6	
Biofuels	Ethanol	1,913	TBM	TBM	—	
	Bio-diesel	2,834	TBM	TBM	—	
	Hydrotreated Vegetable Oil (HVO)	3,115	0,00005	0,00018	—	
	Liquified methane transport (Bio-LNG)	Bio-gas fuel	2,750	0	0,00011	3,1 for LNG Otto (dual fuel medium speed)
						1,7 for LNG Otto (dual fuel slow speed)
						0,2 for LNG Diesel (dual fuel slow speed)
						2,6 for Lean-Burn Spark-Ignited (LBSI)
Bio-methanol	1,375	TBM	TBM	—		
Other	3,115	0,00005	0,00018	—		
Bio-H <sub>2</sub>	0	0	0 for Fuel Cells	—		
			TBM for ICE			
Renewable Fuels of Non-Biological Origin (RFNBO) – e-Fuels	e-diesel	3,206	0,00005	0,00018	—	
	e-methanol	1,375	TBM	TBM	—	
	e-LNG		2,750	0	0,00011	3,1 for LNG Otto (dual fuel medium speed)
						1,7 for LNG Otto (dual fuel slow speed)
						0,2 for LNG Diesel (dual fuel slow speed)
						2,6 for Lean-Burn Spark-Ignited (LBSI)
	e-H <sub>2</sub>	0	0	0 for Fuel Cells	—	
				TBM for ICE		
e-NH <sub>3</sub>	0	N/A	TBM	N/A		
e-LPG	N/A	N/A	N/A	N/A		
e-DME	N/A	N/A	N/A	—		

Column 1 identifies the class of the fuels.

Column 2 identifies the name of the relevant types of fuel for each class.

Column 3 contains the emission factor EF for carbon dioxide in gCO<sub>2</sub>/gfuel.

Column 4 contains the emission factor EF for methane in gCH<sub>4</sub>/gfuel.

Column 5 contains the emission factor EF for nitrous oxide in gN<sub>2</sub>O/gfuel.

Column 6 identifies the part of fuel lost as fugitive and slipped emissions ( $C_j$ ) measured as % of mass of fuel used by the specific emission source. For fuels such as LNG for which fugitive and slipped emissions exist, the amount of fugitive and slipped emissions as presented in the table is expressed in % of the mass of fuel used. The values of  $C_j$  in the table are calculated at 50 % of the full engine load.

\* Regulation (EU) 2023/1805 of the European Parliament and of the Council of 13 September 2023 on the use of renewable and low-carbon fuels in maritime transport, and amending Directive 2009/16/EC (OJ L 234, 22.9.2023, p. 48).

\*\* Commission Implementing Regulation (EU) 2018/2066 of 19 December 2018 on the monitoring and reporting of greenhouse gas emissions pursuant to Directive 2003/87/EC of the European Parliament and of the Council and amending Commission Regulation (EU) No 601/2012 (OJ L 334, 31.12.2018, p. 1).

## B. METHODS FOR DETERMINING GREENHOUSE GAS EMISSIONS

The company shall indicate in the monitoring plan which monitoring method is to be used to determine the greenhouse gas emissions for each ship under its responsibility and ensure that once a method has been chosen, it is consistently applied.

The following methods A, B, C and D, based on the calculation approach or the measurement approach, can be used.

Under the calculation approach (methods A, B and C), emissions shall be calculated using the formulae set out in Part A. For that purpose, the actual fuel consumption for each voyage shall be determined using any of methods A, B or C described hereinafter and used for the purpose of the calculation. Sources of uncertainty and associated levels of uncertainty shall be considered when selecting any of the methods A, B or C. The company shall regularly perform suitable control activities, including cross-checks between the bunkering quantity as provided by the Bunker Delivery Note (BDN) and the bunkering quantity indicated by on-board measurement, and take corrective action if notable deviations are observed.

Under the measurement approach (method D), direct greenhouse gas emissions measurements are used.

Any combination of methods A, B, C and D, once assessed by the verifier, may be used if it enhances the overall accuracy of the measurement.

### 1. Method A: BDN and periodic stocktakes of fuel tanks

This method is based on the quantity and type of fuel as indicated on the BDN combined with periodic stocktakes of fuel tanks based on tank readings. The fuel at the beginning of the period, plus deliveries, minus fuel available at the end of the period and de-bunkered fuel between the beginning of the period and the end of the period together constitute the fuel consumed over the period.

The period means the time between two port calls or time within a port. For the fuel used during a period, the fuel type and the sulphur content need to be specified.

This method shall not be used when BDN are not available on board ships, especially when cargo is used as a fuel, for example, liquefied natural gas (LNG) boil-off.

Under existing MARPOL Annex VI regulations, the BDN is mandatory, is to be retained on board for 3 years after the delivery of the bunker fuel and is to be readily available. The periodic stocktake of fuel tanks on board is based on fuel tank readings. It uses tank tables relevant to each fuel tank to determine the volume at the time of the fuel tank reading. The uncertainty associated with the BDN shall be specified in the monitoring plan. Fuel tank readings shall be carried out by appropriate methods such as automated systems, soundings and dip tapes. The method for tank sounding and uncertainty associated shall be specified in the monitoring plan.



Where the amount of fuel uplift or the amount of fuel remaining in the tanks is determined in units of volume, expressed in cubic meters, the company shall convert that amount from volume to mass by using actual density values. The company shall determine the actual density by using one of the following:

- (a) on-board measurement systems;
- (b) the density measured by the fuel supplier at fuel uplift and recorded on the fuel invoice or BDN;
- (c) the density measured in a test analysis conducted in an accredited fuel test laboratory, where available.

The actual density shall be expressed in kg/cubic meter and determined for the applicable temperature for a specific measurement. In cases for which actual density values are not available, a standard density factor for the relevant fuel type shall be applied once assessed by the verifier.

## 2. **Method B: Bunker fuel tank monitoring on board**

This method is based on fuel tank readings for all fuel tanks on board. The tank readings shall occur daily when the ship is at sea and each time the ship is bunkering or de-bunkering.

The cumulative variations of the fuel tank level between two readings constitute the fuel consumed over the period.

The period means the time between two port calls or time within a port. For the fuel used during a period, the fuel type and the sulphur content need to be specified.

Fuel tank readings shall be carried out by appropriate methods such as automated systems, soundings and dip tapes. The method for tank sounding and uncertainty associated shall be specified in the monitoring plan.

Where the amount of fuel uplift or the amount of fuel remaining in the tanks is determined in units of volume, expressed in cubic meters, the company shall convert that amount from volume to mass by using actual density values. The company shall determine the actual density by using one of the following:

- (a) on-board measurement systems;
- (b) the density measured by the fuel supplier at fuel uplift and recorded on the fuel invoice or BDN;
- (c) the density measured in a test analysis conducted in an accredited fuel test laboratory, where available.

The actual density shall be expressed in kg/cubic meter and determined for the applicable temperature for a specific measurement. In cases for which actual density values are not available, a standard density factor for the relevant fuel type shall be applied once assessed by the verifier.

## 3. **Method C: Flow meters for applicable combustion processes**

This method is based on measured fuel flows on board. The data from all flow meters linked to relevant greenhouse gas emission sources shall be combined to determine all fuel consumption for a specific period.

The period means the time between two port calls or time within a port. For the fuel used during a period, the fuel type and the sulphur content need to be monitored.

The calibration methods applied and the uncertainty associated with flow meters used shall be specified in the monitoring plan.

Where the amount of fuel consumed is determined in units of volume, expressed in cubic meters, the company shall convert that amount from volume to mass by using actual density values. The company shall determine the actual density by using one of the following:

- (a) on-board measurement systems;
- (b) the density measured by the fuel supplier at fuel uplift and recorded on the fuel invoice or BDN;
- (c) the density measured in a test analysis conducted in an accredited fuel test laboratory, where available.

The actual density shall be expressed in kg/cubic meter and determined for the applicable temperature for a specific measurement. In cases for which actual density values are not available, a standard density factor for the relevant fuel type shall be applied once assessed by the verifier.

#### 4. **Method D: Direct greenhouse gas emissions measurement**

The direct greenhouse gas emissions measurements may be used for voyages and for greenhouse gas emissions occurring within ports located in a Member State's jurisdiction. For ships for which CO<sub>2</sub> reporting is based on this method applied to all emissions sources on board the ship, the fuel consumption shall be calculated using the measured CO<sub>2</sub> emissions and the applicable emission factors of the relevant fuels and emission sources.

This method is based on the determination of greenhouse gas emissions flows in exhaust gas stacks (funnels) by multiplying the greenhouse gas concentrations of the exhaust gas with the exhaust gas flow.

The application of this method to determine emissions of a greenhouse gas shall not prevent companies from applying any other of the methods described under this Part to any other greenhouse gas.

The calibration methods applied and the uncertainty associated with the devices used shall be specified in the monitoring plan.

### C. DATA MANAGEMENT AND CONTROL

#### 1. **Control system**

- 1.1. The company shall carry out a risk assessment to identify sources of risks of errors in the data flow from primary data to final data in the emissions report and shall establish, document, implement and maintain an effective control system to ensure that the reports resulting from data flow activities do not contain misstatements and are in conformity with the monitoring plan and comply with this Regulation.

The company shall make the risk assessment referred to in the first paragraph available to the administering authority responsible upon request. The company shall also make it available for the purposes of verification.

- 1.2. For the purposes of point 1.1, first paragraph, the company shall establish, document, implement and maintain written procedures, separately from the monitoring plan, for data flow activities as well as for control activities, and include references to and a description of those procedures in the monitoring plan. The company shall make any written documentation of the procedures available to the administering authority responsible upon request. The company shall also make such documentation available for the purposes of verification.

- 1.3. Control activities referred to in point 1.2 shall include, where applicable:

- (a) quality assurance of the relevant measurement equipment;
- (b) quality assurance of information technology systems ensuring that the relevant systems are designed, documented, tested, implemented, controlled and maintained in a way that ensures processing reliable, accurate and timely data in accordance with the risks identified in accordance with point 1.1;
- (c) segregation of duties in the data flow activities and control activities, as well as management of necessary competencies;
- (d) internal reviews and validation of data;
- (e) corrections and corrective action;
- (f) control of out-sourced processes;
- (g) keeping records and documentation including the management of document versions.

- 1.4. For the purposes of point 1.3(a), the company shall ensure that all relevant measuring equipment is calibrated, adjusted and checked at regular intervals including prior to use, and checked against measurement standards traceable to international measurement standards, where available, and proportionate to the risks identified.

Where components of the measuring systems cannot be calibrated, the company shall identify those components in the monitoring plan and propose alternative control activities.

When the equipment is found not to comply with the performance requirements, the company shall promptly take necessary corrective action.

- 1.5. For the purposes of point 1.3(d), the company shall review and validate data resulting from the data flow activities referred to in point 1.2.

Such review and validation of data shall include the following:

- (a) a check as to whether the data are complete;
- (b) a comparison of the data that the company has obtained, monitored and reported over several years;
- (c) a comparison of data and values resulting from different monitoring methods when more than one monitoring method is applied.

- 1.6. For the purposes of point 1.3(e), the company shall ensure that, where data flow activities or control activities are found not to function effectively, or not to respect the rules set in the documentation of procedures for those activities, corrective action is taken and affected data is corrected without undue delay.

- 1.7. For the purposes of point 1.3(f), where the company outsources one or more data flow activities or control activities referred to in point 1.1, it shall proceed to all of the following:

- (a) check the quality of the outsourced data flow activities and control activities in accordance with this Regulation;
- (b) indicate appropriate requirements for the outputs of the outsourced processes as well as the methods used in those processes;
- (c) check the quality of the outputs and methods referred to in point (b);
- (d) ensure that the outsourced activities are carried out in such a manner that those are responsive to the inherent risks and control risks identified in the risk assessment referred to in point 1.1.

- 1.8. The company shall monitor the effectiveness of the control system, including by carrying out internal reviews and taking into account the findings of the verifier during the verification of emissions reports and of reports referred to in Article 11(2).

When the company finds the control system ineffective or not commensurate with the risks identified, it shall seek to improve the control system and update the monitoring plan or the underlying written procedures for data flow activities, risk assessments and control activities, as appropriate.

## 2. Data gaps

- 2.1. Where data relevant for the determination of a ship's greenhouse gas emissions for one or more voyages are missing, the company shall use surrogate data calculated in accordance with the alternative method(s) indicated in the monitoring plan assessed by the verifier and, where applicable, approved by the administering authority responsible.

Where data relevant for the determination of a ship's greenhouse gas emissions for one or more voyages are missing, for which the monitoring plan does not list alternative monitoring methods or alternative data sources for corroborating data or for closing the data gap, the company shall use an appropriate estimation method for determining conservative surrogate data for the respective time period and missing parameter.

- 2.2. Where, for technical reasons, it is temporarily not feasible to apply the monitoring plan satisfactorily assessed by the verifier and, where applicable, approved by the administering authority responsible, the company shall apply a method based on alternative data sources listed in the monitoring plan for the purpose of performing corroborative checks, or, if such an alternative is not contained in the monitoring plan, an alternative method which provides surrogate data or a conservative estimation, until the conditions for application of the approved monitoring plan have been restored.

The company shall take all necessary measures to achieve a prompt application of the monitoring plan.

- 2.3. Where an estimation method is used in accordance with point 2.1, or where a temporary deviation from the monitoring plan occurs in accordance with point 2.2, the company shall without undue delay develop a written procedure for avoiding this type of data gap in the future and modify the monitoring plan in accordance with Article 7.'
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## ANNEX II

Annex II to Regulation (EU) 2015/757 is amended as follows:

(a) Part A is amended as follows:

- (i) in point 2, first sentence, the words 'point (g) of paragraph 1' are replaced by the words 'point 1(g)';
- (ii) in point 2, second paragraph, the words 'point (g) of paragraph 1' are replaced by the words 'point 1(g)';
- (iii) in point 3, the words 'paragraphs 1 and 2' are replaced by the words 'points 1 and 2';

(b) Part B is replaced by the following:

**B. MONITORING ON AN ANNUAL BASIS (ARTICLE 10)**

For the purposes of monitoring other relevant information on an annual basis, companies shall respect the following rules:

The values to be monitored under Article 10 shall be determined by aggregation of the respective per voyage data.

Average energy efficiency shall be monitored by using at least four indicators: fuel consumption per distance, fuel consumption per transport work, greenhouse gas emissions per distance and greenhouse gas emissions per transport work, which shall be calculated as follows:

Fuel consumption per distance = total annual fuel consumption/total distance travelled

Fuel consumption per transport work = total annual fuel consumption/total transport work

Greenhouse gas emissions per distance = total annual greenhouse gas emissions/total distance travelled

Greenhouse gas emissions per transport work = total annual greenhouse gas emissions/total transport work.

In addition, when relevant, ships may monitor average energy efficiency by using the two following energy efficiency indicators: fuel consumption per time spent at sea and greenhouse gas emissions per time spent at sea, which shall be calculated as follows:

Fuel consumption per time spent at sea = total annual fuel consumption/total time spent at sea

Greenhouse gas emissions per time spent at sea = total annual greenhouse gas emissions/total time spent at sea

In complying with these rules, companies may also choose to include specific information relating to the ship's ice class and to navigation through ice, as well as other information related to the fuel consumed and greenhouse gas emissions emitted, differentiating on the basis of other criteria indicated in the monitoring plan.;

(c) The following Part C is added:

**C. MONITORING OF TOTAL AGGREGATED EMISSIONS OF GREENHOUSE GASES COVERED BY DIRECTIVE 2003/87/EC IN RELATION TO MARITIME TRANSPORT ACTIVITIES AND OF THE INFORMATION TO JUSTIFY DEROGATIONS FROM ARTICLE 12(3) OF THAT DIRECTIVE (ARTICLE 10, POINT (K))**

**1. Rules to monitor on an annual basis a ship's total aggregated emissions of greenhouse gases covered by Directive 2003/87/EC in relation to maritime transport activities listed in Annex I to that Directive and to be reported under that Directive**

Companies shall determine the relevant amounts of each greenhouse gas separately and the total of those amounts expressed in CO<sub>2</sub>-equivalents.

Companies shall consider the amounts of each type of fuel consumed for maritime transport activities falling within the scope of Directive 2003/87/EC in respect of the period during which the ship was under their responsibility as regards the obligations set out in that Directive.

Companies shall, when applicable, carry out the calculations set out in points 1.1. to 1.7 in the order laid down below.

1.1. *General principle*

For the purpose of monitoring the ship's total aggregated emissions of greenhouse gases to be reported under the Directive 2003/87/EC, companies shall apply the formulae established in Part A of Annex I to this Regulation, considering the types of greenhouse gases emissions covered by Directive 2003/87/EC.

1.2. *Derogation from the general principle and use of emission factors pursuant to Article 14 of Directive 2003/87/EC*

By way of derogation from point 1.1, companies shall not apply the rules laid down in Part A of Annex I to this Regulation as regards the determination of the CO<sub>2</sub> emission factors where the company uses a fuel complying with the sustainability criteria and greenhouse gas emission saving criteria for the use of biomass established by Directive (EU) 2018/2001 of the European Parliament and of the Council (\*), with any necessary adjustments for application as set out in Implementing Regulation (EU) 2018/2066. In such cases, the CO<sub>2</sub> emission factor of the biomass fraction of the fuel shall be zero.

By way of derogation from point 1.1, companies shall not apply the rules laid down in Part A of Annex I to this Regulation as regards the determination of the CO<sub>2</sub> emission factors where the company uses Renewable Fuels of Non-Biological Origin (RFNBO) and Recycled Carbon Fuel (RCF). In such cases, the CO<sub>2</sub> emission factor shall be determined in accordance with Implementing Regulation (EU) 2018/2066.

1.3. *Derogation from the general principle in the case of a voyage between a port under the jurisdiction of a Member State and a port outside the jurisdiction of a Member State*

In accordance with the geographical scope referred to in Article 3ga of Directive 2003/87/EC, the amounts calculated in accordance with points 1.1 and 1.2 of this Part shall be multiplied by 50 % where the greenhouse gas emissions are released by a ship performing either a voyage departing from a port of call under the jurisdiction of a Member State and arriving at a port of call outside the jurisdiction of a Member State, or a voyage departing from a port of call outside the jurisdiction of a Member State and arriving at a port of call under the jurisdiction of a Member State.

1.4. *Derogation from the general principle in the case of CO<sub>2</sub> emissions referred to in Article 12(3a) and (3b) of Directive 2003/87/EC*

By way of derogation from point 1.1, where CO<sub>2</sub> emissions fall within the scope of Article 12(3a) or (3b) of Directive 2003/87/EC, the amounts of such emissions calculated in accordance with points 1.1, 1.2 and 1.3 of this Part shall be multiplied by zero.

1.5. *Derogation from the general principle in the case of greenhouse gas emissions from a voyage or activities referred to in Article 12(3-d), (3-c) or (3-b) of Directive 2003/87/EC*

By way of derogation from point 1.1, where the greenhouse gas emissions fall within the scope of Article 12 (3-d), (3-c), or (3-b) of Directive 2003/87/EC, the amounts calculated in accordance with points 1.1 to 1.4 of this Part shall be multiplied by zero.

1.6. *Calculation of the ship's total aggregated emissions of greenhouse gases to be reported under Directive 2003/87/EC in the case that the company wants to benefit from the derogation provided for in Article 12(3-e) of that Directive*

Companies that want to benefit from the derogation for ice-class ships provided for in Article 12(3-e) of Directive 2003/87/EC shall deduct 5 % from the amounts calculated in accordance with points 1.1 to 1.5 of this Part, as applicable.

1.7. *Calculation of the ship's total aggregated emissions of greenhouse gases to be reported under Directive 2003/87/EC, taking into account Article 3gb of that Directive*

In respect of the emissions for the reporting years 2024 and 2025, companies shall apply the phase-in percentages provided for in Article 3gb of Directive 2003/87/EC to the amounts calculated in accordance with points 1.1 to 1.6 of this Part, as applicable. Companies shall aggregate the amounts of each gas to calculate the ship's total aggregated emissions of greenhouse gases to be reported under Directive 2003/87/EC.

2. **Monitoring of the necessary information to justify the application of any relevant derogation from Article 12(3) of Directive 2003/87/EC**

2.1. Where the greenhouse gas emissions fall under the scope of Article 12(3-d), (3-c), or (3-b) of Directive 2003/87/EC, companies shall monitor, for the period during which the ship was under their responsibility, the following information for each type of derogation provided for in those provisions, on a per-voyage basis:

- (a) the port of departure and port of arrival including the data and hour of departure and arrival;
- (b) amount and emission factor for each type of fuel consumed, taking into account the provisions laid down in point 1.2;
- (c) greenhouse gas emissions emitted, calculated in accordance with points 1.1, 1.2 and 1.3;
- (d) the distance travelled;
- (e) time spent at sea.

2.2. Where all the greenhouse gas emissions released by a ship during a reporting period fall within the scope of Article 12(3-d), (3-c) or (3-b) of Directive 2003/87/EC and where, according to its schedule, the ship performs more than 300 voyages during that reporting period, the company shall not be obliged to monitor the information referred to in point 2.1 of this Part on a per-voyage basis in respect of that ship during that reporting period.

2.3. Where the greenhouse gas emissions fall under the scope of Article 12(3-e) of Directive 2003/87/EC, companies shall provide information relating to the ice class of the ship.

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(\*) Directive (EU) 2018/2001 of the European Parliament and of the Council of 11 December 2018 on the promotion of the use of energy from renewable sources (OJ L 328, 21.12.2018, p. 82).'