

# Digital voyage analytics to support shipping's decarbonisation

by Pelle Sommansson, *Chief Product Officer, ZeroNorth*

**At ZeroNorth, we have recently integrated a new service into our platform to provide ship operators with the voyage insights they need to analyse, forecast, and proactively strive for their Carbon Intensity Indicator (CII) goals. Here are my thoughts on why the CII solution – and digital (energy efficiency) technologies in general – will be critical for the future greening of ship operations, including the shift to climate-friendly marine fuels.**

**A**s shipping becomes increasingly influenced by charterers, shippers, and consumers seeking to meet decarbonisation targets, it is necessary for the industry to take immediate action. We must also acknowledge that pressing regulatory requirements, including the International Maritime Organization's (IMO) CII, require compliance across the global fleet. Whether this is through designing next-gen vessels, working on the structural frameworks that hold back emission reduction progress, or by implementing new solutions and technologies, there are actions that we can take today that will set us up for success in the future.

## Critical to future profitability

Introduced by the IMO at the 76<sup>th</sup> gathering of its Marine Environment Protection Committee, CII regulations will be implemented in 2023 to support the organisation's longer-term objective of reducing international shipping's carbon intensity by 40% by 2030 vs the 2008 level. It sets out mandatory requirements for all cargo and passenger (Ro-Pax and cruise) vessels above GT 5,000 that trade internationally.

The scheme results in a score (from A to E, like that found on home appliances) that indicates how efficiently a ship transports goods or passengers (measured in grams of CO<sub>2</sub> emitted per cargo-carrying capacity and nautical mile). The rating requirements will become 2% more demanding each year. By the end of 2026, there will be an 11% reduction compared to a reference line of 2019.

Shipowners and operators will be required to record their vessel data via their Ship Energy Efficiency Management Plan (SEEMP). An improvement action

plan must be submitted if a vessel is rated D or E. The reality is that many ships with a low CII rating will cease being commercially attractive. Therefore, shipping players must look beyond compliance to sustain or improve their fleets' operational efficiency or risk losing commercial viability.

The CII will be a critical operational key performance indicator from a regulatory perspective, but beyond that, it will create transparency and force efficiency. It is not an exaggeration to say that CII reporting is critical to future profitability. Doing nothing isn't an option, but accurate accounting can be highly complex and confusing. Luckily, as with many challenges the industry has had to navigate, digital technologies can be deployed to provide part of the solution. In December 2021, ZeroNorth launched a CII analysis and optimisation solution that supports owners and operators by enabling them to proactively implement plans to improve revenue and reduce emissions whilst complying with CII regulatory requirements.

## To monitor...

ZeroNorth's emissions optimisation solution is the most comprehensive CII offering on the market to date, and it fits seamlessly together with ZeroNorth's existing cloud-based voyage, vessel and bunker optimisation platform.

The new service enables operators to view recommended voyage routing options to support a vessel's CII rating goal. Because the functionality is integrated with real-time weather route and voyage optimisation, CII recommendations will be made alongside options that reduce emissions and improve revenue, ensuring that owners and operators can prioritise

maximising their competitive advantage – even while sailing.

This flexibility allows for different priorities to be set for separate voyage parts, where, for example, a vessel may need to sail at full speed for one time-critical leg of the journey. After that, reduced speed or alternative routing might be advantageous in reducing the crossing's overall CII.

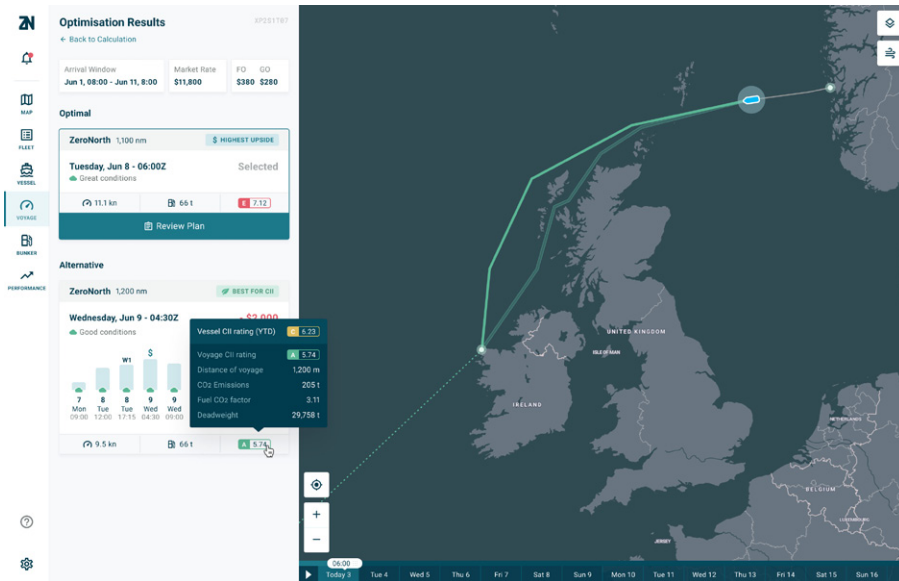
Beyond the immediate decision-making for specific voyages, historical and year-to-date CII data derived from noon reports is made available for each vessel in an easily understood numerical and graphical format. The calculations consider necessary ship factors, such as type and deadweight, to provide a CII rating for the year-to-date and year-by-year performance monitoring. The solution also generates alerts when a vessel is at risk of non-compliance.

The accumulated data is used to predict each vessel's next CII score, opening the way for ship operators to vary voyage and vessel parameters and instantaneously see what impact their choices have on future CII ratings.

## ...optimise...

By combining in-depth analysis of all the factors affecting voyage and vessel performance with sophisticated algorithms and human expertise, owners and operators will be provided with an informed decision-making platform to either sustain or strive for their vessels' CII rating goals whilst maintaining a focus on commercial performance.

They will have on-the-spot access to various options based on voyage route, vessel speed, fuel prices, and CII rating, instantly

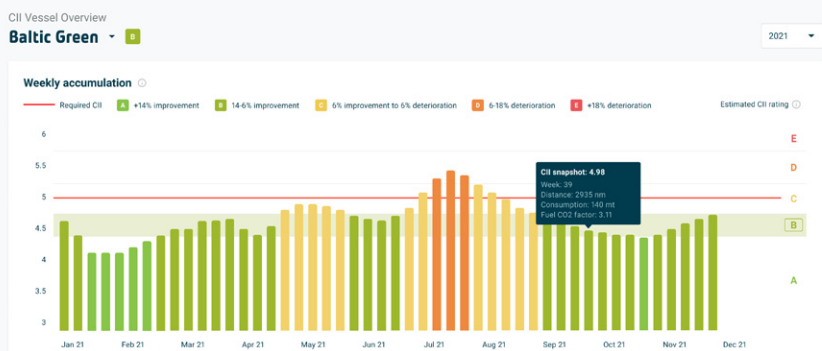


**CII Fleet Overview**

Search vessel name or IMO All vessels

Extrapolated CII ratings

Vessel name	Segment	DWT	CII rating Year to date	Vessel reports Year to date	CII number 12 months back	CII rating 2023	CII rating 2024	CII rating 2025	CII rating 2026
Blue Diamond 284702	Afra	109,200 mt	C 5.25	343	9.43	C	D	E	E
Opal North 7644321	Afra	131,971 mt	C 7.34	452	8.23	C	D	D	E
Atlas North 6533903	Handy	36,675 mt	C 11.0	101	10.63	C	D	D	D
Meyer North 8363748	City	13,467 mt	A 4.56	107	4.86	B	C	D	D
Baltic Green 7394739	Handy	29,758 mt	A 5.67	87	5.78	B	C	C	D
Endo Blue 919464	Afra	103,127 mt	A 7.23	321	7.37	A	B	E	C
Somman North 4353735	Intermediate	16,510 mt	A 7.95	75	7.89	A	A	B	B
Point Green 9282547	Intermediate	19,286 mt	A 7.32	219	6.78	A	A	B	B



Photos: ZeroNorth

seeing the results of their choices through simulation, instead of waiting for the voyage to be underway and historical data gathered.

These functionalities enable operators and charterers to agree on a course of action before signing contracts. Balancing CII requirements while meeting commercial expectations of charterers – not to mention making the most of the market conditions – is not easy. Meanwhile, masters are ultimately responsible for the vessels’ safety and actual sailing, so there is a requirement for a space that enables collaboration and joint decision-making. It is one of the pillars that the ZeroNorth platform has been designed around.

A single, comprehensive intelligence platform is important because higher-quality data from noon reports and onboard sensors improve ship performance and voyage optimisation. This, in turn, drives better CII reporting and analytics, again enhancing vessel optimisation. Without system integration and powerful data analysis, progress would be impractically slow.

...and lead

ZeroNorth continues to build functionality into the system and incorporate suggestions from shipowners and operators. Although decarbonising shipping is a large and complex task, even daunting, the urgency to act immediately cannot be ignored.

Owners and operators need to find cost-efficient solutions right now to fund the green transition since future low-to-zero emission marine fuels are likely to be between two and eight times more expensive than what goes in the tank today. Putting it vividly, every dollar we save today in efficiency gains is worth \$2 to \$8 in the near future.

It’s nothing less than inspiring to realise that the money saved today via digital solutions can pave the future decarbonisation pathway for our sector.



Born from Maersk Tankers, ZeroNorth was founded to change the shipping industry through digitalisation. Working alongside our customers and partners, we truly believe that we can support shipping companies worldwide to optimise their business while reducing shipping climate footprint. This is what empowers us, a team made up of some of the most creative and strategic minds in shipping, with over 90 years of experience in the industry. Set a course for [zeronorth.com](https://zeronorth.com) to discover more.