



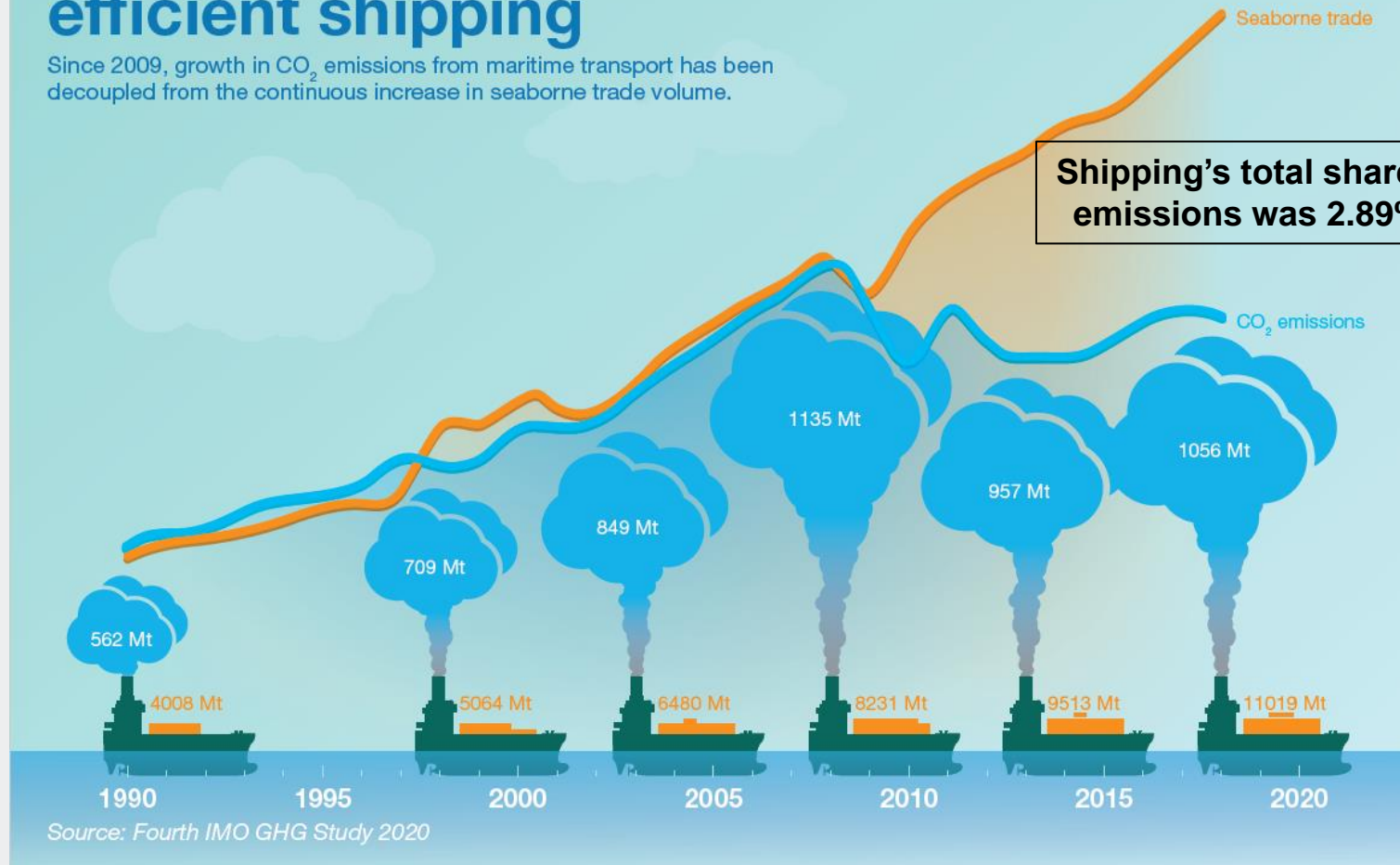
IMO regulations supporting innovation: MARPOL Annex VI and the IMO Initial GHG Strategy

Ms. Lydia NGUGI
Head MTCC Africa (Kenya)

Reducing shipping's carbon intensity is possible

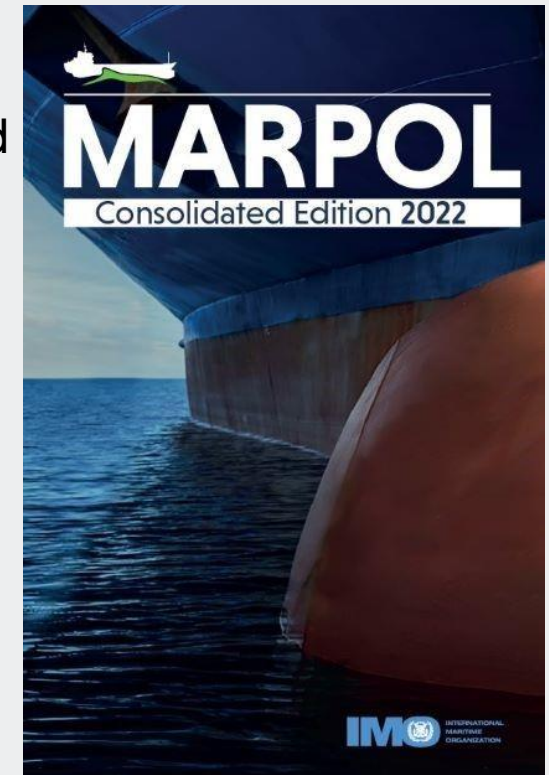
Towards more energy efficient shipping

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



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

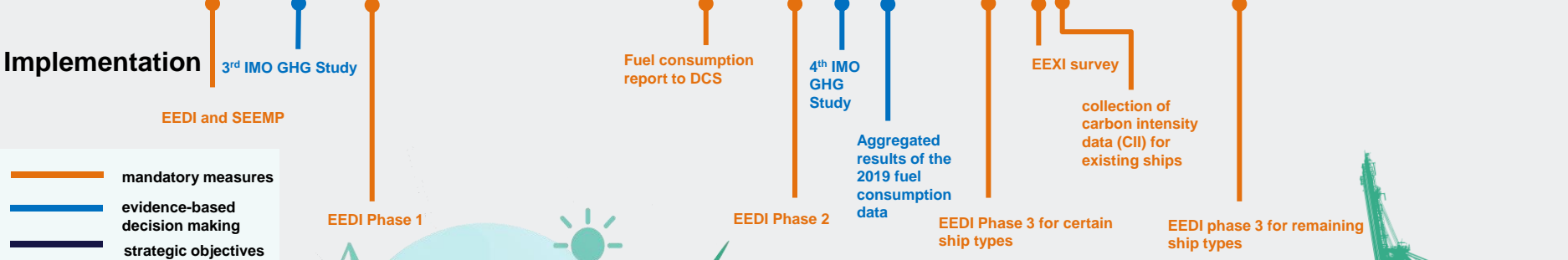


Addressing climate change : IMO action toward phasing out GHG emissions from shipping as soon as possible in this century

Committee outputs



Implementation



- mandatory measures
- evidence-based decision making
- strategic objectives



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

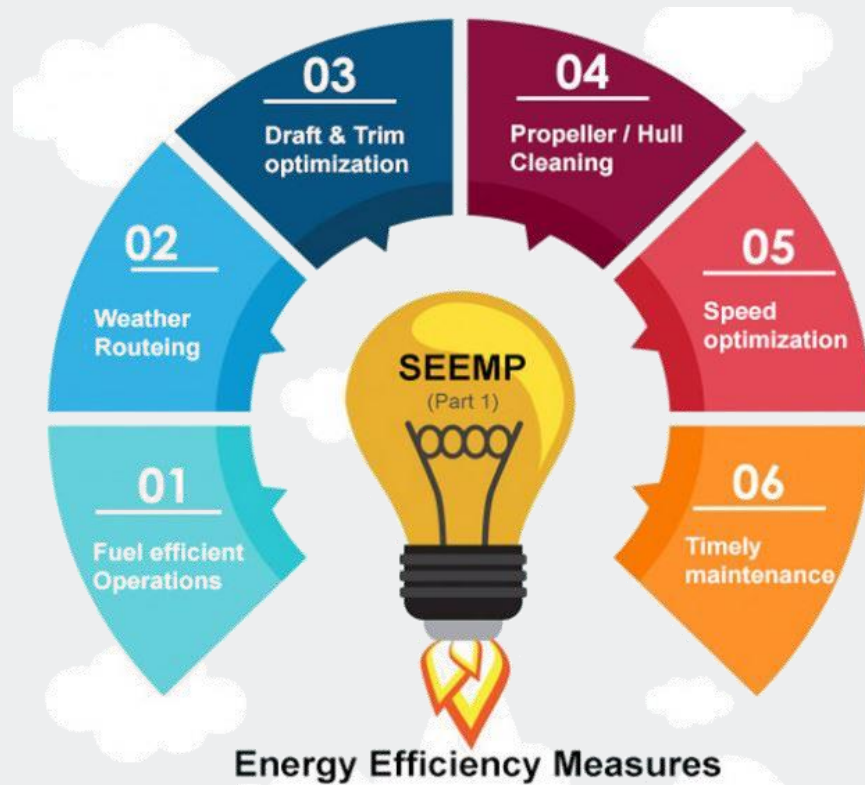
IMO's Fuel Consumption Data Collection System (DCS)

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

Figure 1: Gross tonnage of ships reported by Administrations

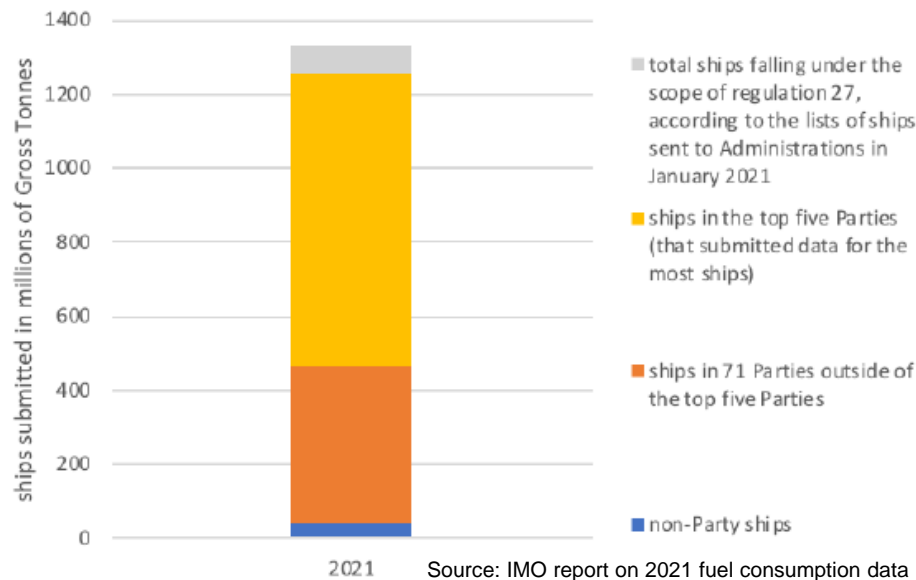
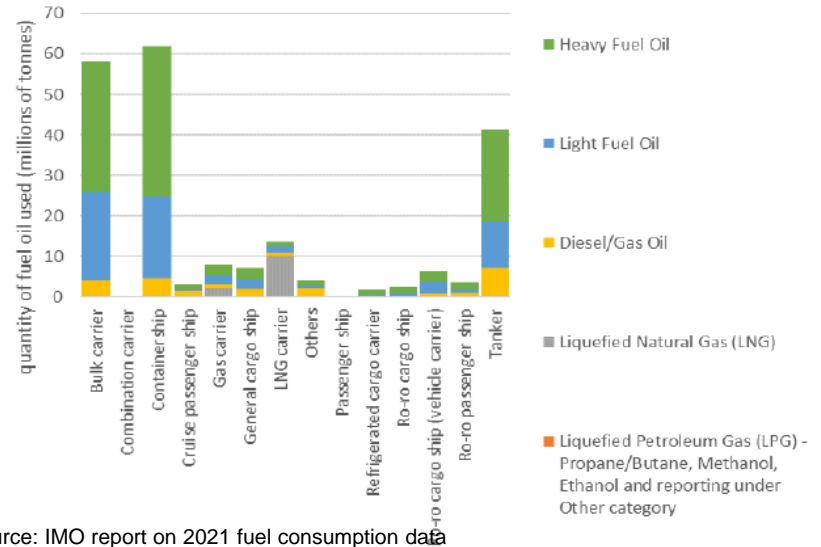
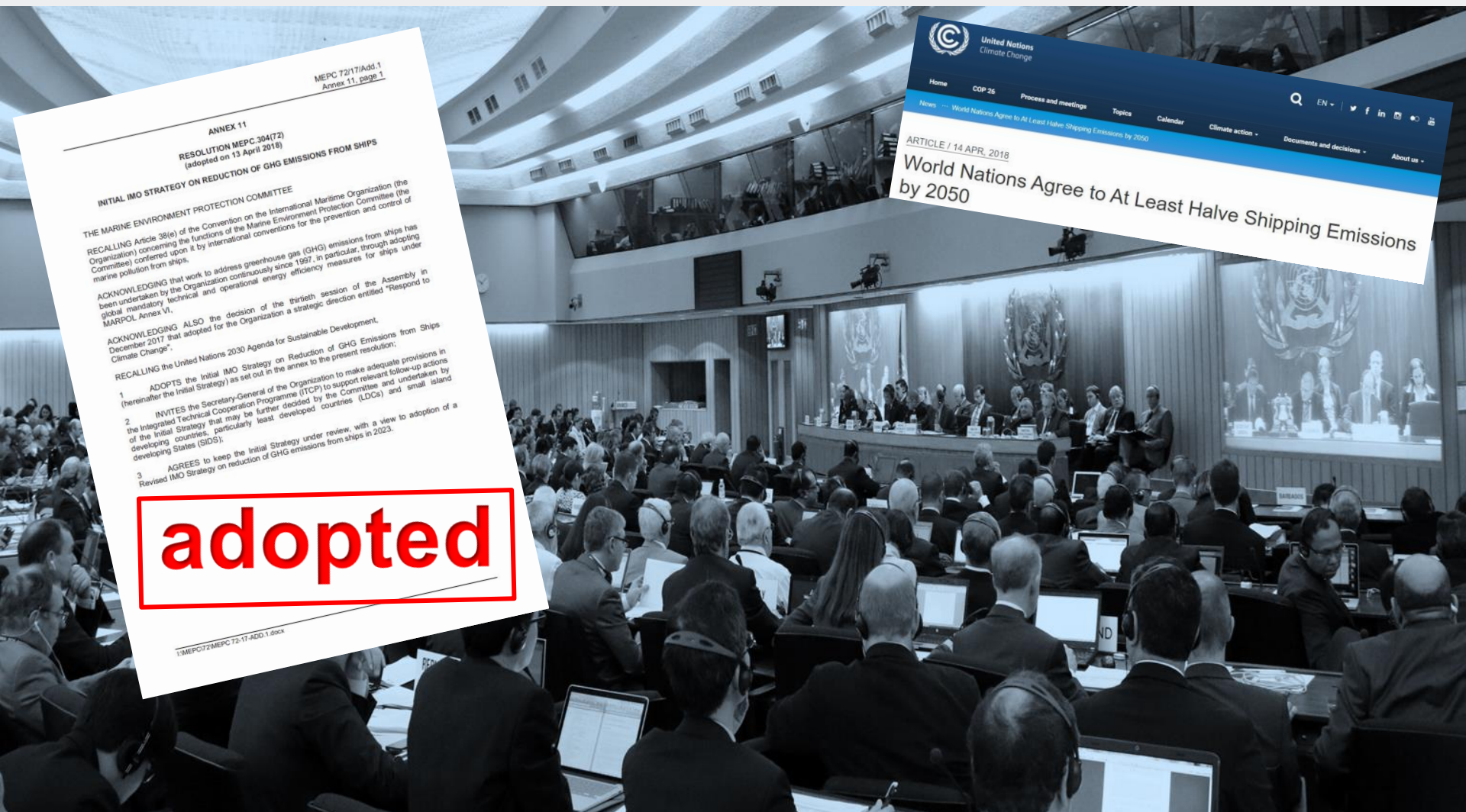


Figure 4: The aggregated annual amount of each type of fuel oil consumed for ships of 5,000 GT and above by EEDI ship type, including the "Others" and "Passenger ship" categories for ships not subject to EEDI for the 2021 reporting period



Initial IMO Strategy on Reduction of GHG emissions from ships (2018)



MEPC 72/17/Add.1
Annex 11, page 1

ANNEX 11

RESOLUTION MEPC.304(72) (adopted on 13 April 2018)

INITIAL IMO STRATEGY ON REDUCTION OF GHG EMISSIONS FROM SHIPS

THE MARINE ENVIRONMENT PROTECTION COMMITTEE

RECALLING Article 38(e) of the Convention on the International Maritime Organization (the Organization) concerning the functions of the Marine Environment Protection Committee (the Committee) conferred upon it by international conventions for the prevention and control of marine pollution from ships,

ACKNOWLEDGING that work to address greenhouse gas (GHG) emissions from ships has been undertaken by the Organization continuously since 1997, in particular, through adopting global mandatory technical and operational energy efficiency measures for ships under MARPOL Annex VI,

ACKNOWLEDGING ALSO the decision of the thirtieth session of the Assembly in December 2017 that adopted for the Organization a strategic direction entitled "Respond to Climate Change",

RECALLING the United Nations 2030 Agenda for Sustainable Development, December 2017 that adopted for the Organization a strategic direction entitled "Respond to Climate Change",

1. ADOPTS the Initial IMO Strategy on Reduction of GHG Emissions from Ships (hereinafter the Initial Strategy) as set out in the annex to the present resolution;
2. INVITES the Secretary-General of the Organization to make adequate provisions in the Integrated Technical Cooperation Programme (ITCP) to support relevant follow-up actions of the Initial Strategy that may be further decided by the Committee and undertaken by developing countries, particularly least developed countries (LDCs) and small island developing States (SIDS);
3. AGREES to keep the Initial Strategy under review, with a view to adoption of a Revised IMO Strategy on reduction of GHG emissions from ships in 2023.

adopted

13MEPC72/MEPC.304(72)-ADD.1.docx

United Nations Climate Change

Home COP 26 Process and meetings Topics Calendar Climate action Documents and decisions About us

ARTICLE / 14 APR, 2018

World Nations Agree to At Least Halve Shipping Emissions by 2050

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

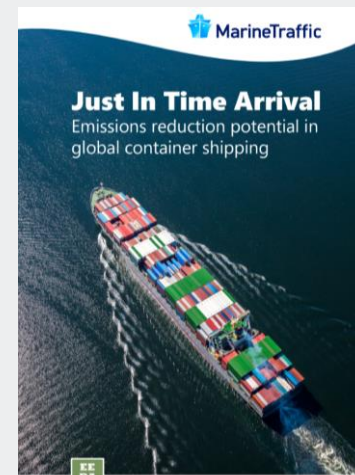
Other key elements

- **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

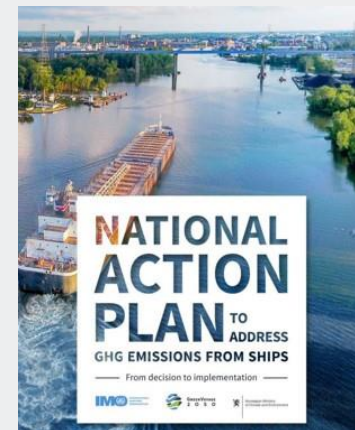
Cooperation between ports and the shipping sector to reduce GHG emissions (Resolution MEPC.366(79))

- 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**

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



Propeller Boss Cap Fins

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



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 (TT-EG) and supports implementation of resolution MEPC.229(66) on Promotion of technical cooperation and transfer of technology relating to the improvement of energy efficiency of ships.

Relevant information about energy efficiency measures can be found under each technology group as appropriate.

This information comprises a description of the measure, the typical associated costs, expected savings and links to more information related to the measure. All suggested energy efficiency measures are 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.



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**

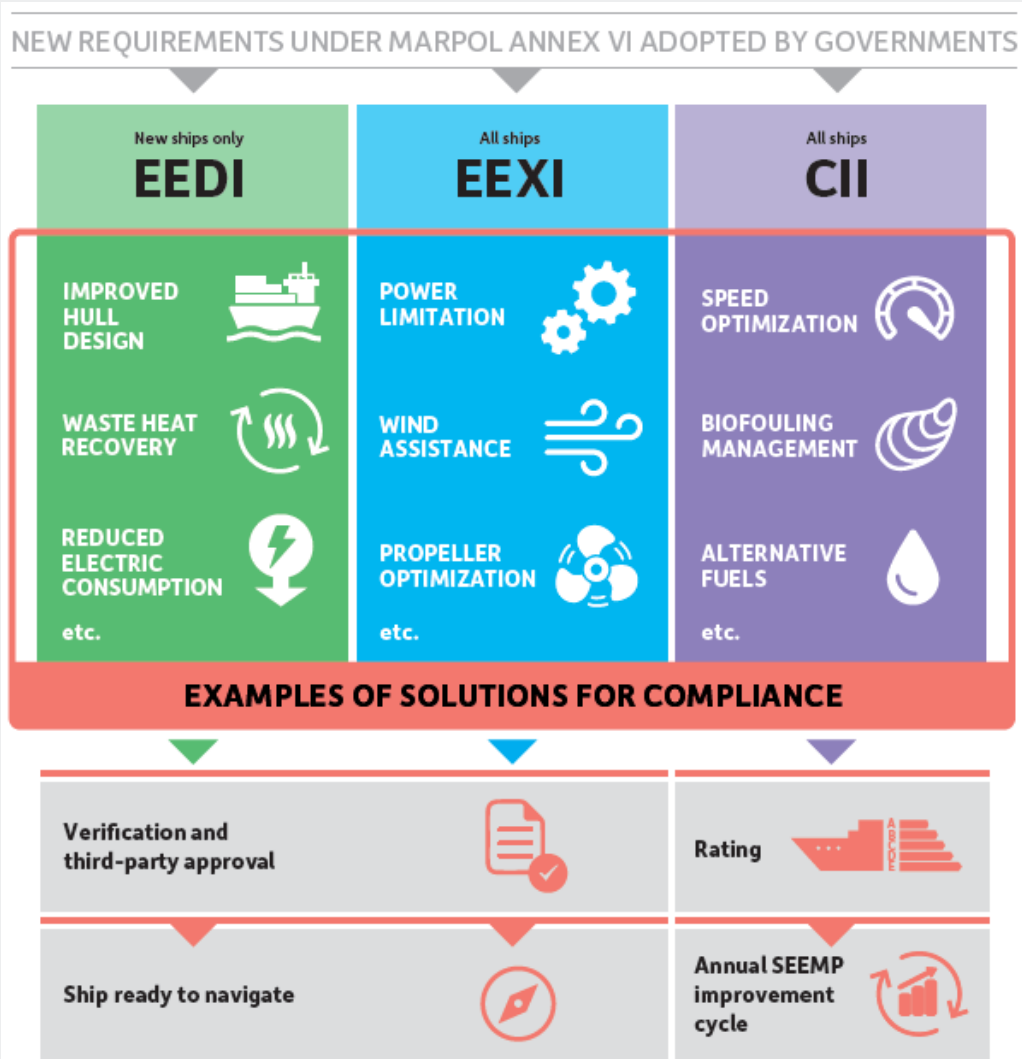
01 November 2022

Rules on ship
carbon intensity
and rating system
enter into force



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IMO goal-based regulations drive innovation and reduce fuel demand



Find more information on the IMO website : [here](#)

The screenshot shows the IMO website's navigation bar with the logo and menu items: 'Contact us | Careers | English | Français | Español | IMO WEB ACCOUNTS'. Below the navigation is a search icon and a list of menu items: 'ABOUT IMO', 'MEDIA CENTRE', 'OUR WORK', 'PUBLICATIONS', and 'KNOWLEDGE CENTRE'. The main heading is 'Climate action and clean air in shipping'. A breadcrumb trail reads: 'Home -> Our Work -> Marine Environment -> Climate action and clean air in shipping'. The text explains that in 1997, a new annex was added to the International Convention for the Prevention of Pollution from Ships (MARPOL), and that MARPOL Annex VI entered into force on 19 May 2005. Two main content areas are highlighted: 'Climate action' (with a green graphic of renewable energy) and 'Clean air in shipping' (with a photo of a ship). Both areas have corresponding sub-sections on the right side of the page.

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Climate action and clean air in shipping

Home -> Our Work -> Marine Environment -> 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 (SO_x, NO_x, 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.

Climate action

- > Historic background
- > IMO Strategy on reduction of GHG emissions from ships
- > IMO and UNFCCC
- > IMO GHG studies
- > Improving the energy efficiency of ships
- > IMO Data Collection System (DCS)
- > Alternative marine fuels
- > IMO's multi-donor GHG Trust Fund
- > Media

Clean air in shipping

- > Historic background
- > Equivalents (SO_x scrubber, etc.)
- > Ozone-depleting substances (ODS)
- > Nitrogen Oxides (NO_x)
- > Sulphur Oxides (SO_x)
- > Volatile Organic Compounds (VOC)
- > Shipboard incineration
- > Fuel oil availability and quality

Thank you for your attention

