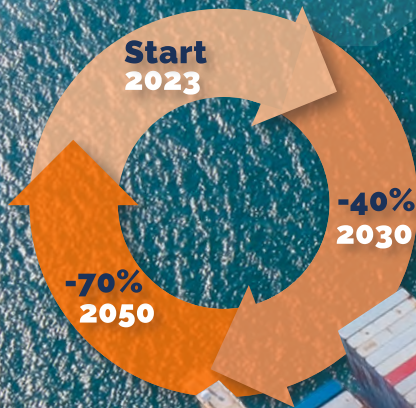


WHITEPAPER

# CII & EEXI Regulations

The impact on your fleet



**IMPOSED DRASTIC CARBON  
EMISSION REDUCTION**

*Including rules, guidelines  
and deadlines*

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Colophon | Whitepaper CII & EEXI

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# Reduction plan

As the impact of climate change becomes more and more visible, the maritime industry is adapting its rules and regulations to pursue the reduction of current greenhouse gas (GHG) emissions. With the ambition to reduce the 2008 produced carbon emissions by 40% by 2030 and 70% by 2050, the International Maritime Organization (IMO) has created an ambitious short-term reduction plan. This plan consists of new sets of regulations aiming to increase energy efficiency of ships. The Carbon Intensity Indicator (CII) and the Energy Efficiency eXisting Ship Index (EEXI) are parts of this IMO reduction plan.

The objective of this whitepaper is to provide you, the vessel owner, with a clear overview of the implications as a result of the new rules and regulations. Saltwater can assist you in finding appropriate technical or operational solutions that will help you achieve a rating that complies with the criteria. The available solutions that impact your CII and/or EEXI rating can be combined and optimized to fit your budget and timeframe.

**Both regulations came into effect January 2023!**

## CII

### Operational index

The CII regulation measures the operational efficiency index of ships and applies to all cargo, RoPax and cruise ships over 5000 GT.



## EEXI

### Technical index

The EEXI regulation is a measurement of the energy efficiency of vessels and can be described as a technical index. The EEXI is directly related to the technical specifications of the vessel. This regulation is applicable for vessels of 400 GT and over.

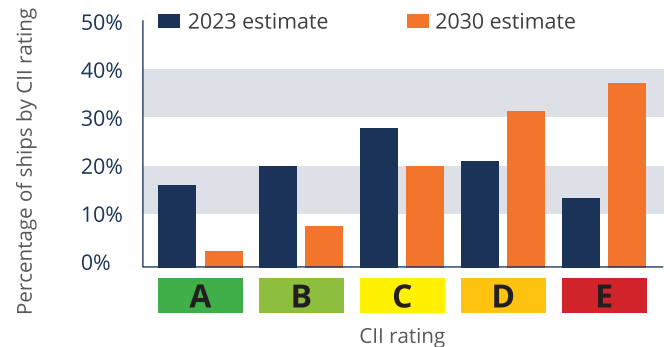


# Ambitious or impossible?

## CII

### Operational index

The CII scale range is from A to E, best to worst, and increases in strictness year by year. To get an idea of how many ships will be subject to change under these new regulations, an international class society has executed an investigation on existing fleets. A total of 70% of the existing tanker fleet will receive a D or E rating if no carbon emissions-reducing solutions are implemented by 2030. Adjustments to the vessel will be required if your vessel rates D for 3 consecutive years or rating E is reached. For the CII regulation a step-by-step process explanation is displayed below.



Tanker fleet CII ratings (2019)

Unlike the EEXI, the CII value is required to be calculated on a yearly basis. This is due to the fact that the CII index of the vessel is subject to your annual operational data.

This process consists of calculating your current CII rating and thus compliance status. Based on your annual GHG emissions in relation to your transported cargo or executed works, correction factors have been developed to ensure the CII rating is aimed at your specific vessel type.



## EEXI

### Technical index

As a sister regulation to the already existing EEDI (new vessels), IMO introduced the EEXI (existing vessels). In terms of content, the EEXI is about the carbon emissions per cargo tonnage and nautical mile as associated with the vessel. IMO has provided an equation that provides a theoretical approach to determine the carbon emissions per cargo tonnage and nautical miles. IMO defined an index level to which your vessel must confirm. This required level varies between ship types and becomes stricter every five years. This regulation entered into force in January 2023. For a process-oriented overview the following steps are required to be executed.

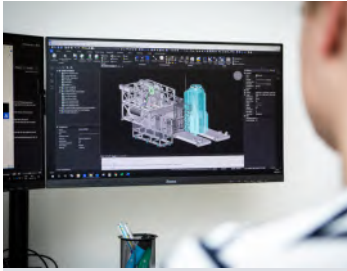
**“Your ship can continue to sail with a non-compliant CII rating (if a plan for compliancy exists), but not with a non-compliant EEXI rating.”**



# Keep your fleet in shape

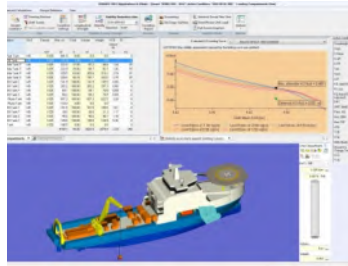
In order to comply with the mentioned regulations and keep your fleet in shape, different strategies are available to reduce carbon emissions. These strategies can only be described in general terms and it must be clarified that an individual evaluation is required for each case. Due to the differences in vessel design and operational characteristics, each vessel requires its own approach. The following four areas are available for strategic decision-making.

## Mechanical engineering



An efficiency audit on the current machinery on board the vessel can be executed to determine possible areas of improvement that suit your budget and timeframe. Realistically speaking, this area will impact the index ratings the most.

## Naval architecture



Depending on the state of your vessel, potential engineering possibilities are investigated to improve the vessel's hydrodynamic behavior. The different solutions vary greatly in laboring costs, implementation time and impact on CII and/or EEXI index.

## Operational profile



An investigation of the existing operational profile can be conducted. This contains an investigation of the utilization of the current vessel and determines possible pathways and technologies to improve in this area.

## Power source



An alternative fuel source can be chosen to significantly improve your CII and/or EEXI index. The available solutions require significant financial investment but potentially solve emission-related regulations all at once. A hybrid propulsion source could potentially be a more cost-efficient solution.

## What happens if my vessel does not comply?

Depending on your compliance status with either of the rules, you (the vessel owner) must have a Ship Energy Efficiency Management Plan (SEEMP) indicating your compliance status by your next general survey.

A SEEMP describes a roadmap with all necessary technical and/or operational modifications to the vessel to comply with the new set of regulations.





## SEEMP

As stated in the previous chapter, if the conditions of the CII and/or EEXI are not met, a SEEMP is required to contain the vessel's improvement roadmap. To define the roadmap, numerous design solutions are available to improve the energy efficiency on board the vessel. The available design solutions can be divided into operational and technical measurements with each their respective impact on implementation time, laboring costs and impact on regulations. Saltwater can guide you through this process and provide you with a SEEMP, developing a financially and technically attractive approach.



Saltwater splits the SEEMP into two phases. The first phase consists of developing a future-proof roadmap to define a modification plan that is in compliance with the new regulations. Based on the vessel, different short-medium- or long-term emission-reducing solutions will be discussed to determine a combination that fits your needs. The second phase consists of developing a logistical strategy for planning the required operational and/or technical modifications to the vessel.

## Support

As mentioned, a compliance check is required to determine the status of your vessel related to the new set of rules. Based on the outcome, Saltwater can assist you in finding appropriate technical or operational solutions that will help you achieve a rating that complies with the criteria. The available design solutions that impact your CII and/or EEXI rating can be combined and optimized to fit your budget and timeframe.

## Our added value

- Saltwater provides customized engineering solutions that maximize impact on your attained CII and/or EEXI rating. Understanding your challenges enables us to deliver practical, quality products and clever solutions. Our key to success lies in putting your needs at center stage.
- Saltwater has a large network of experts who take care of the practical implementation of the various sub-solutions.



Contact us

Are you facing a challenge?  
Get in touch with one  
of our consultants

# Terminology

<b>CII</b>	Carbon Intensity Indicator
<b>EEXI</b>	Energy Efficiency eXisting ship Index
<b>EEDI</b>	Energy Efficiency Design Index
<b>GHG</b>	Green House Gasses
<b>IMO</b>	International Maritime Organization
<b>SEEMP</b>	Ship Energy Efficiency Management Plan

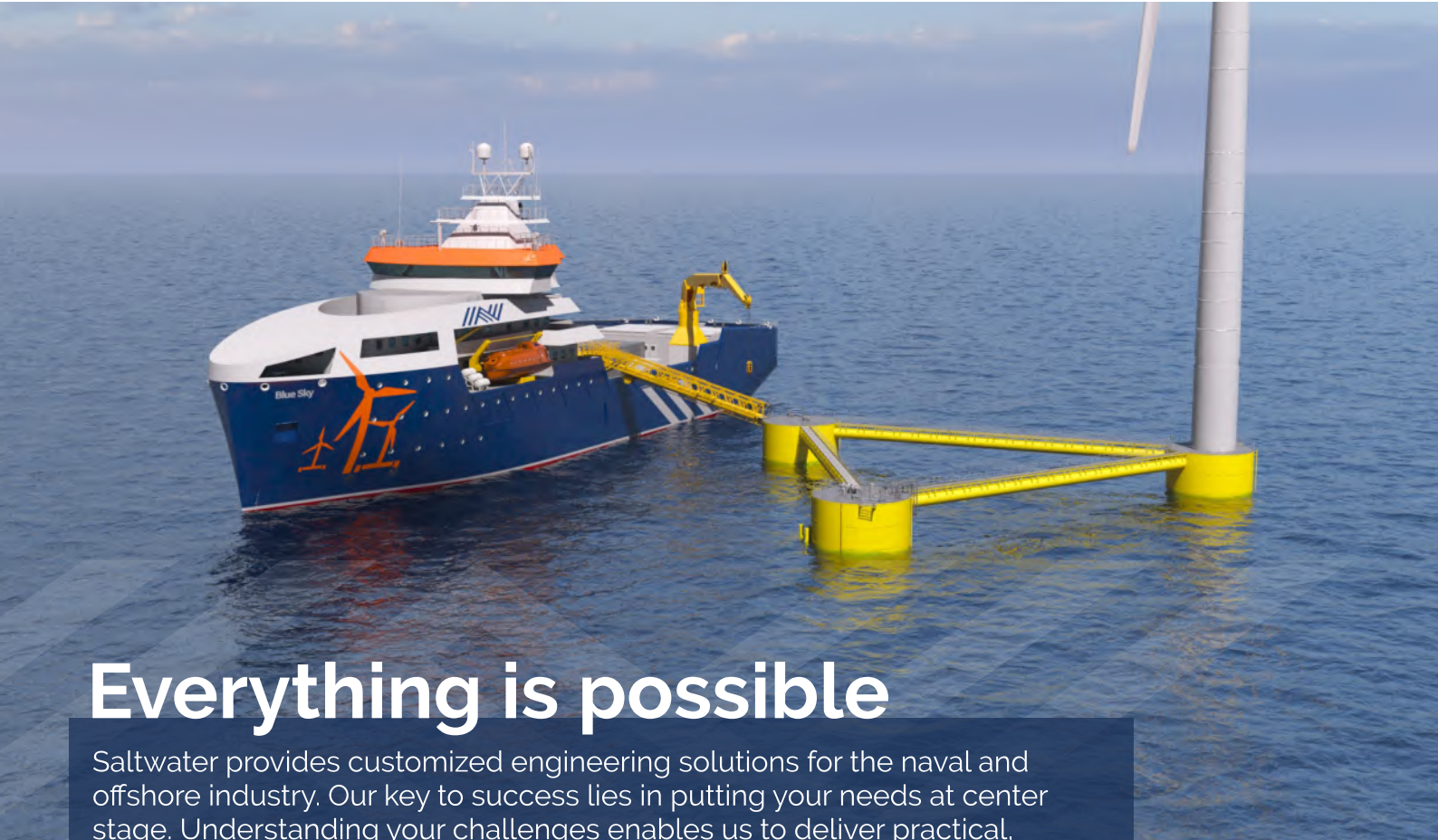


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More questions?  
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and visit our FAQ page



# About us



## Everything is possible

Saltwater provides customized engineering solutions for the naval and offshore industry. Our key to success lies in putting your needs at center stage. Understanding your challenges enables us to deliver practical, quality products and clever solutions and making everything possible.

### Mission

Our mission at Saltwater is to engineer and develop maritime solutions that reduce the environmental impact and support a low carbon footprint. We are committed to provide innovative and efficient engineering services that meet the needs of our clients while guaranteeing safety and quality.

### Vision

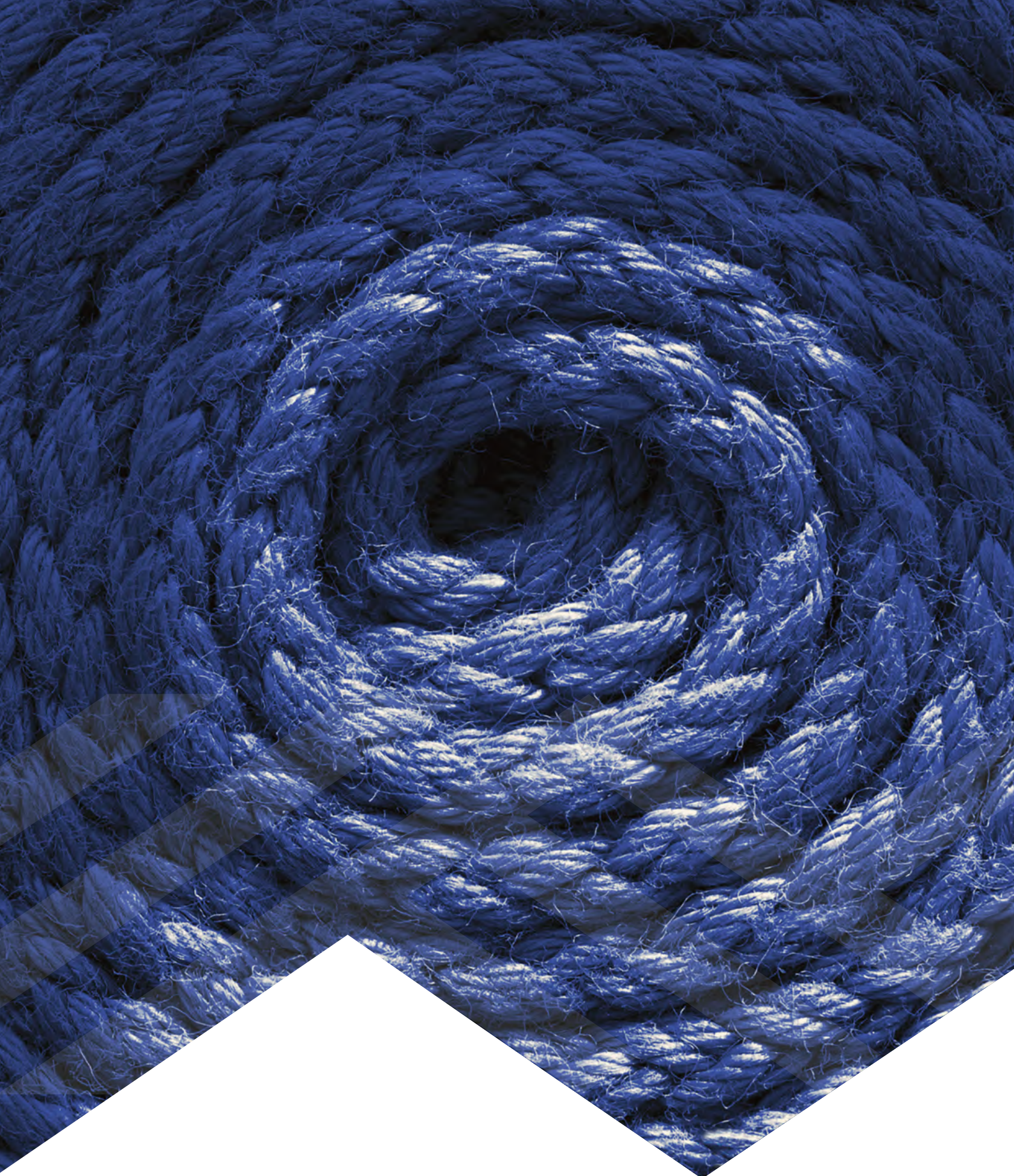
At Saltwater, our vision is to be a leading force in the maritime

engineering industry, striving for positive change through socially responsible practices. We envision a future where our engineering solutions help to create a healthier and more sustainable world. We are committed to ship conversions and new vessel designs, encouraging a culture of young innovators and collaborating with our partners and clients to achieve our shared goals.

Sander Broekmeulen - CEO







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Custom naval engineering solutions

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