# T&E views on EU Ship MRV

## Alignment of the EU MRV with the IMO DCS

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## Summary

T&E proposes that the EU MRV and the IMO DCS should co-exist for a fixed period of time with comparisons conducted to review which elements are necessary or need modification. Regardless of the degree of alignment, EU MRV must monitor domestic shipping which IMO DCS excludes.

In the event that alignment takes place, the transparency, actual cargo data and robust verification elements of the EU MRV must be preserved. EU MRV adds insignificant additional operational costs (less than 0.03%) to a ship's annual running costs so cannot justify weakening of this vital climate measure.

In addition, methane and black carbon emission from ships have a significant climate warming impact so should be included along with NOx emissions in the scope of the MRV. These pollutants are not covered by the IMO DCS.

## 1. Context

The objective of the EU's 2015 monitoring, reporting and verification (MRV) Regulation of ship emissions is to incentivise emission reduction from ships by making available necessary data for stakeholders and to break down market barriers to ship efficiency. Global maritime transport is predicted to increase in line with growth in global seaborne trade bringing about a 20% to 120% spike in ship GHG emissions by 2050. This increase in emissions will take place despite the introduction of energy efficiency standards for new ships. In addition to climate change, ship emissions, notably, SOx, NOx, PM and BC, cause air pollution leading to mortality and morbidity in coastal and inland communities and environmental degradation.

The monitoring of ships' fuel consumption and related energy efficiency parameters is an important tool to raise awareness of emission reduction opportunities and trigger mitigation actions at company level. It would also provide robust information to policy-makers to put in place abatement measures to address the problems.

## 2. Scope

Regardless of the scale of alignment, the EU MRV is required to monitor domestic shipping, which the IMO DCS does not include. It is important to monitor emissions at berth separately from emissions at sea in order to enable ports to analyse emissions from ships & facilitate the deployment of initiatives to improve air quality such as shore side electric or battery bunkering.

## 3. Transparency of data

Under the EU MRV, $CO_2$ emissions and real operational efficiency data will be made public for each individual ship covering journeys to/from/in the EU. This data will be published by the EU Commission once a year starting from April 2019. In contrast, under the IMO DCS, neither individual ship emissions, nor their operational or design efficiencies will be rendered public.

Transparent and robust information on ships' fuel consumption and energy efficiency is important to create market incentives for investments into energy efficiency technologies. Currently (time) charter markets don't function well due to split incentives, whereby ship-owners are responsible for the fuel efficiency of ships and relevant investments, whereas charterers pay for the fuel bill. According to available research, one of the consequences of this landlord-tenant problem is that markets do not reward efficient ships over non-efficient ones in getting higher freight rates or charter contracts. Hence, ship-owners do not have the incentive to invest in more efficient ships, thus resulting in higher ship emissions. The IMO DCS will not solve this problem as neither design, nor operational efficiency data of ships will be made public. A robust transparent EU MRV will provide essential information to charterers for decision making to underpin growth in clean shipping markets.

Transparency is key for clients to make informed decisions and publically accessible data is important for driving innovation in clean shipping. Increasingly shipping clients and the wider public are looking to understand the GHG emissions along the entire supply chain with businesses requesting data on the emissions from transportation or shipping their products so they can accurately calculate their 'scope 1, 2 & 3' emissions. Scope 1 emissions are direct emissions from owned or controlled sources. Scope 2 emissions are indirect emissions from the generation of purchased energy to the business and Scope 3 emissions are associated with the supply chain and are calculated when taking a lifecycle approach to GHG accounting (increasingly a mandatory requirement to fulfil GHG reporting obligations).

One of the commonly cited barriers in the shipping industry is the lack of sufficient information on the technical efficiency of a ship operated in real operating conditions when a ship is chartered.

The EEDI is a theoretical design energy efficiency indicator given to a ship at the time of delivery, while real operational efficiency of ships depends on its commercial and environmental operational conditions and maintenance. As a ship ages, the specific parameters that determine its fuel consumption change over time due to a gradual deterioration of the hull's surface and fouling due to marine growth. For example, two ships which appear identical in their design characteristics can perform differently due to differences in maintenance schedules or retrofitting which would not be evident merely from looking at their EEDI scores.

# 4. Cargo data and real operational efficiency

The operational energy efficiency (energy intensity) of a ship is a measure of how much energy (fuel) is required to undertake a certain transport work. Transport work can be theoretical, estimated based on a proxy expressed in terms of ***cargo carrying capacity*** (fixed for every ship); or real, estimated based on ***actual cargo carried***, over a certain distance. In this regard, operational energy efficiency (energy intensity) can be expressed as:

$$Theoretical\ energy\ intensity = \frac{fuel\ consumed}{cargo\ carrying\ capacity\ *\ distance\ sailed}$$

*or*

$$Real\ energy\ intensity = \frac{fuel\ consumed}{actual\ cargo\ carried\ *\ distance\ sailed}$$

In the case of the theoretical, the ship will always appear to be performing the highest possible transport work regardless of the amount of cargo it carries; it will always appear to be full (even if it carries no cargo) because deadweight is a constant number. The more laden a ship is, the more energy efficient (less energy intense) it is. Therefore, if cargo carrying capacity is used to estimate energy efficiency, then one would not be able to differentiate an efficient ship from an empty one.

Hence, in order to estimate real operational efficiency of ships and avoid an empty vs. efficient ship dilemma, actual cargo carried must be used.

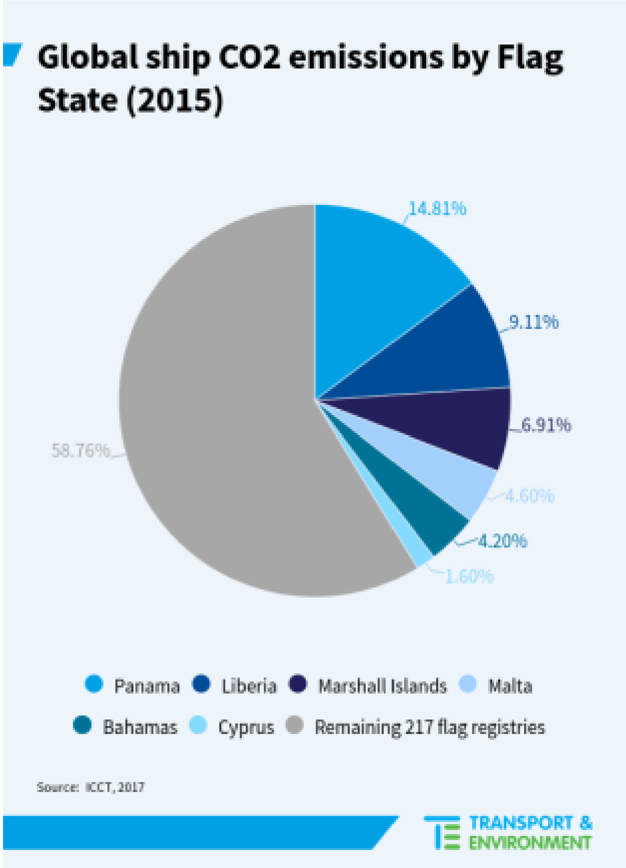
The EU MRV requires ships to report actual cargo carried in addition to fuel consumed and distance sailed, making it possible to estimate a ships' real transport work and operational efficiency (energy intensity). The IMO DCS, however, relies on deadweight (DWT) capacity as a proxy to estimate transport work and operational efficiency. The result is that under DCS a ship's operational efficiency metric will not differentiate an empty ship from an efficient one and shippers (users of shipping services) will be misled to charter inefficient ships. If the EU MRV is harmonised to drop the collection of real cargo data and rely on DWT proxy only, then it will defeat the purpose of incentivising the operational efficiency of ships.

Therefore, reporting of actual cargo data must be preserved in the EU MRV when harmonizing with the IMO DCS.

## 5. Verification of reported data

The EU MRV requires reported data to be verified by third party verifiers supervised by National Accreditation Bodies (NABs) and is based on internationally agreed ISO standards and EU specific verification rules.

Under the IMO DCS system, Flag Administrations are assigned the responsibility to verify data according to their rules, taking into account IMO guidelines. There is no requirement for an independent third-party verification of the reported data under the IMO system. This gives rise to real concerns over the reliability of the compiled IMO data. 42% of global ship CO2 emissions in 2015 are estimated to belong the 6 largest ship registries classified by International Transport Worker's Federation (ITF) as *flags of convenience* (FoC)[i] due to their lax regulation and enforcement of labour, safety and environmental regulations. Many of the remaining flag administrations have worse reputations.




Flags of convenience are the least reliable system of enforcement of any regulation because the size of their tonnage is in part incentivised by lax regulation. This is already evident from the EU Thetis database where 34 out of 52 detained ships, and 31 out of 89 ships banned for access to EU ports were flagged in FoC.

Additionally, while developing the guidelines to underpin the DCS, the IMO passed up the opportunity to encourage compliance by refusing to publish details in IMO annual reports of ships that fail to report their annual emissions to their respective flag administrations. In the absence of international penalties or other enforcement tools, naming and shaming could have been the only available tool to force compliance but under pressure from FoCs and industry, the IMO chose not to do this. Therefore, any alignment of the transparency and verification provisions of the EU MRV with the IMO DCS would be to the clear detriment of the transparency and accuracy goals of the MRV regulation and should be resisted.

## 6. Administrative costs

From an administrative burden point of view, the EU MRV represents an insignificant additional operating cost for ships which cannot justify weakening the MRV. In 2016, the operational costs of an average Capesize bulker was €1.6mln/y, for VLCC €1.9mln/y (T&E estimations based on OpCost and 3rd IMO GHG study). With up to €500/y compliance costs, MRV would add less than 0.03% to OPEX of individual ships. The amount at stake is trivial compared to the benefit for ship owners and operators alone having accurate and reliable fuel burn data.

## 7. Further considerations

Both the EU MRV and IMO DCS cover only ship CO2 emissions, leaving out methane (CH4) and black carbon (BC). ICCT (2017) estimated that methane and BC accounted for up to 24% of shipping's global climate warming impact as they are much stronger climate warming agents than CO2. For this reason, any future IMO/EU CO2 reduction targets would be inaccurate and fall well short of the required ambition unless these emissions are taken into account. A lack of accurate data on these pollutants would further distort the required ambition gap. Both methane and BC emissions are expected to increase, particularly as tighter marine sulphur standards are likely to see more ships switching to LNG or use 0.5% sulphur compliant blends. The former would increase shipping's methane footprint, while some studies (IMO/PPR 4/INF.7) estimate that 0.5% sulphur fuels *could* cause higher BC emissions. In order to account for these two pollutants, the EU MRV should require ships to submit ship specific technical information that could enable estimations of these emissions, notably, engine type by individual ships (2-stroke vs. 4-stroke).

Also, in view of growing ship air pollution, MRV should be expanded to include ship NOx emissions. This would require very small additional effort from ship-owners/operators. Ships' NOx ratings and the details of the installed SCR system, if applicable, are by law indicated in their Engine International Air Pollution Prevention (EIAPP) certificates and are readily available to owners and operators. Requiring this data to be reported along with fuel consumption would enable relevant authorities to correctly estimate air pollution caused by ships, notably in major port and coastal communities and take appropriate regulatory actions.

## Further information

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## End Notes

[i] In total, ITF identifies 35 FoC: Antigua and Barbuda, Bahamas, Barbados, Belize, Bermuda (UK), Bolivia, Cambodia, Cayman Islands, Comoros, Cyprus, Equatorial Guinea, Faroe Islands (FAS), French International Ship Register (FIS), German International Ship Register (GIS), Georgia, Gibraltar (UK), Honduras, Jamaica, Lebanon, Liberia, Malta, Madeira, Marshall Islands (USA), Mauritius, Moldova, Mongolia, Myanmar, Netherlands, Antilles, North Korea, Panama, Sao Tome and Príncipe, St Vincent, Sri Lanka, Tonga, and Vanuatu.