

4 Operational carbon intensity indicator (CII) of individual ships for use in implementing regulation 28 of MARPOL Annex VI

In its most simple form, the attained annual operational CII of individual ships is calculated as the ratio of the total mass of CO₂ (*M*) emitted to the total transport work (*W*) undertaken in a given calendar year, as follows:

$$\textit{attained CII}_{\textit{ship}} = M / W \quad (1)$$

4.1 Mass of CO₂ emissions (*M*)

The total mass of CO₂ is the sum of CO₂ emissions (in grams) from all the fuel oil consumed on board a ship in a given calendar year, as follows:

$$M = \sum FC_j \times C_{F_j} \quad (2)$$

where:

- *J* is the fuel oil type;
- *FC_j* is the total mass (in grams) of consumed fuel oil of type *J* in the calendar year, as reported under IMO DCS; and
- *C_{F_j}* represents the fuel oil mass to CO₂ mass conversion factor for fuel oil type *J*, in line with those specified in the *2018 Guidelines on the method of calculation of the attained Energy Efficiency Design Index (EEDI) for new ships (resolution MEPC.308(73))*, as may be further amended. In case the type of the fuel oil is not covered by the guidelines, the conversion factor should be obtained from the fuel oil supplier supported by documentary evidence.

4.2 Transport work (*W*)

In the absence of the data on actual transport work, the supply-based transport work (*W_s*) can be taken as a proxy, which is defined as the product of a ship's capacity and the distance travelled in a given calendar year, as follows:

$$W_s = C \times D_t \quad (3)$$

where:

- *C* represents the ship's capacity:
 - For bulk carriers, tankers, container ships, gas carriers, LNG carriers, 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) 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.

¹ Deadweight tonnage (DWT) means the difference in tonnes between the displacement of a ship in water of relative density of 1,025 kg/m³ at the summer load draught and the lightweight of the ship. The summer load draught should be taken as the maximum summer draught as certified in the stability booklet approved by the Administration or any organization recognized by it.

² Gross tonnage (GT) should be calculated in accordance with the International Convention on Tonnage Measurement of Ships, 1969.

