



IMO activities on reduction of GHG emissions from ships



International Transport Forum - Leipzig, 27 May 2009

**Miguel Palomares
Director, Marine Environment Division
International Maritime Organization - IMO**



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, garbage, air pollutants, invasive species, AFS)
 - Equipment
 - Maintenance
 - Crew - Pollution control

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

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

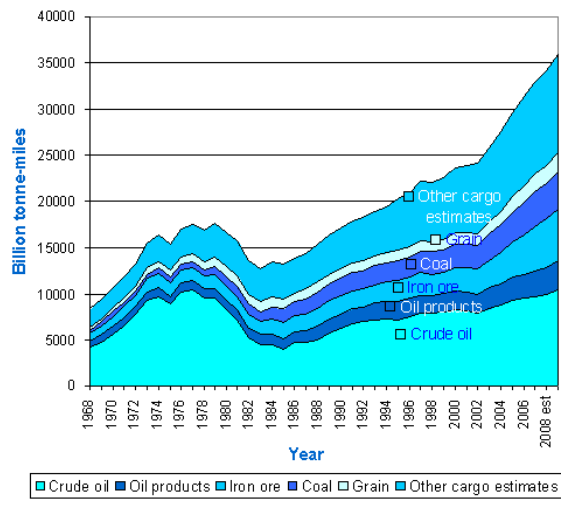
Work started at IMO in the 1980's

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_x & SO_x and cargo vapours (VOC)
- Greenhouse gases not covered

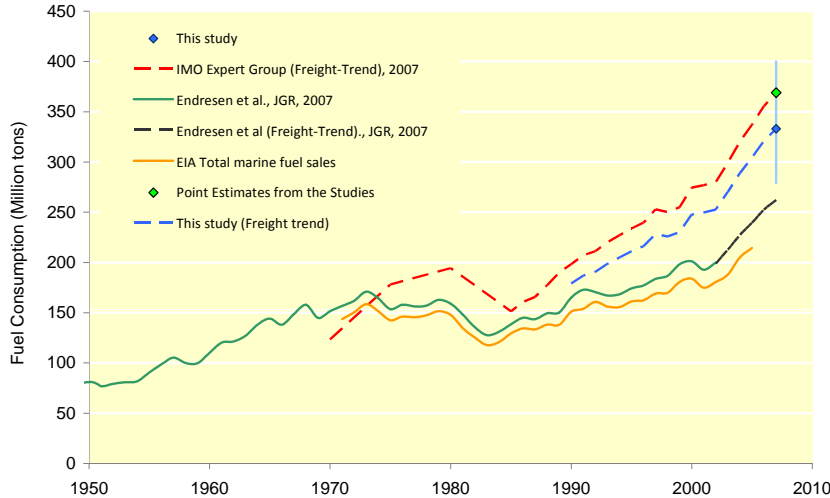
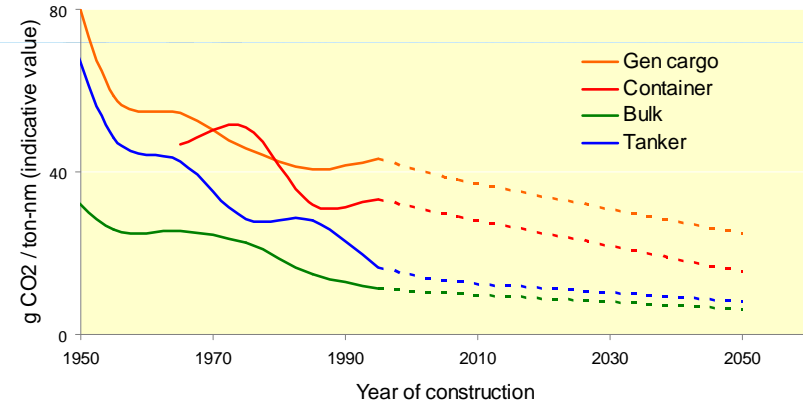
World seaborne trade 1968-2008



Efficiency improvements



Baseline efficiency improvement in historic perspective



Fuel Consumption World Fleet

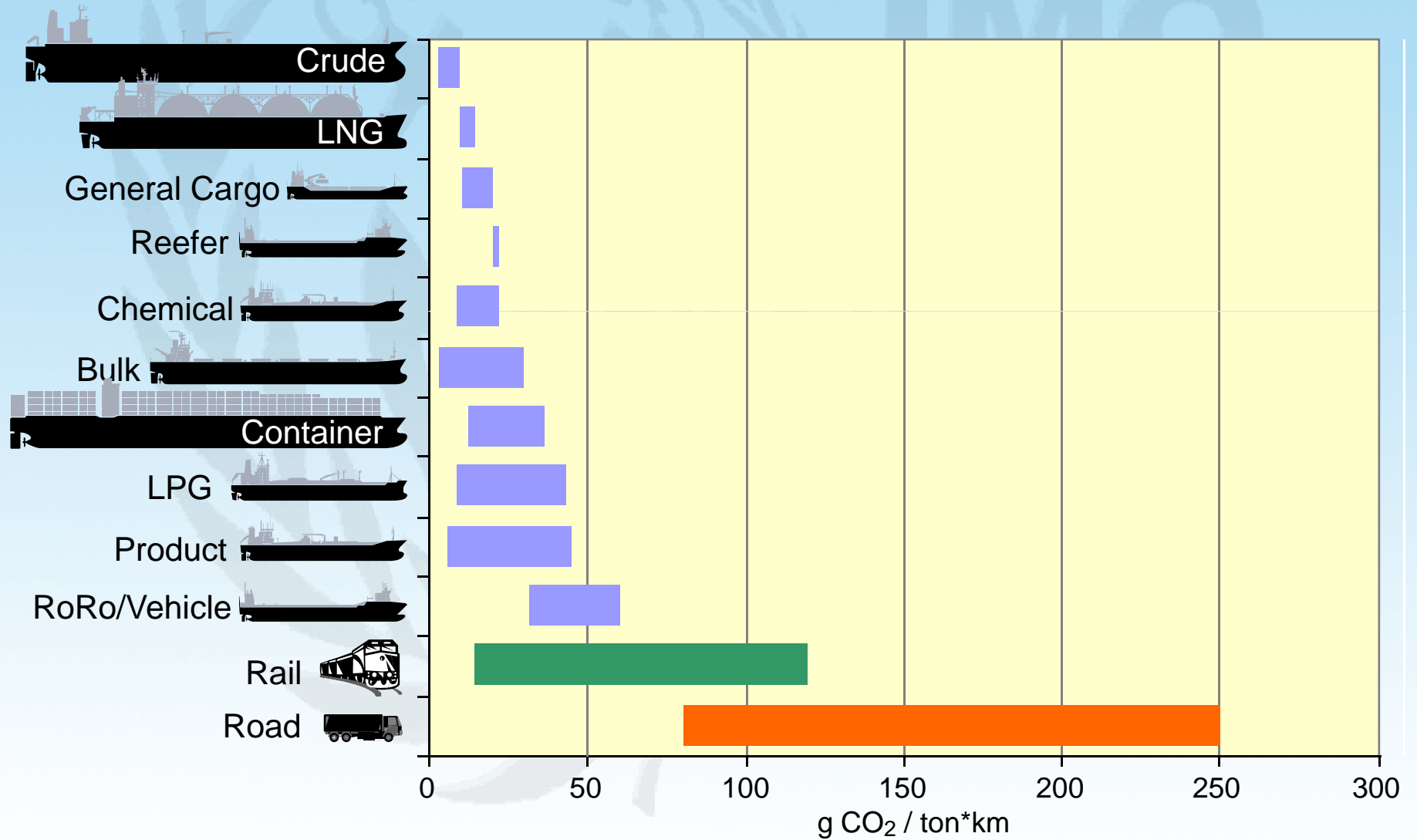


Second IMO GHG Study 2009: 2007 CO₂ emissions for international shipping in million tonnes CO₂

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

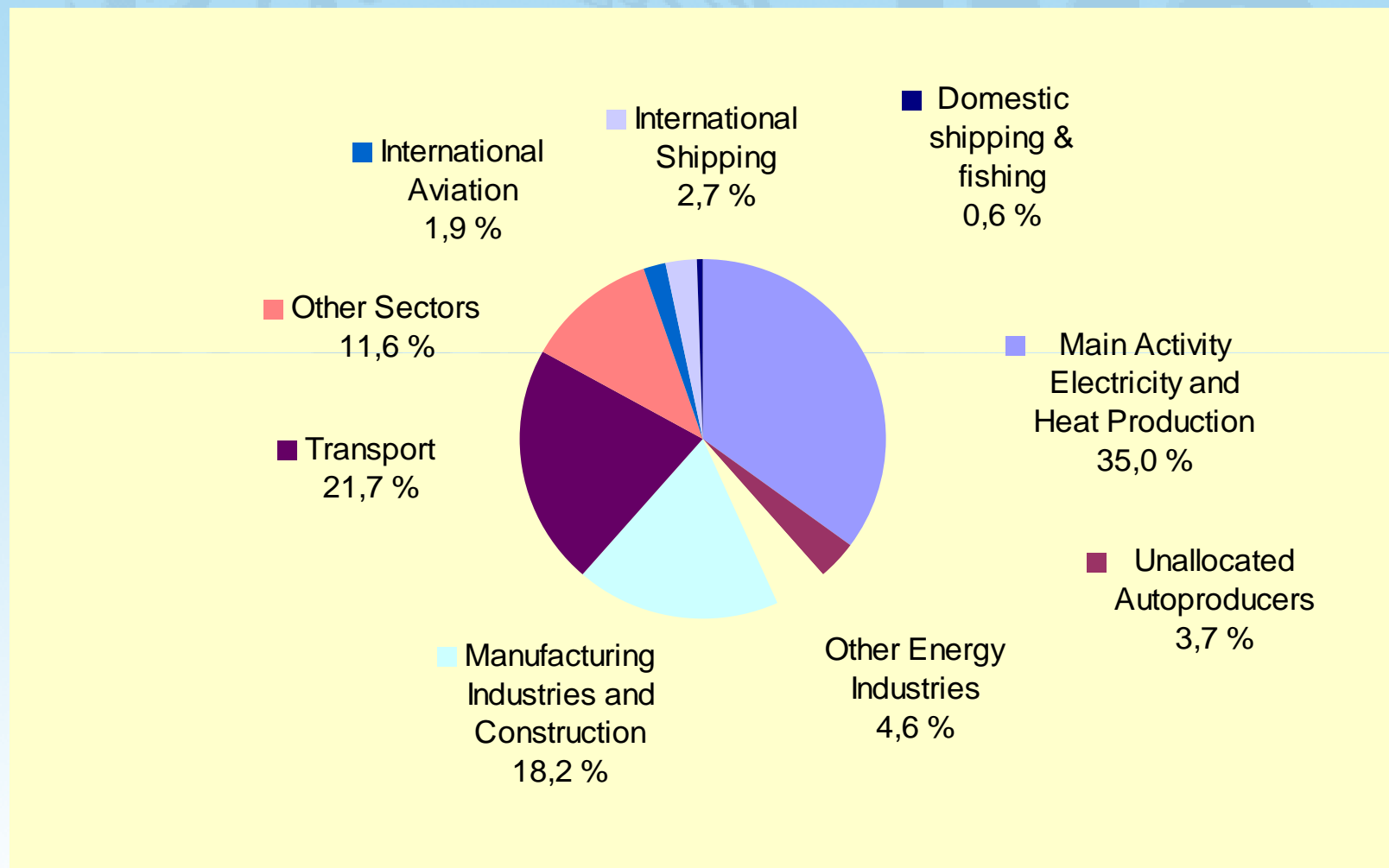
Consensus estimate: 843 million tonnes CO₂ = 2.7%

Range of typical CO₂ 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, CO₂ emissions must peak within 10 – maximum 15 years:

CO₂ 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, ...”

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

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 CO₂ 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 CO₂
- 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