



# IMO activities on reduction of GHG emissions from ships



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# IMO – Specialized UN agency

Global regulation of:

- Maritime safety and security;
- Marine and atmospheric environment protection

- London headquarters
- 168 Member States
- 3 Associated Members
- 51 IGOs and 66 NGOs



**Global regulation for a Global industry!**



# The need for IMO



**The 168 IMO Member States represent 98.81 % of the world tonnage of merchant ships**

- **Shipping – international by nature**
- **Underpins world trade**
- **Assets move between jurisdictions**
- **Need for universally applicable standards**
- **Mandate to regulate all aspects of shipping**



# IMO regulatory framework

- 51 IMO Conventions and Protocols
- Hundreds of codes, guidelines and recommendations
- Almost every aspect of shipping covered:
  - Design - Pollution prevention
  - Construction (oil, HNS, sewage,
  - Equipment garbage, air pollutants,
  - Maintenance invasive species, AFS)
  - Crew - Pollution control

**Safe, secure and efficient shipping  
on clean oceans!**

# Ship emissions: one of the last major ship pollutants left to be regulated

Work started at IMO in the 1980's

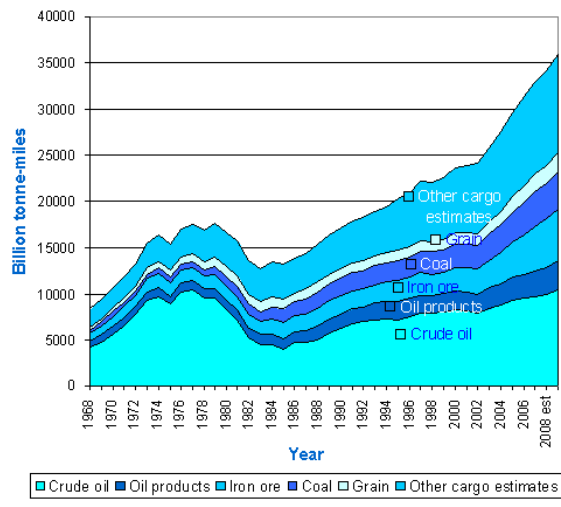
Annex VI adopted in 1997, in force in  
May 2005 - revised 2008



- Prohibits ODS in line with the Montreal Protocol
- Regulates exhaust gas emissions: NO<sub>x</sub> & SO<sub>x</sub> and cargo vapours (VOC)
- Greenhouse gases not covered



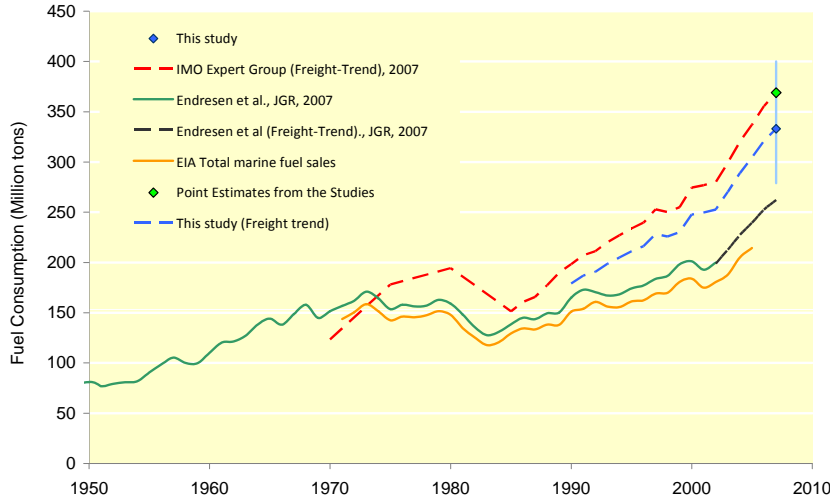
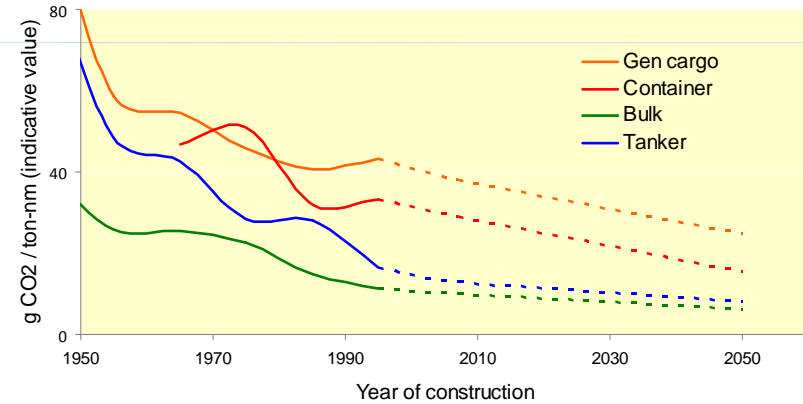
# World seaborne trade 1968-2008



## Efficiency improvements



Baseline efficiency improvement in historic perspective



## Fuel Consumption World Fleet

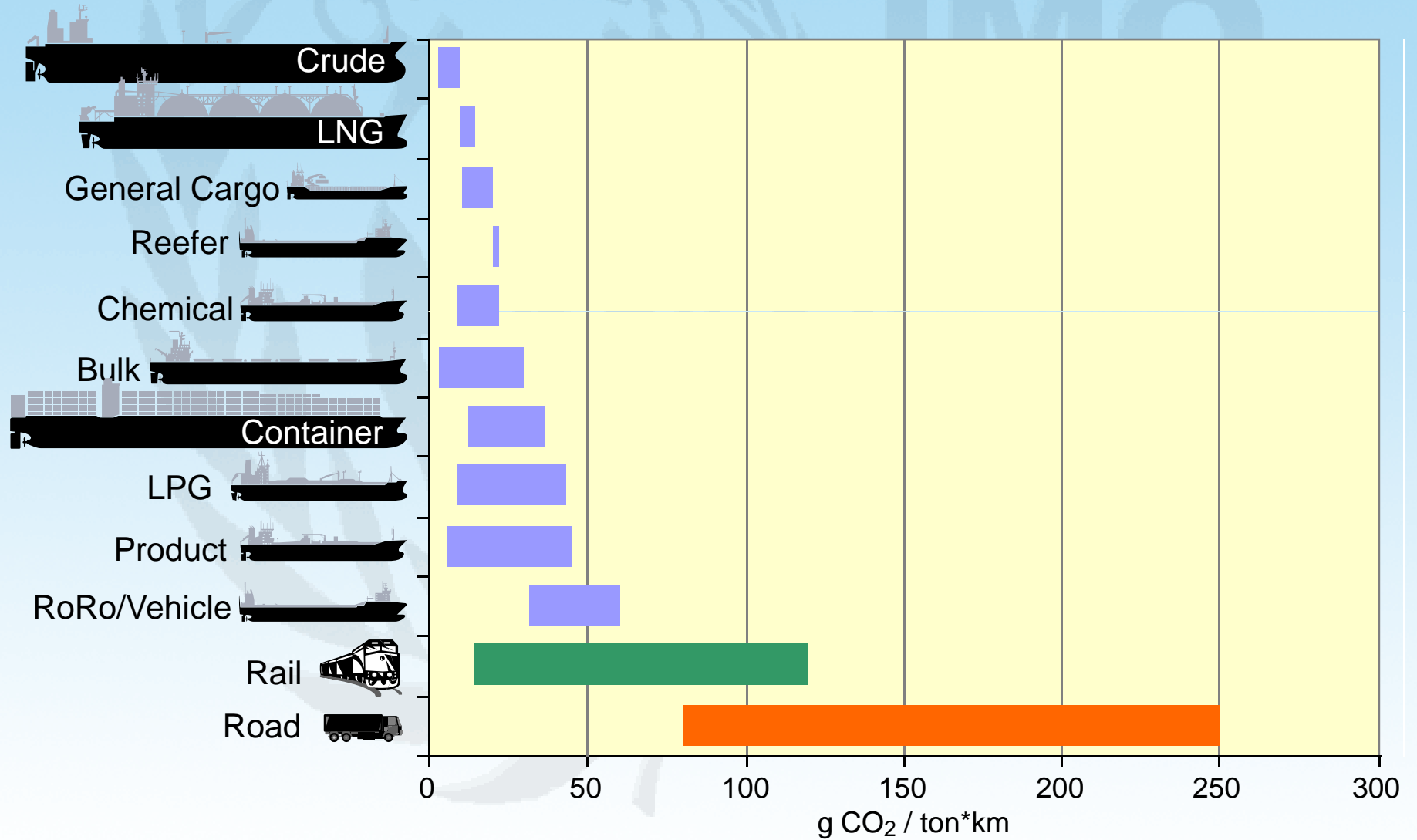


# Second IMO GHG Study 2009: 2007 CO<sub>2</sub> emissions for international shipping in million tonnes CO<sub>2</sub>

	Low bound	Consensus	High bound
<b>Total shipping emissions</b> (activity based)	854	1019	1224
<b>Total less fishing</b> (activity based)	796	954	1150
<b>IEA domestic shipping</b> (statistical data)	111	111	111
<b>International shipping</b> (hybrid estimate)	685	<b>843</b>	1039

Consensus estimate: 843 million tonnes CO<sub>2</sub> = 2.7%

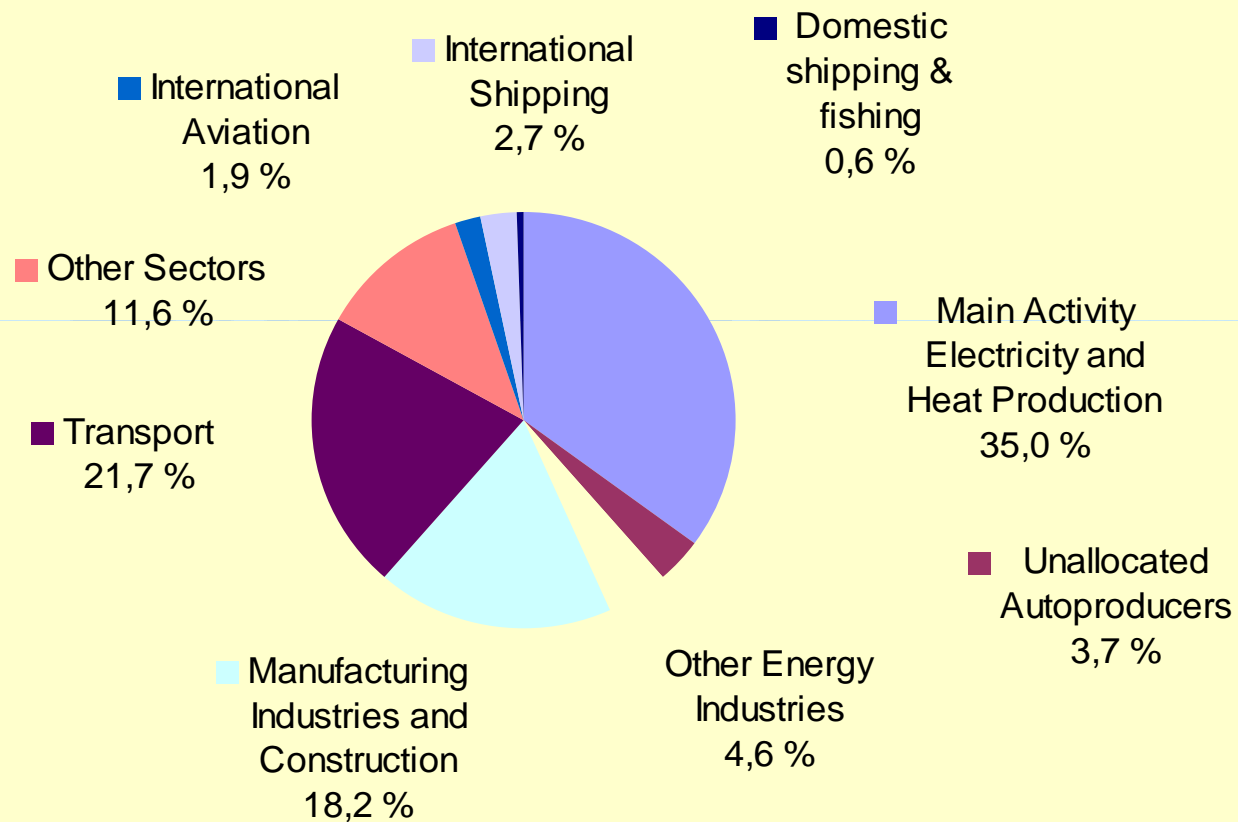
# Range of typical CO<sub>2</sub> efficiencies for various cargo carriers



Data: IMO GHG Study 2008



# Share of Global Emissions



Data: International Shipping: This study. Other IEA. Reference year: 2005



## Climate Change and the Global response

**IPCC 2007: To avoid irreversible damage to the climate, CO<sub>2</sub> emissions must peak within 10 – maximum 15 years:**

**CO<sub>2</sub> concentration must not exceed 450 ppm to keep the global warming within 2°C above 1990 level**

**More recent reports suggest that this assessment may be too optimistic. The need to act now is, therefore, clear.**



# UNFCCC debate on allocation of ship emissions 1992 - 1997

- 1 No allocation
- 2 Proportional to national emissions
- 3 Fuel sales
- 4 Nationality of company
- 5 Flag
- 6 Route of vessel
- 7 Route of cargo
- 8 Country of origin of cargo
- 9 Emissions in territorial waters





## Kyoto Protocol Article 2.2

“The Parties included in Annex I shall pursue limitation or reduction of emissions of greenhouse gases not controlled by the Montreal Protocol from ... marine bunkers fuels, working through ... the International Maritime Organization, ...”

	<b>Number of ships %</b>	<b>GT %</b>	<b>DW %</b>
<b>Annex I flag States</b>	<b>33</b>	<b>26</b>	<b>23</b>
<b>Non-Annex I flag States</b>	<b>67</b>	<b>74</b>	<b>77</b>

## **Resolution A.963(23)**

**IMO Policies and Practices Related to the Reduction of Greenhouse Gas Emissions from Ships, adopted on 5 December 2003**

**Requests MEPC to:**

- develop a work plan with timetable**
- establishment of GHG baseline**
- develop CO<sub>2</sub> indexing methodology**

**MEPC Work Plan: To develop Technical, Operational and Market-based reduction measures**

# Current situation



## MEPC 59 will consider for agreement:

- **An Energy Efficiency Design Index (applicable to new ships)**
- **An Energy Management Plan, comprising:**
  - **Best practices**
  - **Use of the Energy Efficiency Operational Indicator**
- **Baselines for the above**

## MEPC 59 will also consider in depth:

- **Possible market-based mechanisms to supplement the above measures.**





# Energy Efficiency Design Index

$$EEDI = \frac{\textit{Environmental cost}}{\textit{Benefit for society}}$$

- Cost: Emissions of CO<sub>2</sub>
- Benefit: Cargo capacity & transport work

Complex formula to accommodate most ship types and sizes



# Ship Energy Management Plan

## Onboard management tool to include:

- **Improved voyage planning** (Weather routing/Just in time)
- **Speed and power optimization**
- **Optimized ship handling** (ballast/use of rudder and autopilot)
- **Improved fleet management**
- **Improved cargo handling**
- **Energy management**





# Energy Efficiency Operational Indicator

- An efficiency indicator for all ships (new and existing) obtained from fuel consumption, voyage (miles) and cargo data (tonnes)

**Actual Fuel  
Consumption  
Index**

=

**Fuel Consumption in Operation**

**Cargo Onboard** x (Distance traveled)



# The way ahead

## Before COP 15 in Copenhagen:

- MEPC 59 agrees to package of technical and operational measures in July
- MEPC 59 draws clear plan to develop a market-based mechanism
- MEPC 59 adopts a resolution setting out a calendar for regulatory action
- Whole package is submitted to COP 15

## After COP 15:

- Regulatory action undertaken by MEPC 60 (March 2010) and MEPC 61 (October 2010)



# COP 15 Outcome

## Three main IMO objectives:

- IMO continues to be entrusted to develop and enact global regulations to limit or reduce GHG emissions from ships engaged in international trade
- The regulations are applied to ships according to the non-discriminatory principle on which the IMO regulatory framework is based
- The interests of developing countries are fully taken into account



# Thank you for your attention!



**CLIMATE CHANGE:**  
A CHALLENGE FOR IMO TOO!

**For more information please see:**

[www.imo.org](http://www.imo.org)