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REDUCTION OF GHG EMISSIONS FROM SHIPS

CII reduction factors

Submitted by WSC

SUMMARY

Executive summary:	This document outlines issues that arise in the data and rationale for ship specific CII reduction rates. The document highlights specific questions and makes recommendations for addressing this important matter.
Strategic direction, if applicable:	3
Output:	3.2
Action to be taken:	Paragraph 23
Related documents:	MEPC 76/7/5 and MEPC 76/INF.10

Introduction

1 The carbon intensity indicator (CII) regulations and guidelines establish a framework to assign CII ratings and to stimulate continuous improvement to reach the 40% fleet-wide reduction by 2030 agreed in IMO's Initial GHG Strategy. To finalize the CII framework, the Committee needs to consider what annual reduction rates are appropriate and whether reduction rates should be applied uniformly across the fleet or whether to apply reduction rates that are unique to each of the ship types covered by the CII framework.

2 This document briefly discusses the challenges with deriving definitive conclusions on estimated CII trends in the fleet, highlights important questions relevant to this important matter, and offers recommendations for the consideration of the Committee.

Discussion

3 The calculation and determination of CII reduction factors seek to determine or estimate the relative efficiency gain between 2008 and today. The Correspondence Group on Development of Technical Guidelines on Carbon Intensity Reduction examined both

demand-based and supply-based measurement of efficiency. Under a supply-based measure, the dry bulk, container, and ro-ro cargo fleets exhibit the best performance in the overall fleet. Interestingly, a demand-based measurement rendered a more favourable situation for multiple ship-types, but not all. While it is not surprising that a demand-based approach was favoured by the majority, the considerable difference in these figures raises questions about the reliability and consistency of the considered mechanisms for estimating efficiency improvement.

4 Three periods of time are relevant in estimating trends between 2008 and the present. The first are estimates modelled from 2008 to 2012 and is the period subject to the greatest uncertainty. The second period from 2013 to 2018 is also based on modelled estimates that appear to align well in some ship types and not in others. The last is the year 2019 which is actual IMO Data Collection System (DCS) ship data that represents actual verified fuel consumption. The last point is important as it is considered where the fleet is today and trend lines from 2008 to the present.

5 These three periods and the uncertainty associated with the data for the first two periods is also relevant as the Committee considers the important question of what reduction rate should be applied to achieve the 2030 efficiency target under the CII framework. As noted in paragraph 4 above, the estimated figures for 2008 to 2012 are the most uncertain and the farthest removed in time, and figures for the second period 2013 to 2018 are also modelled estimates. The 2019 data is based on observed data and not estimates and consequently provides the most accurate indicator of where the fleet or a given ship type is relative to the 2008 baseline.

Problems that arise if the 2019 DCS data is ignored

6 The 2019 data is particularly important because it is the one reference point that represents actual data and is not estimated. Estimates and modelled data can be very useful and necessary when actual data is unavailable, but when actual data is available as it is for 2019, it is imperative that actual data is used and considered as these figures provide the greatest insight into where the fleet stands presently, because the 2019 data is actual verified data collected through the IMO DCS.

7 To illustrate this point WSC examined two cases where the trends estimated through 2018 do not align at all with the actual 2019 data, as illustrated in figures 1 and 2.

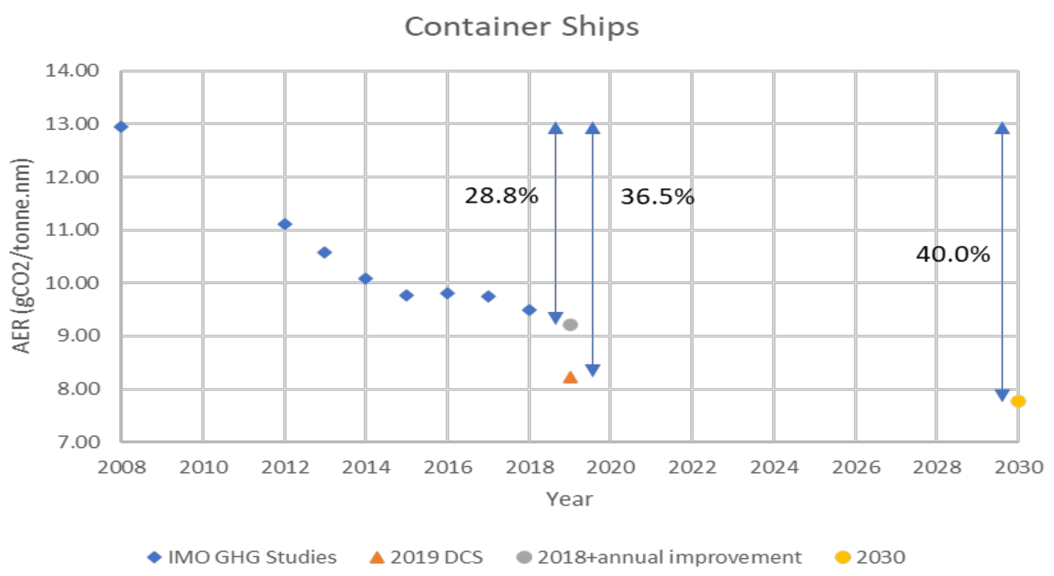


Figure 1: Estimated container ship trend data compared with actual 2019 DCS data

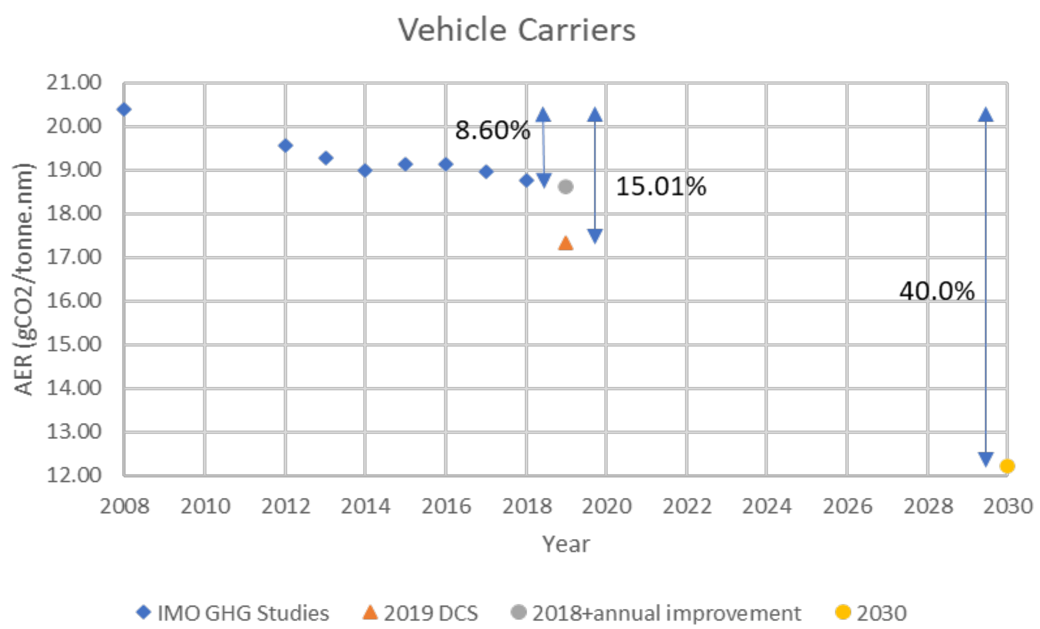


Figure 2: Estimated vehicle carrier trend data compared with actual 2019 DCS data

8 The situation shown in both figures 1 and 2 illustrate a situation where the estimated efficiency trends underestimate the actual performance gain achieved by 2019. For example, if we consider the actual 2019 DCS data, the container fleet has actually achieved or nearly achieved the 40% reduction called for by 2030, yet by failing to take into consideration the 2019 data the container fleet is subject to the highest annual reduction rate of 1.5% per annum.

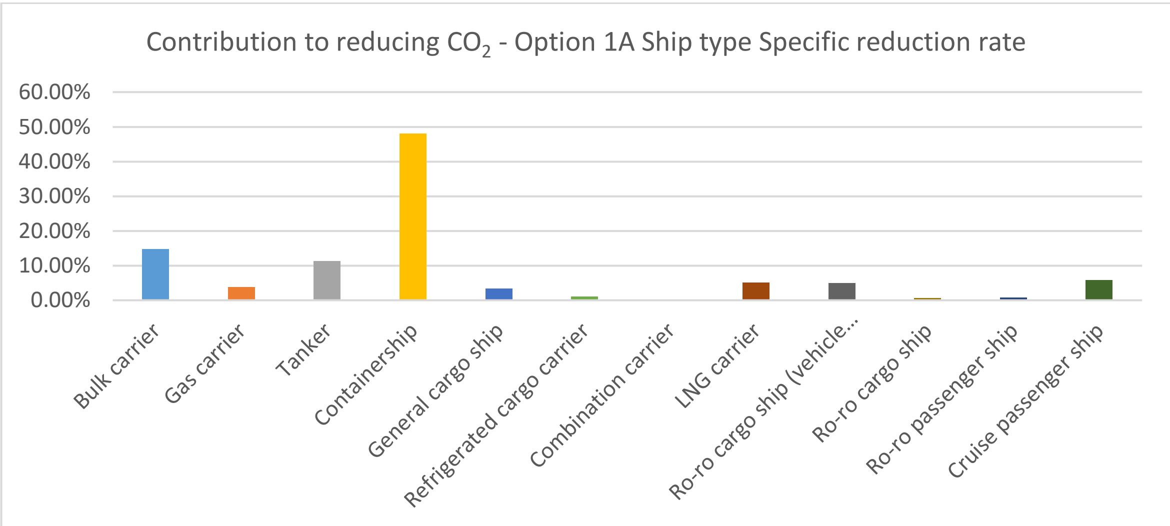
9 The 2008 baseline figures must by necessity be estimated, but we should consider both the estimated 2008 figures and the 2019 figures that are derived from actual DCS ship data to make judgements on where the fleet stands today and what progress has been made since 2008. This approach does not adversely affect the dry bulk segment, but it would result in a more accurate and equitable evaluation of progress made across the overall fleet, including estimated efficiency trends for some ship-types that do not align or correlate with the 2019 DCS data.

Reduction rates: uniform rates versus ship type specific, and the relative contributions of a given ship type compared to the gap to be achieved

10 As reported in document MEPC 75/7/5 (China et al.), members of the Correspondence Group expressed different views concerning whether it was appropriate to utilize a singular reduction rate across all ship types or to apply unique reduction rates for specific ship types. However, both sides agreed that equity and fairness considerations were a critical factor in the views expressed.

11 Considering the equity and fairness concerns raised in the Correspondence Group, WSC believes it is important to consider the estimated efficiency gaps to be overcome in a given ship type or sector and the reduction rate applied to the sector. In the first example, the container fleet is estimated (absent consideration of the actual 2019 data) to need to cover a gap estimated at 16.1% by 2030 (see table 2, page 5 of annex 3 of document MEPC 76/INF.10). The same analysis (again ignoring 2019 data) estimates that tankers need to cover a gap of 14.5% by 2030. While the estimated gap to be covered by each ship type is remarkably close (14.5% vs. 16.1%) the annual reduction rate proposed to be applied to container ships is three times as large (1.5% per annum, 16.5% in total) as that proposed for tankers (0.5% per annum, 5.5% in total). This disparity in proposed reduction rates clearly does not track or otherwise correlate with the estimated efficiency gaps to be overcome.

12 The difference in contribution to reduction of carbon intensity resulting from the proposed reduction rates to be applied to these two ship-types is not proportionally appropriate.



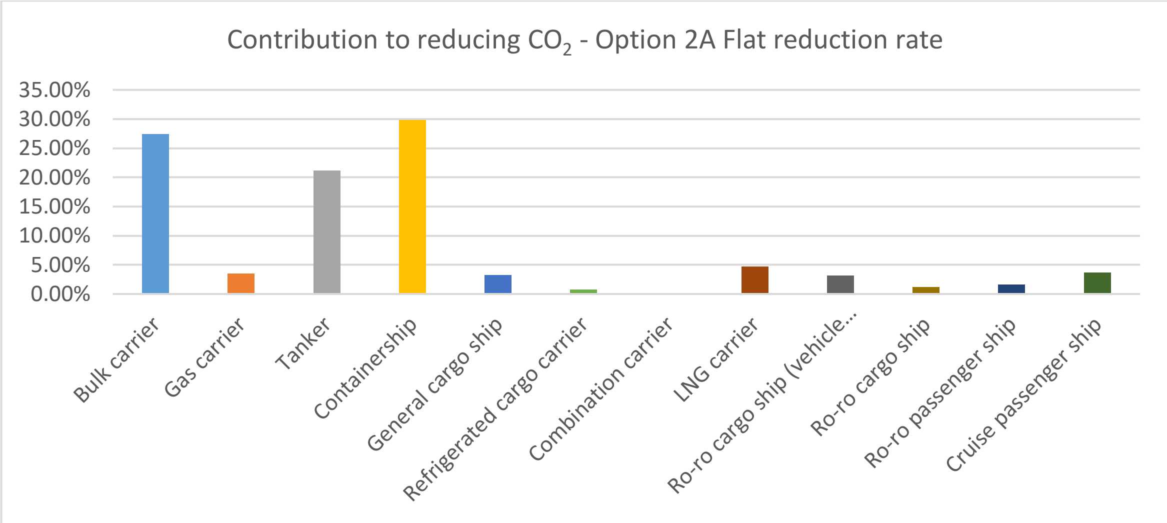


Figure 3: Relative contributions to reducing CO_2 fleet emissions under the proposed ship type specific reduction rates and the uniform flat reduction rate

13 Figure 3 shows that the reduction rate applied to tankers would result in a contribution of roughly 11% by 2030. In contrast, the reduction rate applied to container ships would result in a contribution of 48% which far exceeds its own contribution to total fleet emissions. Moreover, the container fleet would be expected to contribute reductions that are more than four times the reductions proposed for the tanker fleet even though the estimated efficiency gap between the two ship types reflects a difference of only 1.6%.

14 The container fleet contributes roughly 26.5 to 28%[1] of total fleet emissions and has slowed down on average 24.6% between 2008 and 2019.[2] In addition, container ship fleet characteristics have changed significantly since 2008 when the largest container ships were limited to a handful of 13,000 TEU ships. In the years following 2008, ultra-large container ships ranging in size from 14,000 to 20,000 TEU had grown to constitute a significant portion of fleet capacity with a consequent increase in the transport efficiency of the fleet.

15 Examination of the 2019 DCS data indicates that the container fleet has achieved AER improvements of 36.5% relative to 2008 (MEPC 76/INF.10, annex 1, page 18). Using the 2019 DCS data, the efficiency gap for the container fleet is only 3.5% as compared to the 16.1% efficiency gap using estimated trends.

16 To add further context, the difference in the respective estimated trends for specific ship types reveal that the estimated efficiency trend for dry bulk matches well with the 2019 actual DCS figures. In contrast, the estimated efficiency trends for container ships and vehicle carriers do not align at all with the 2019 actual DCS figures. Both container ships and vehicle carriers are then severely penalized by ignoring the 2019 data, instead using estimated trends that do not align with actual 2019 data.

17 The conclusion here should not be to exclude or otherwise ignore the 2019 data because the 2019 data is the only actual verified data available for consideration. The more appropriate conclusion is to recognize that the assumptions made for efficiency trends in the dry bulk sector align well with the assumptions used to estimate the relevant efficiency trends. It is equally clear that the assumptions used to estimate efficiency trends in the container and

1 *Fourth IMO GHG Study 2020*, and 2019 DCS Data.

2 Clarksons data.

vehicle carrier trades do not align. Consequently, one needs to consider the actual 2019 DCS data relative to the 2008 modelled data and decide upon reduction rates that require commensurate reductions across the fleet.

Conclusions

18 An examination of the estimated trend data indicates that there is considerable uncertainty in how well the estimated efficiency trends track with actual developments in specific sectors. In some sectors it is clear that the <u>estimated</u> efficiency improvements achieved do not match up with the <u>actual</u> efficiency improvements made through 2019. This is particularly evident when examining the estimated trend through 2018 for container ships and vehicle carriers when compared with actual 2019 DCS data. In short, there is no plausible explanation how the container fleet improved efficiency by 7.7% in a single year between 2018 and 2019 or how the vehicle carrier fleet suddenly made an improvement of 6.4% in the same one-year period. Rather, one needs to respect that the 2019 data is the more realistic data point to determine improvements made since 2008 and to establish an appropriate reduction rate based on consideration of 2008 estimates and actual 2019 DCS data.

19 As pointed out in paragraphs 12 to 16, there are disparities in the suggested reduction rates proposed for some ship types when compared to other ship types where similar efficiency improvements are called for based on the estimated gap. This situation draws into question whether ship-specific reduction rates are the most equitable means of handling reduction rates in light of the relevant shortcomings with estimated data and the disparity between estimated trends and actual 2019 data seen with certain ship types. Consequently, WSC recommends the use of a single uniform annual reduction rate to promote further efficiency improvements across the fleet as a whole.

20 As noted in the preceding discussion, WSC recommends that both the estimated 2008 data and the 2019 DCS data should be used to calculate the total improvements made over the period. The 2019 DCS data is invaluable because it is the only data that represents actual fuel consumption data that has been verified through agreed IMO procedures.

21 Ignoring the 2019 data clearly results in under-estimating improvements made by the container and vehicle carrier fleets. Similar issues may also be present in the estimated trends for some other ship types. Ignoring verified actual ship data collected through the IMO DCS, to instead use estimated data when known verified data is available, is very difficult if not impossible to justify. Moreover, the containership fleet should not be expected to shoulder a disproportionate reduction burden, effectively asking the container fleet to produce roughly half of the projected reduction in the world fleet between now and 2030.

22 Should the Committee decide to proceed with reduction rates that are unique for each ship type, WSC believes it is critical to re-evaluate the reduction rates proposed for specific ship types to ensure that the proposed annual reduction rate is proportional to the estimated efficiency gap and that the reduction rates are fully proportional when applied to ship types that have similar efficiency gaps to be achieved.

Action requested of the Committee

23 The Committee is invited to consider the information presented in this document including the recommendations set out in paragraphs 18 to 22 and to take action as appropriate.

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