

Introduction and Overview of IMO Energy Efficiency Work

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The Introduction

When was the need for an energy efficiency framework introduced to the IMO?

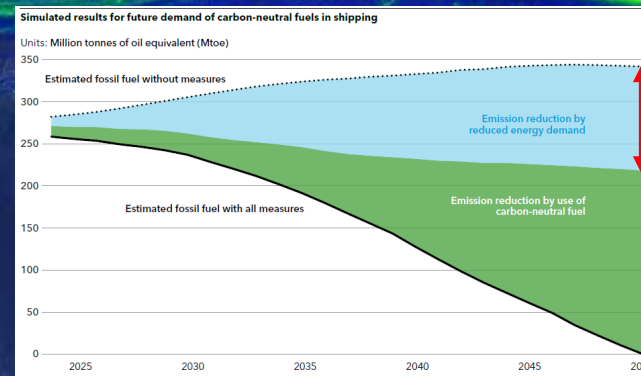
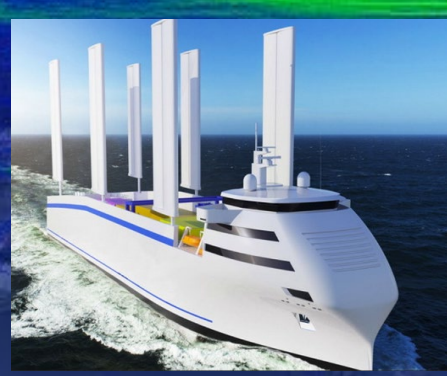
1. In the *1st IMO GHG Study* (31 March 2000) reported to MEPC 45 it is recommended to «*Start working on how to design emission standards for new and possibly also for existing vessels*».
2. Resolution A.963(23) (5 Dec 2003) IMO POLICIES AND PRACTICES RELATED TO THE REDUCTION OF GREENHOUSE GAS EMISSIONS FROM SHIPS.
“*URGES the Marine Environment Protection Committee to identify and develop the mechanism or mechanisms needed to achieve the limitation or reduction of GHG emissions from international shipping and, in doing so, to give priority to:*
 - (a) the establishment of a GHG emission baseline;*
 - (b) the development of a methodology to describe the GHG efficiency of a ship in terms of a GHG emission index for that ship. In developing the methodology for the GHG emission indexing scheme, the MEPC should recognize that CO₂ is the main greenhouse gas emitted by ships;*
 - (c) the development of Guidelines by which the GHG emission indexing scheme may be applied in practice. The Guidelines are to address issues such as verification;*
 - (d) the evaluation of technical, operational and market-based solutions;*”



The Outcome

$$\frac{\left(\prod_{j=1}^n f_j \right) \left(\sum_{i=1}^{n_{ME}} P_{ME(i)} \cdot C_{FME(i)} \cdot SFC_{ME(i)} \right) + (P_{AE} \cdot C_{FAE} \cdot SFC_{AE} *) + \left(\left(\prod_{j=1}^n f_j \cdot \sum_{i=1}^{n_{PTI}} P_{PTI(i)} - \sum_{i=1}^{n_{eff}} f_{eff(i)} \cdot P_{AE_{eff(i)}} \right) C_{FAE} \cdot SFC_{AE} \right) - \left(\sum_{i=1}^{n_{eff}} f_{eff(i)} \cdot P_{eff(i)} \cdot C_{FME} \cdot SFC_{ME} ** \right)}{f_i \cdot f_c \cdot f_l \cdot Capacity \cdot f_w \cdot V_{ref} \cdot f_m}$$

.....or perhaps a detailed presentation of the formula for calculation the attained Energy Efficiency Design Index (EEDI) is not needed?



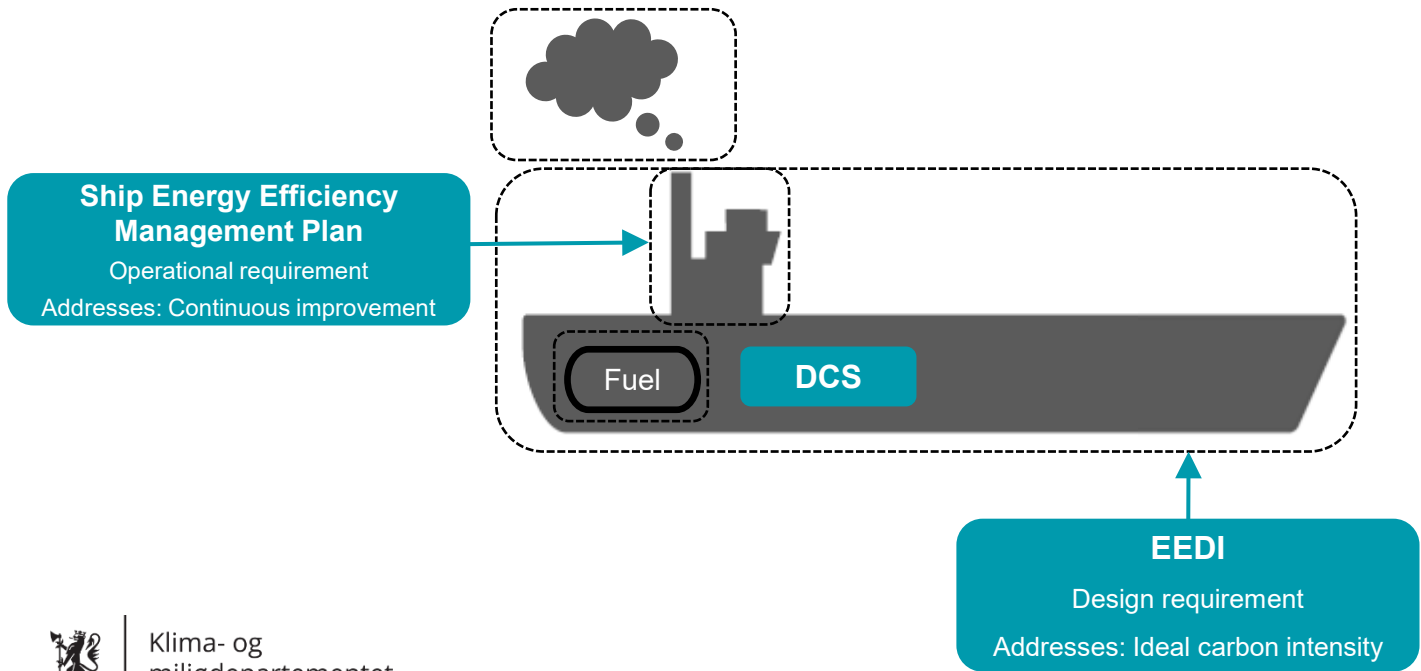
WHEN TRUST MATTERS

Energy Transition Outlook 2023

MARITIME FORECAST TO 2050

A deep dive into shipping's decarbonization journey

Energy efficiency requirements

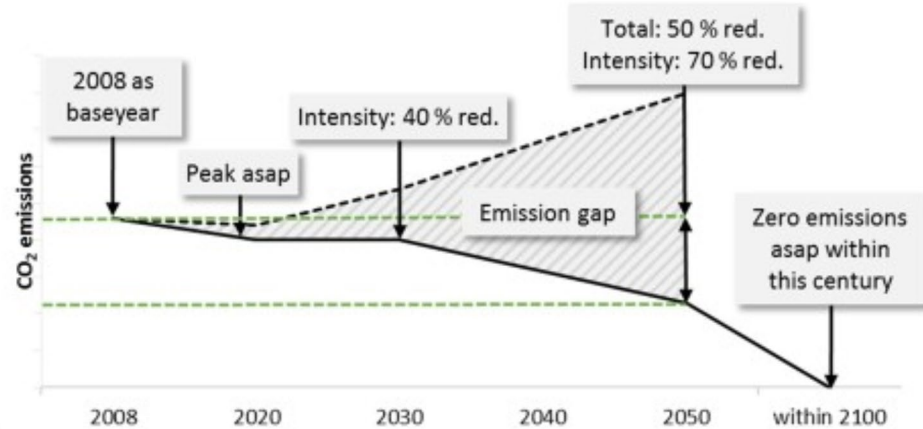


The Gamechanger

The Initial IMO Strategy on Reduction of GHG Emissions from Ships
Adopted 13 April 2018



Initial IMO Strategy on reduction of GHG emissions:
Vision and ambitions

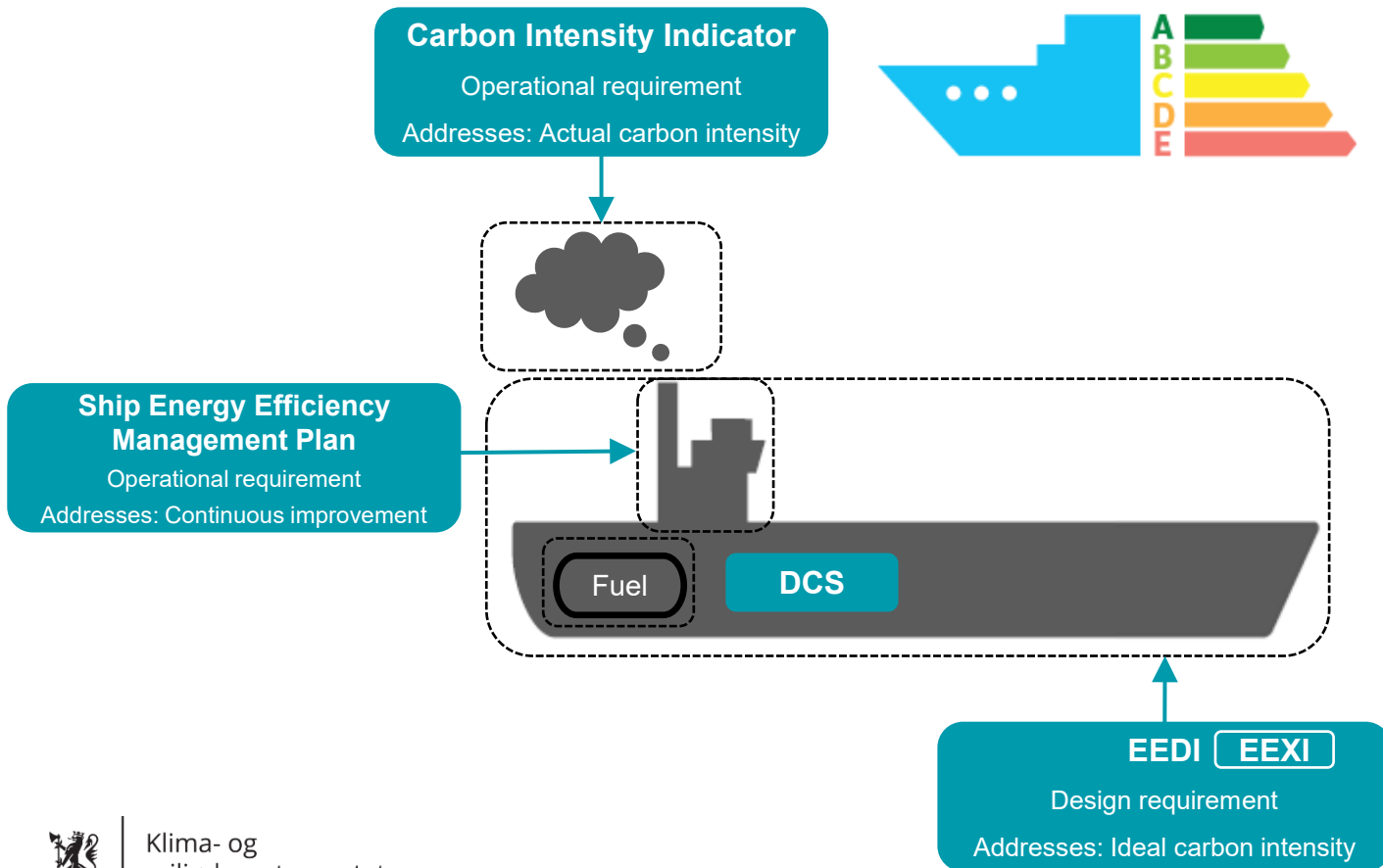


"We stand here at one of the most historic moments in IMO"
IMO Secretary General - Kitack Lim

"A major step forward in global action to combat climate Change"
UN Secretary General - António Guterres

Energy efficiency requirements










Implications



IMO STRATEGY ON REDUCTION OF GHG EMISSIONS FROM SHIPS



NEW REQUIREMENTS UNDER MARPOL ANNEX VI ADOPTED BY GOVERNMENTS

New ships only EEDI	All ships EEI	All ships CII
<p>IMPROVED HULL DESIGN </p> <p>WASTE HEAT RECOVERY </p> <p>REDUCED ELECTRIC CONSUMPTION </p> <p>etc.</p>	<p>POWER LIMITATION </p> <p>WIND ASSISTANCE </p> <p>PROPELLER OPTIMIZATION </p> <p>etc.</p>	<p>SPEED OPTIMIZATION </p> <p>BIOFOULING MANAGEMENT </p> <p>ALTERNATIVE FUELS </p> <p>etc.</p>
EXAMPLES OF SOLUTIONS FOR COMPLIANCE		



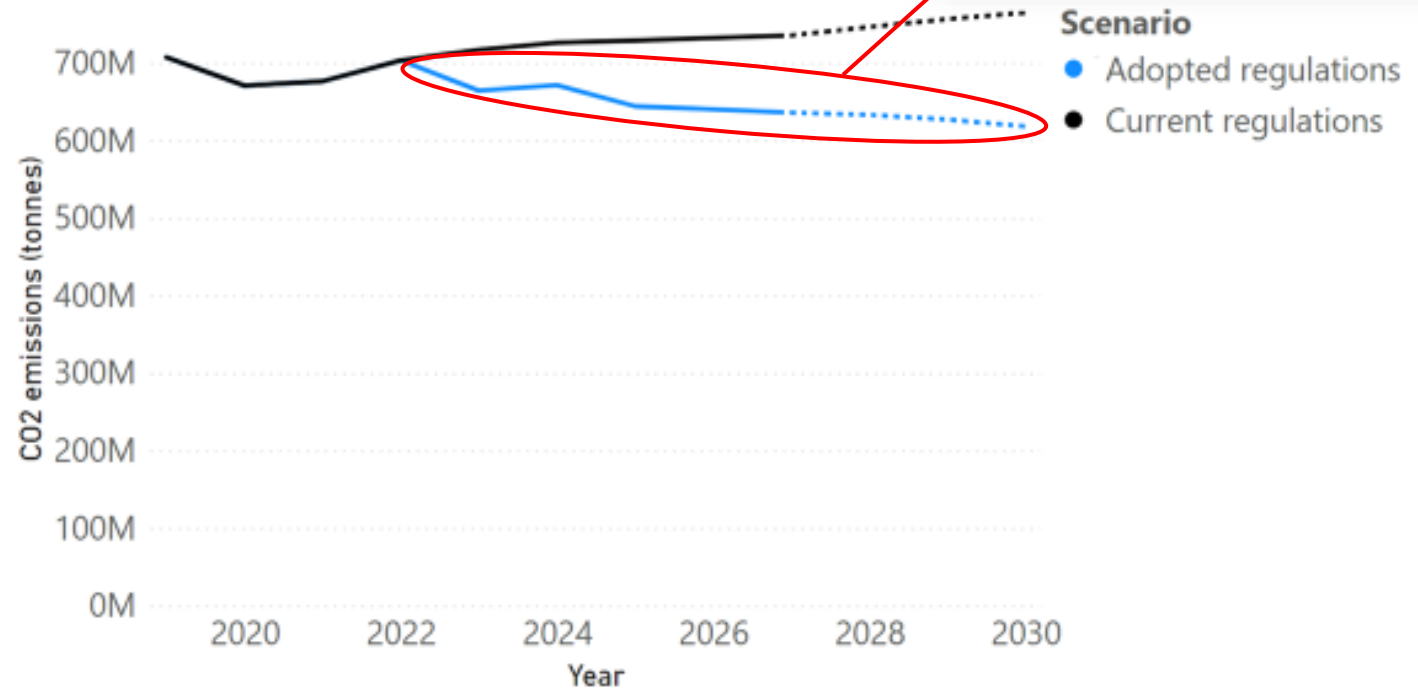
«Short-Term GHG-measures» adopted

17 June 2021

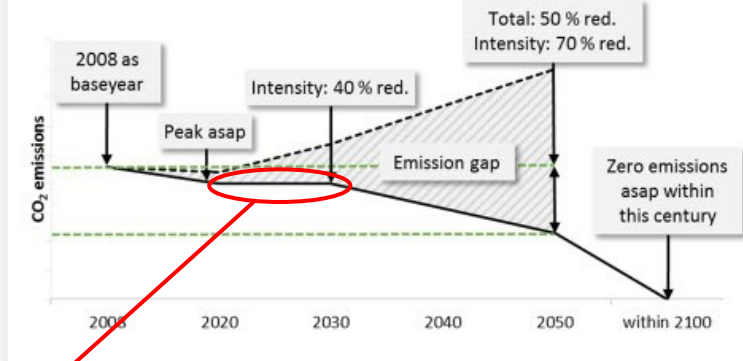
**Further shipping
GHG emission
reduction
measures adopted**

Will enter into force in
November 2022

CO₂ emissions

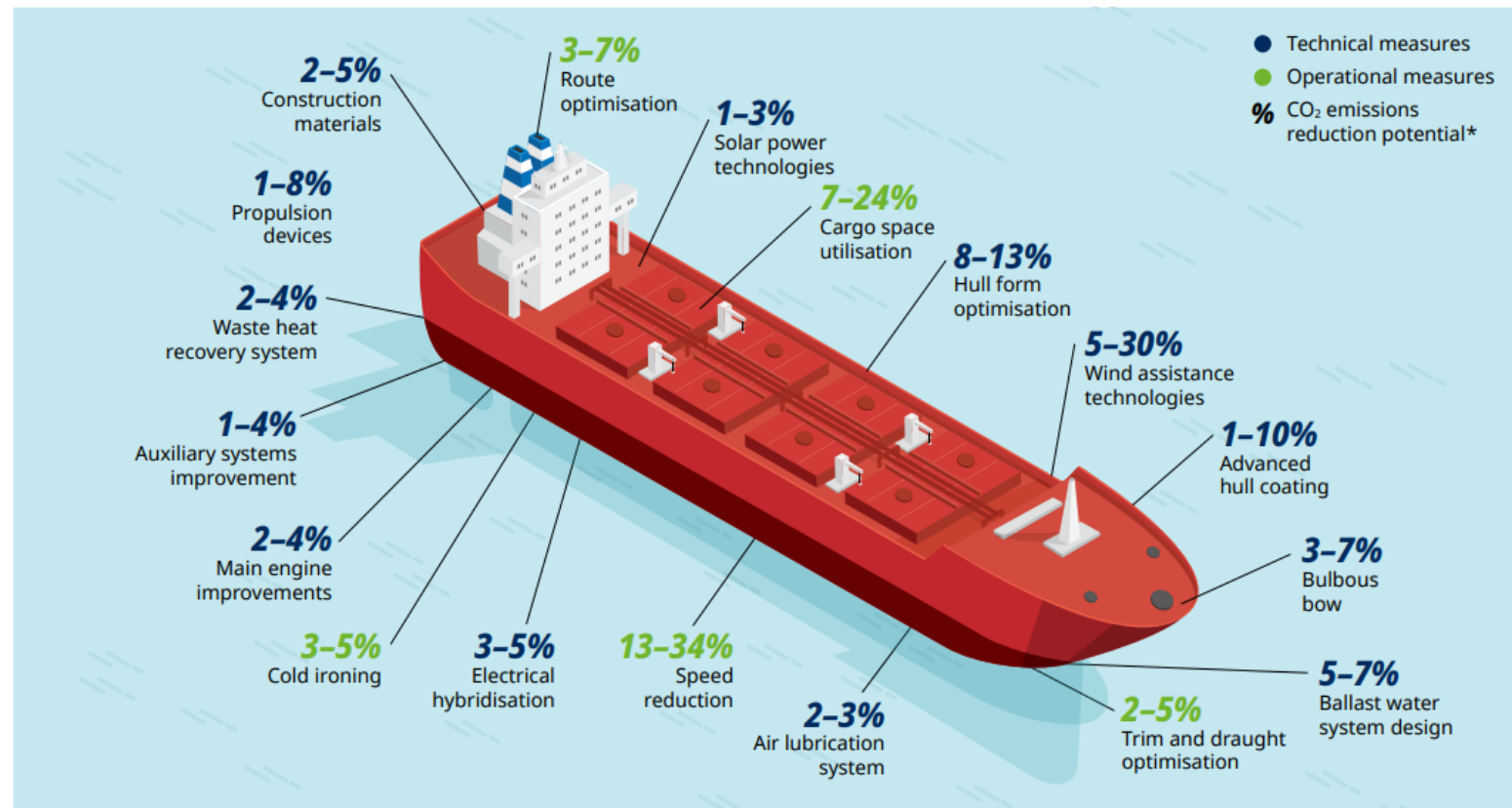


Initial IMO Strategy on reduction of GHG emissions:
Vision and ambitions



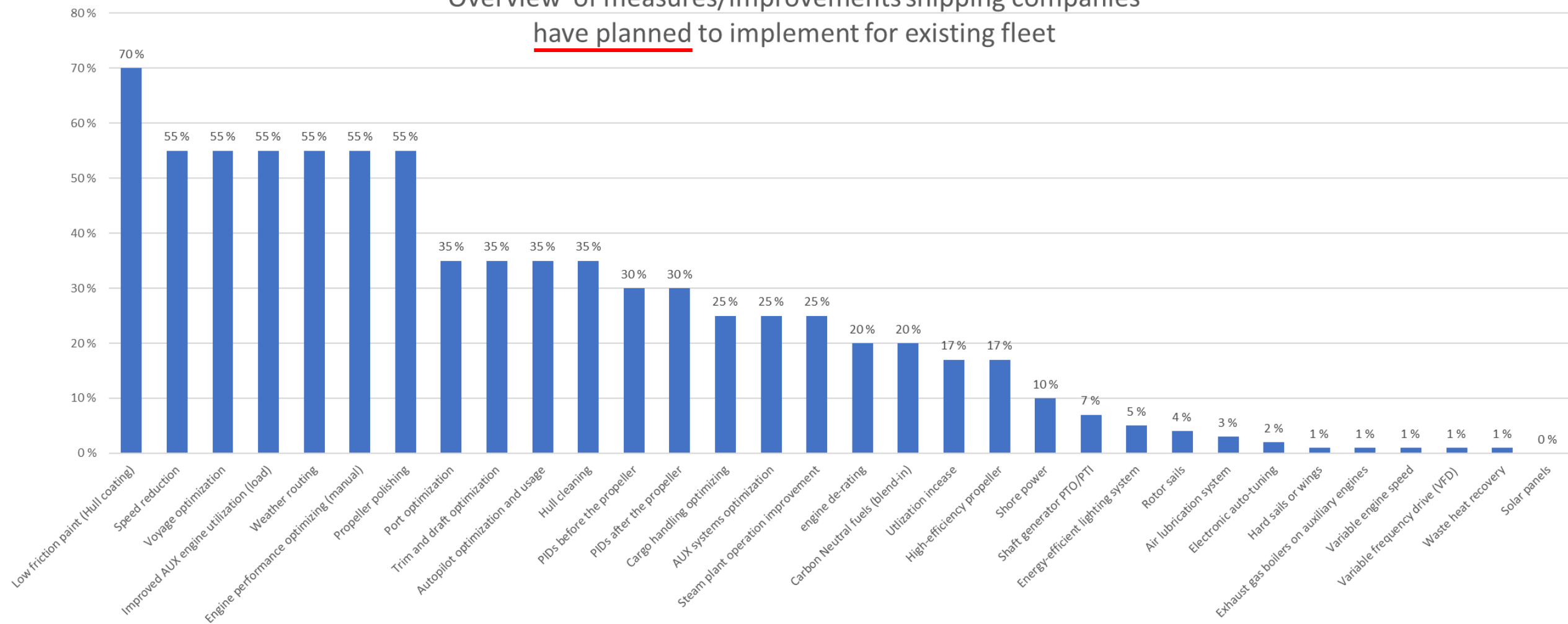
What is the energy efficiency potential?

Figure 2: Short-term energy efficiency solutions



*Values associated with efficiency improvement measures are indicative of a typical ship operation and are not necessarily cumulative, due to technical incompatibilities
Source: UMAS

Overview of measures/improvements shipping companies have planned to implement for existing fleet

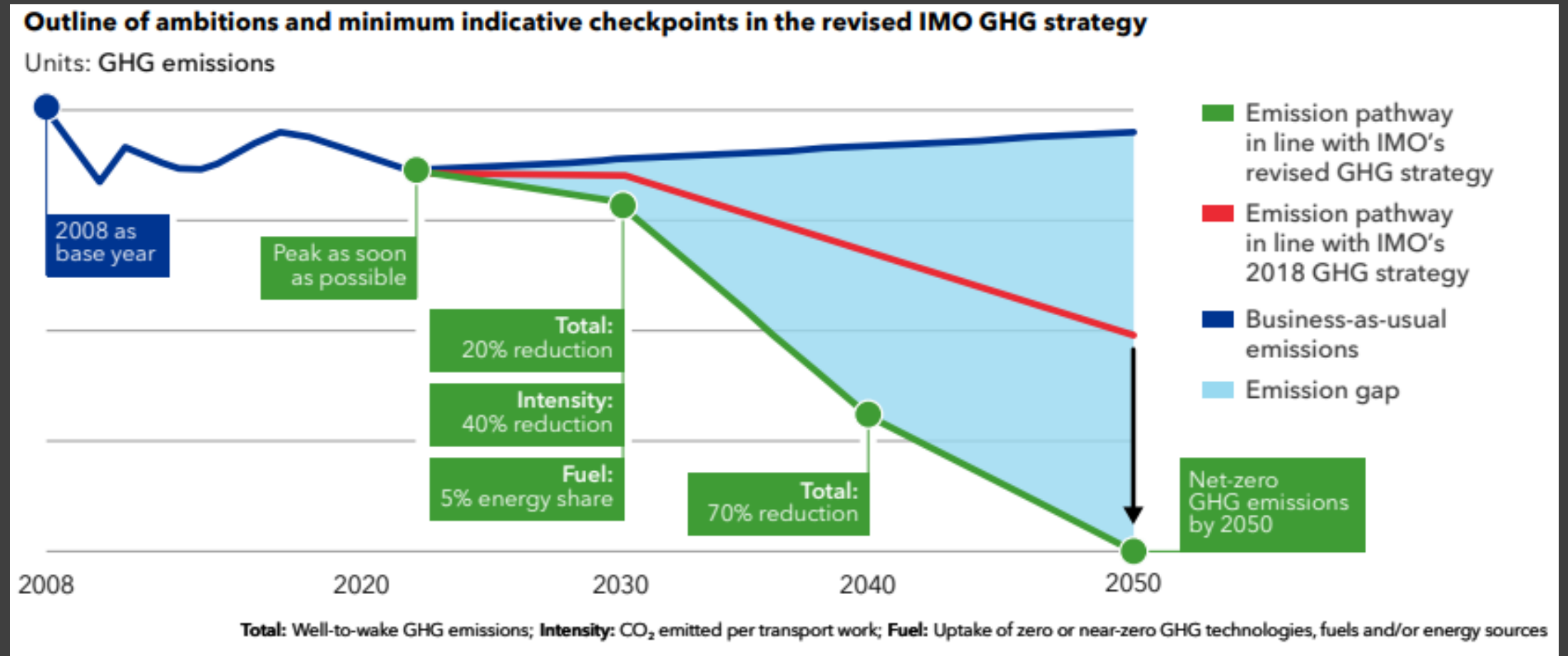


Notes:

- Numbers are based on more than 1000 plans for all vessel types relevant to the IMO CII framework
- Measures was planned implemented over the remaining lifetime of the vessels
- Numbers for plans made prior to MEPC 80 are included
- Segment specific measures are not included
- Measures for New Builds are not included (only existing vessels)
- For operational measures the numbers indicate increased focus/improvement (some actions may already be initiated)



MEPC 80 adopted the 2023 IMO GHG Strategy



MEPC 80 agreed also a review plan for the Short-term measure (EEXI and CII)

Content

1. effectiveness of the short-term measure in reducing the carbon intensity of international shipping;
2. experiences with enforcement of the short-term measure by flag and port States, including the review of (plans of) corrective actions, and the use of incentives by relevant stakeholders;
3. data needs and need for enhancement of the ship fuel oil consumption data collection system (IMO DCS);
4. impacts on States;
5. revision of the Z factor and CIIR values as set out in the CII guidelines G3 and G2 to reduce the carbon intensity of international shipping in accordance with regulation 20 of MARPOL Annex VI;
6. consideration on further amendment to the CII metrics, as set out in the CII guidelines G1;
7. consideration of further amendments to the correction factors and voyage adjustments for CII (Guidelines G5);
8. application of the LCA Guidelines; and
9. any consequential amendments to existing instruments.

Timeline

1. Data gathering stage: from MEPC 80 to MEPC 82 (autumn 2024);
2. Data analysis stage: working group at MEPC 82 to be continued by a correspondence group; and
3. Convention and Guidelines review stage: an intersessional working group between MEPC 82 and MEPC 83 (spring 2025) as well as a working group at MEPC 83.





All need to come on board



Global Industry Alliance
LOW CARBON SHIPPING



ENERGY EFFICIENCY EXISTING SHIP INDEX (EEXI)

1. An Introduction to EEXI



Watch the videos!



CII - An Introduction to CII



Global Industry Alliance
LOW CARBON SHIPPING



CARBON INTENSITY INDICATOR (CII)

1. An Introduction to CII



www.greenvoyage.com



Klima- og
miljødepartementet

A scenic view of a rocky coastline. In the foreground, several large, rounded rocks are partially submerged in the water, covered in green moss. The water is a deep blue-grey color. In the background, the ocean extends to the horizon under a sky filled with soft, white clouds. A small white wave is visible breaking against a rock in the distance. The overall atmosphere is calm and natural.

*The IMO energy efficiency framework will be further improved.
Thank you for your attention!*