IMO regulations supporting innovation: MARPOL Annex VI and the IMO Initial GHG Strategy

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Reducing shipping’s carbon intensity is possible

Towards more energy efficient shipping
Since 2009, growth in CO₂ emissions from maritime transport has been decoupled from the continuous increase in seaborne trade volume.

Shipping’s total share of global emissions was 2.89% in 2018

Source: Fourth IMO GHG Study 2020
MARPOL Annex VI: Defining binding regulations aimed at reducing air pollution from ships

- International Convention for the Prevention of Pollution from Ships (MARPOL) adopted in 1973

- Annex VI: additional protocol to the Convention adopted in 1997

- ratified by 105 States - 97% of world tonnage

- contains **binding requirements** which are **enforced globally** by flag States and port States
Addressing climate change: IMO action toward phasing out GHG emissions from shipping as soon as possible in this century

Committee outputs

Energy efficiency regulations for ships: EEDI and SEEMP
DCS regulations
Initial IMO Strategy on reduction of GHG emissions from ships
Short-term measure: EEXI, CII
Revision of the Initial IMO Strategy


Implementation

3rd IMO GHG Study
Fuel consumption report to DCS
4th IMO GHG Study
EEXI survey

EEDI Phase 1
EEDI Phase 2
EEDI Phase 3 for certain ship types
EEDI phase 3 for remaining ship types

35% reduction of the total annual GHG
50% reduction of the total annual GHG
70% reduction of CO₂ per transport work
80% reduction of CO₂ per transport work

See: https://www.imo.org/en/MediaCentre/HotTopics/Pages/Cutting-GHG-emissions.aspx
GHG reduction: Over 10-years of mandatory IMO energy-efficiency requirements in MARPOL Annex VI

**Ship Energy Efficiency Management Plan (SEEMP)**
Since 2013: Each ship shall have a **ship-specific SEEMP** on board

**Energy Efficiency Design Index (EEDI)**
Since 2015: Gradually **more stringent energy efficiency performance** of **new build ships** under subsequent EEDI phases

**IMO’s Fuel Consumption Data Collection System (DCS)**
Since 2019: Ships over 5,000 gt to report **annual fuel consumption data** to their Administration; forwarded to IMO

**2021**: 109 Administrations - **28,171 ships** - 212 million tonnes of fuel
Ship Energy Efficiency Management Plan (SEEMP)

A framework to develop best practice and energy efficient operations

- On-board management tool
- Ship and fleet performance monitoring, using e.g EEOI
- Expected to catalyze uptake of operational Energy Efficiency Measures
IMO Data Collection System (DCS)

- Fuel consumption data informs IMO’s regulatory discussions on reducing carbon intensity of international shipping
- Annual report to MEPC made by the IMO Secretariat (see document MEPC 79/6/1)
- In 2021: 212 million tonnes of fuel (on a quantity basis) reported for 28,171 ships
Initial IMO Strategy on Reduction of GHG emissions from ships (2018)

adopted
IMO’s 2018 strategic objectives in reducing GHG emissions from international shipping

**Vision**

- To phase out GHG emissions from international shipping as soon as possible in this century

**Levels of ambitions**

- Further strengthen energy efficiency design requirements for ships
- **2030**: reduce carbon intensity by at least 40%, compared to 2008
- **2050**: reduce total GHG emissions by at least 50%, compared to 2008

**Other key elements**

- Impacts on States of candidate GHG reduction measures to be assessed before adoption
- Initial Strategy to be revised by 2023
Implementing the Initial IMO GHG Strategy: Promoting global action across the maritime value chain

Cooperation between ports and the shipping sector to reduce GHG emissions (Resolution MEPC.366(79))

- Promote global cooperation between ports and shipping: bunkering alternative fuels, onshore power supply, Just-in-Time arrival, port incentive schemes, etc.

National Action Plans to address GHG emissions from ships (Resolution MEPC.367(79))

- Develop cross-sectoral national policies and strategies to address GHG emissions from international shipping
Implementing the Initial IMO GHG Strategy: leaving no one behind

IMO multi-donor GHG Trust Fund

- Established in 2019 to support development/consideration of IMO GHG instruments and their implementation

Voluntary Multi-Donor Trust Fund (VMDTF) for financial support to attend IMO GHG meetings

- Financial assistance to representatives of developing countries in attending MEPC and ISWG-GHG meetings

Marine Environment Division
IMO projects and cooperation supporting States in complying with the EEXI/CII requirements

The ship hull biofouling penalty

Biofouling  Hull Roughness  Increased fuel consumption  Increased GHG emissions

Growth on the ship's hull  Increases hydrodynamic friction of the ship  More fuel is needed to move the ship  Environmental impact from increased fuel

Energy Efficiency Technologies Information Portal

This Energy Efficiency Technologies Information Portal provides users access to energy efficiency technology information in a user-friendly format and highlights the wide spectrum of ways to potentially reduce ship fuel consumption. It builds on the work undertaken by the Ad hoc Expert Working Group on Facilitation of Transfer of Technology for Ships (HLCG) and supports implementation of resolution MEPC.328(70) on Promotion of technical cooperation and transfer of technology relating to the improvement of energy efficiency of ships.

Growth in information on energy efficiency measures can be found under each technology group as appropriate.

-known technologies that have been applied with varying degrees of success for different vessel types.

The savings potential and associated costs for each measure depends on the type of the vessel and the operation of the vessel. The savings potential and costs are therefore indicated with a range.

Some measures are only applicable to some vessel types and this is also indicated in the description of the measure.

Propeller Boss Cap Fins

The Maritime Technology Cooperation Centre (MTCC) in the Pacific is funding the installation of a propeller improvement device known as Propeller Boss Cap Fins (PBCF) on a Fiji government ship. PBCF can enhance propeller efficiency, thus resulting in reduced fuel consumption and associated GHG emissions.

Coordinated Actions to Reduce Emissions from Shipping
Implementing the Initial GHG Strategy: IMO short-term GHG reduction measure

New regulations in MARPOL Annex VI on ‘EEXI’ and ‘CII’

- Designed to attain 2030 target: reduce 40% **carbon intensity of global fleet**
- Each ship to achieve an **annually carbon intensity reduction factor**
- Based on annual fuel consumption, ships are **rated** against peers (ship type/size)
- Enhance the involvement of the maritime value chain in the energy efficiency performance of a ship
- **Entry-into-force November 2022** – review/strengthening by 2026
- **First annual CII rating (A – E)** to be based on **2023 fuel consumption**
IMO goal-based regulations drive innovation and reduce fuel demand

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**Examples of Solutions for Compliance**

- Verification and third-party approval
- Rating
- Ship ready to navigate
- Annual SEEMP improvement cycle
Find more information on the IMO website: here

Climate action and clean air in shipping

In 1997, a new annex was added to the International Convention for the Prevention of Pollution from Ships (MARPOL). The "Regulations for the prevention of air pollution from ships" (Annex VI) seek to minimize airborne emissions from ships (SOx, NOx, ODS, VOC shipboard incineration) and the carbon intensity of global shipping in order to annihilate its contribution to local and global air pollution and environmental problems.

MARPOL Annex VI entered into force on 19 May 2005 and since then it has been continuously evolving in line with the commitments that Member States make within IMO to limit the harmful effects of air pollution and GHG emissions from international shipping on human health and the environment.
Thank you for your attention