The challenges of CII compliance – Cooperation is key

IMO's Carbon Intensity Indicator (CII) rating system for vessels is coming into force next year. It will be used to assess the efficiency with which a ship operates in terms of its CO2 emissions. The CII regulation is likely to alter the traditional division of responsibilities between owners and time charterers, and may significantly change the way vessels are operated.

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Written by Siddharth Mahajan

An initial step in the journey is to understand the challenges ahead in order for owners and charterers to work cooperatively to meet them. In this article we look at some of the key features of the CII regulation. Our accompanying article “Under the lens – BIMCO’s CII clause for time charterparties” parses the newly released clause that intends to help owners and charterers contractually navigate and collaborate on compliance with CII as an operational measure.

The CII regulation

The Carbon Intensity Indicator or CII is a rating system developed by IMO for all cargo, Ro-pax and cruise vessels above 5,000 GT whereby vessels will be rated for their operational Carbon Intensity for each calendar year, starting in 2023. Operational carbon intensity performance of different types of ships from 2019 will be used as a reference. Below are some key points of the CII regulations.

• CII Rating:
Based on a vessels carbon intensity, vessels will be given a rating between A and E, with 'E' being for vessels that are worst emitters under the CII regime. Calculations will be based on data reported by the vessel under the IMO Data Collection System (DCS), which has been in force since 2018.

• Actions after receiving rating 'D' or 'E':
A vessel that is rated 'D' for three consecutive years or 'E' for a single year, will have to update their Ship energy Efficiency Management Plan (SEEMP) Part III with a corrective action plan showing how the vessel will achieve a rating of 'C', and this will then have to be verified by the Flag State or the Classification Societies in their role as Recognised Organizations (RO). This plan will then have to be implemented onboard.

• Correction factors and voyage adjustments:
IMO has agreed to various correction factors and voyage adjustments which may be applied to the calculation of the attained CII, for example any emission necessary for the purpose of securing the safety of a ship or saving life at sea, fuel consumed in relation to STS voyages, fuel consumed for production of electrical power used for refrigerated containers or cargo cooling/re-liquefaction systems on gas carriers, fuel used in cargo heating etc. The need for further adjustments is still under discussion.

• Progressive reduction of carbon intensity:
IMO's objective is to continuously improve a vessel's operational carbon intensity. Therefore, a phased approach has been adopted whereby the carbon intensity limits will progressively reduce by 2% each year. This requires owners and managers to continuously work on improving a vessel's carbon intensity, or else her rating could degrade over time. As an example, if a 62,000 t DWT bulk carrier has a carbon intensity of 5.50 g CO
2
/t-nm for 2023, then she will be rated as 'D' for that year. Assuming no improvements or changes are made to how the ship is managed or operated in the subsequent year, then for the same carbon intensity of 5.50 g CO2/t-nm she will be rated as 'E' at the end of calendar year 2024. This is because the 'required CII' for this vessel has reduced in this two-year period.

• Ship Energy Efficiency Management Plan (SEEMP) Part III:
Vessels subject to CII regulations must develop a ship specific SEEMP Part III to include things such as, 'CII calculation methodology', 'Required CII values until 2026', 'implementation plan for achieving the required CII', and 'procedures for self-evaluation & improvement'. Vessels will already have onboard SEEMP Part I, that relates to improving energy efficiency, and Part II which focusses on procedures for monitoring and collecting fuel oil consumption data. The requirements for SEEMP Part I and Part II came into force in 2018.

- **Incentives for better performing vessels:**
IMO encourages Administrations and port authorities to provide incentives to ships rated as A or B. However, there is no guidance provided by the IMO on what form these incentives should take. We are not yet aware of any authorities introducing such incentive schemes based on CII ratings, but we do expect to see some in the future.

Factors affecting CII

To understand which factors can impact carbon intensity of a vessel, we need to look at the simplified formula for CII. It is derived from the annual efficiency ratio (AER), i.e. it is based on vessel's deadweight as opposed to the actual cargo carried. If it was the latter, then the metric would have been EEOI (Energy Efficiency Operational Indicator).

$$CII\ (gCO2/t-nm) = \frac{\text{Annual fuel consumption x CO2 emission factor}}{\text{Annual distance sailed x Deaweight or GT (depending on vessel type)}}$$

As the formula stands currently, calculation of carbon intensity is based on the consumption of fuel and its fixed carbon factor, and not on direct measurements of the emissions at the engine exhaust side. Also, there is no benefit given for carbon capture onboard. A lower numerator and/or a greater denominator can result in lower carbon intensity. Focussing on the numerator first, the following factors can have a positive impact on the CII rating for a given calendar year:

• slower speeds which will result in lower fuel consumption. Although it would also result in a marginal reduction in distance sailed annually, the fuel savings will however be greater. As such, use of concepts like just in time can have a beneficial effect on reducing emissions.

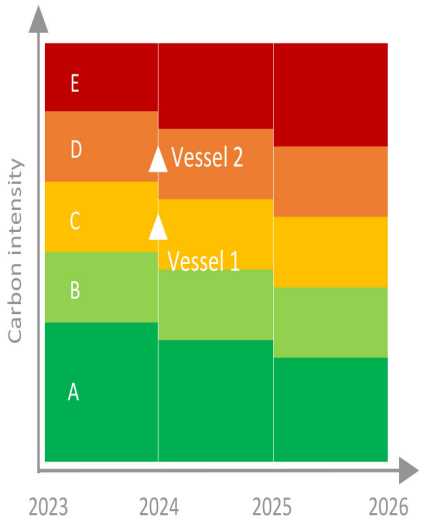
• reduced fuel consumption due to energy efficient technologies installed onboard, utilizing wind power, reducing frictional resistance through water, machinery performing at an optimum level etc., and

• using fuels with a lower carbon emission factor.

Looking at the denominator, the deadweight or GT of a vessel will be constant and hence the only variable factor is the distance sailed. Greater idling time, such as in port or anchorage can have a detrimental impact. Frequent machinery breakdowns at sea can have a similar affect. One of the consequences of having a fixed DWT or GT in the denominator is that any reduction in cargo carried and/or an increase in ballast voyages will help the vessel achieve a better CII rating (by reducing fuel consumption).

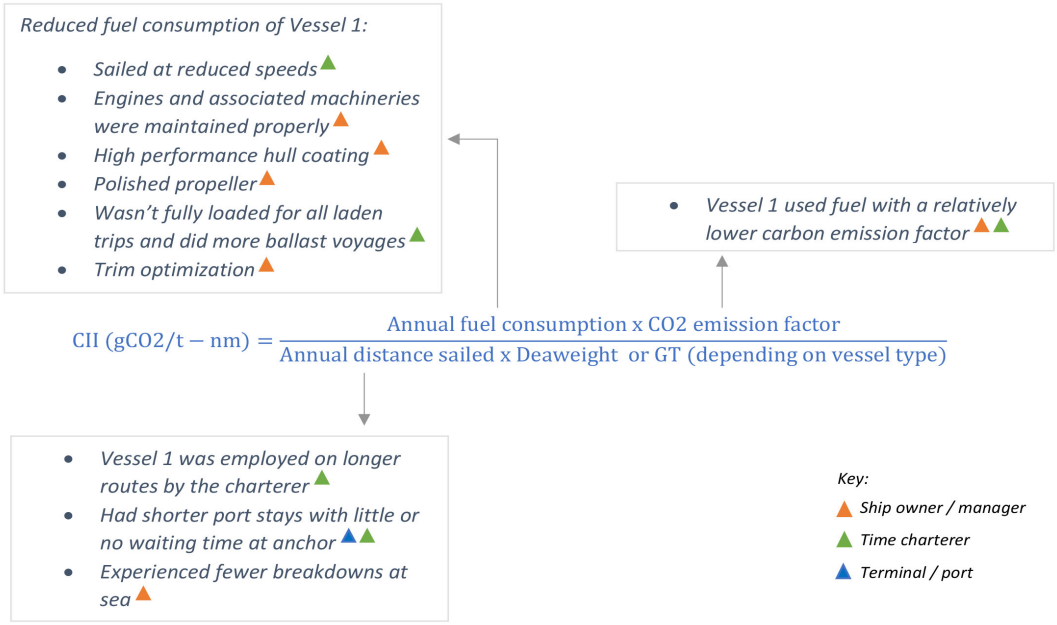
We explain this using a worked example of two sister ships, 'Vessel 1' and 'Vessel 2'. The CII calculations for these two ships are shown below.

	Vessel 1	Vessel 2
Type	Bulk carrier	Bulk carrier
Deadweight	62,000 t	62,000 t
Distance travelled	60,045 nm	53,000 nm
CO2 emissions	17,447 t	18,000 t
Attained CII	4.69	5.27
Rating for 2023	C	D



*Above graph is for illustration purposes only

As is apparent from the above example, two identical ships can have different CII ratings. 'Vessel 1' had a better rating in this case and there can be many reasons for this, some of which we mention below. For ease of simplicity, we have tried to show them in relation to the formula for CII. We have also indicated which stakeholder is more likely to have a greater control over the relevant factor impacting CII.



Important considerations

• Focus on crew:
The role of the crew should not be overlooked. They are the ones who will 'make it happen'. Support, guidance and training by the shore organization will be required in all spheres. It is
estimated
that to meet IMO's decarbonisation goals, 300,000 seafarers will need to be upskilled to manage the transition to new fuels & technologies, whereas for a 'zero carbon by 2050' scenario, the number is 800,000 seafarers.

• Continuous evaluation:
Both owners and charterers need to be aware of the vessel's carbon intensity at all times. This will require consistent continuous measurements so that the vessel is able to achieve the desired CII rating at the end of a year. For the same reason voyages will need to be evaluated for emissions before execution.

• Cooperation and transparency:
Open data transfer between owners and charterers and jointly operating the vessel in an optimum manner is the key to reducing carbon intensity and achieving a good CII rating. It is important that both owners and charterers are aligned in their actions and expectations.

• Recordkeeping of carbon intensity reduction measures taken:
This is essential for both owners and charterers to show what measures they took throughout the calendar year with respect to meeting the 'Agreed CII' rating for a vessel.

- **Balance**

: Parties will have to strike a balance between flexibility and certainty going forward and due consideration must be given during negotiations to ensure that a right balance is struck. BIMCO's recently released CII clause for time charterparties is an effort to create a contractual framework to facilitate cooperation and data sharing between the parties to meet the carbon intensity reduction goals. Gard insight on BIMCO's CII Clause can be found **here**

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