IMO's work on control of GHG emissions from ships – response measures

Eivind S. Vagslid
Head, Air Pollution and Climate Change Section
Marine Environment Division – IMO

Joint SBI/SBSTA forum on the impact of the implementation of response measures,
SB 34: Bonn, 7 June 2011

IMO – specialised UN agency

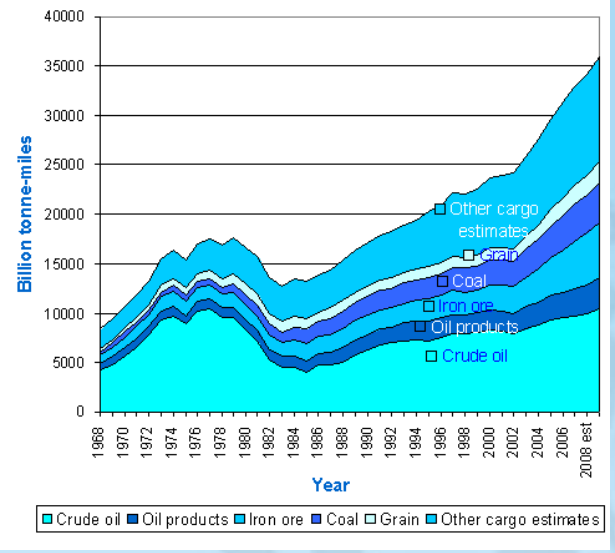
- 169 Member States
- IGOs and NGOs
- London headquarters
- Annual budget £30+ M
- Secretariat – 300+ staff
- 50+ Nationalities
- Secretary-General: E. Mitropoulos, Greece

Safe, secure and efficient shipping on clean oceans!

PIRACY IMO ORCHESTRATING THE RESPONSE

CLIMATE CHANGE: A CHALLENGE FOR IMO TOO!

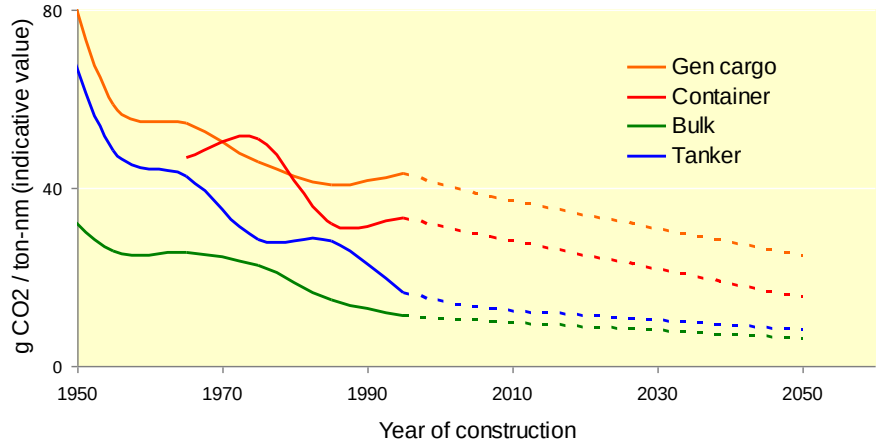
World seaborne trade 1968-2008



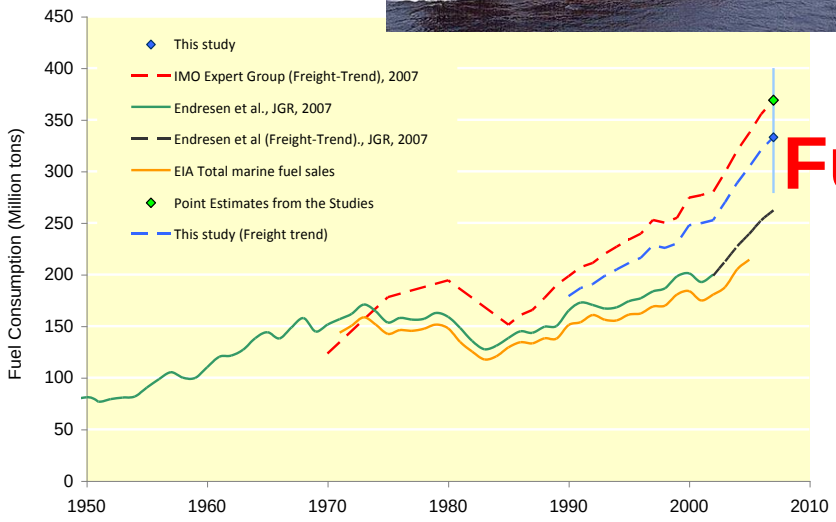
CLIMATE CHANGE:
A CHALLENGE FOR IMO TOO!

Efficiency improvements

Baseline efficiency improvement in historic prespective



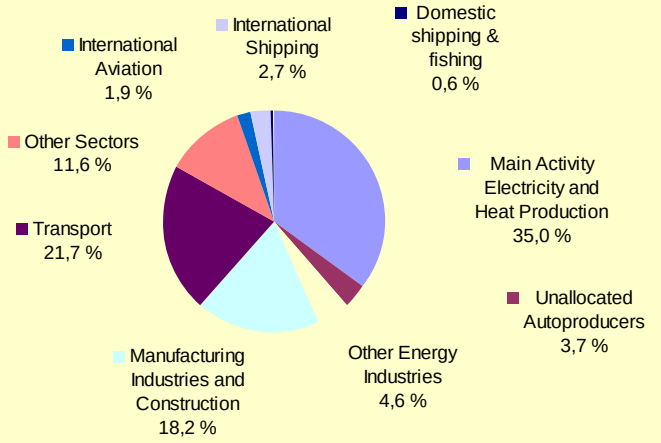
Fuel Consumption World Fleet

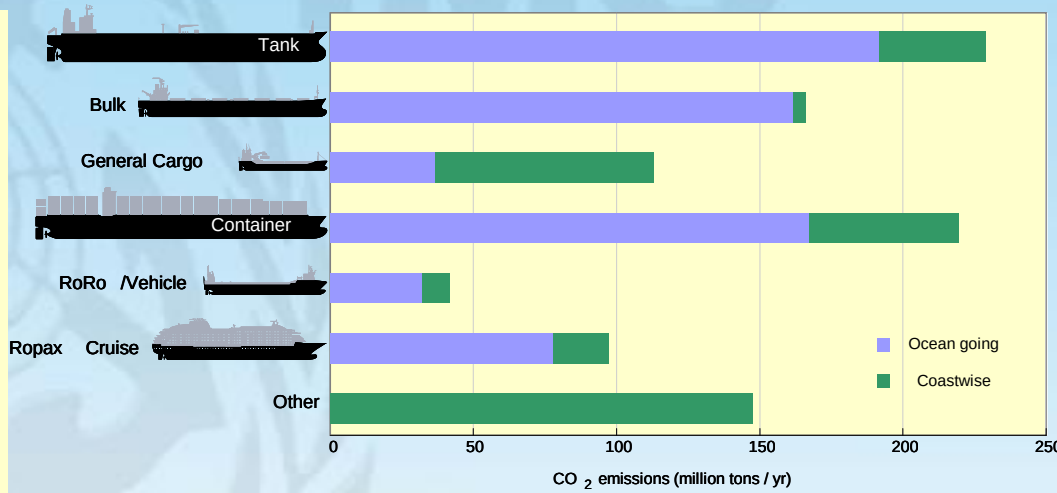


Second IMO GHG Study 2009

CLIMATE CHANGE: A CHALLENGE FOR IMO TOO!

2007 shipping CO2 emissions 870 million tons



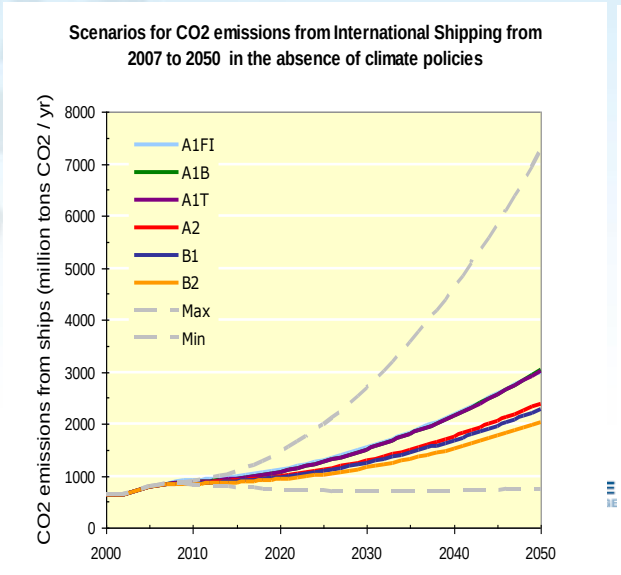


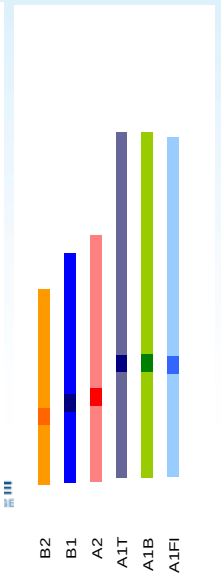
Future CO2 emissions:

Significant increase predicted: 200 - 300% by 2050 in the absence of regulations

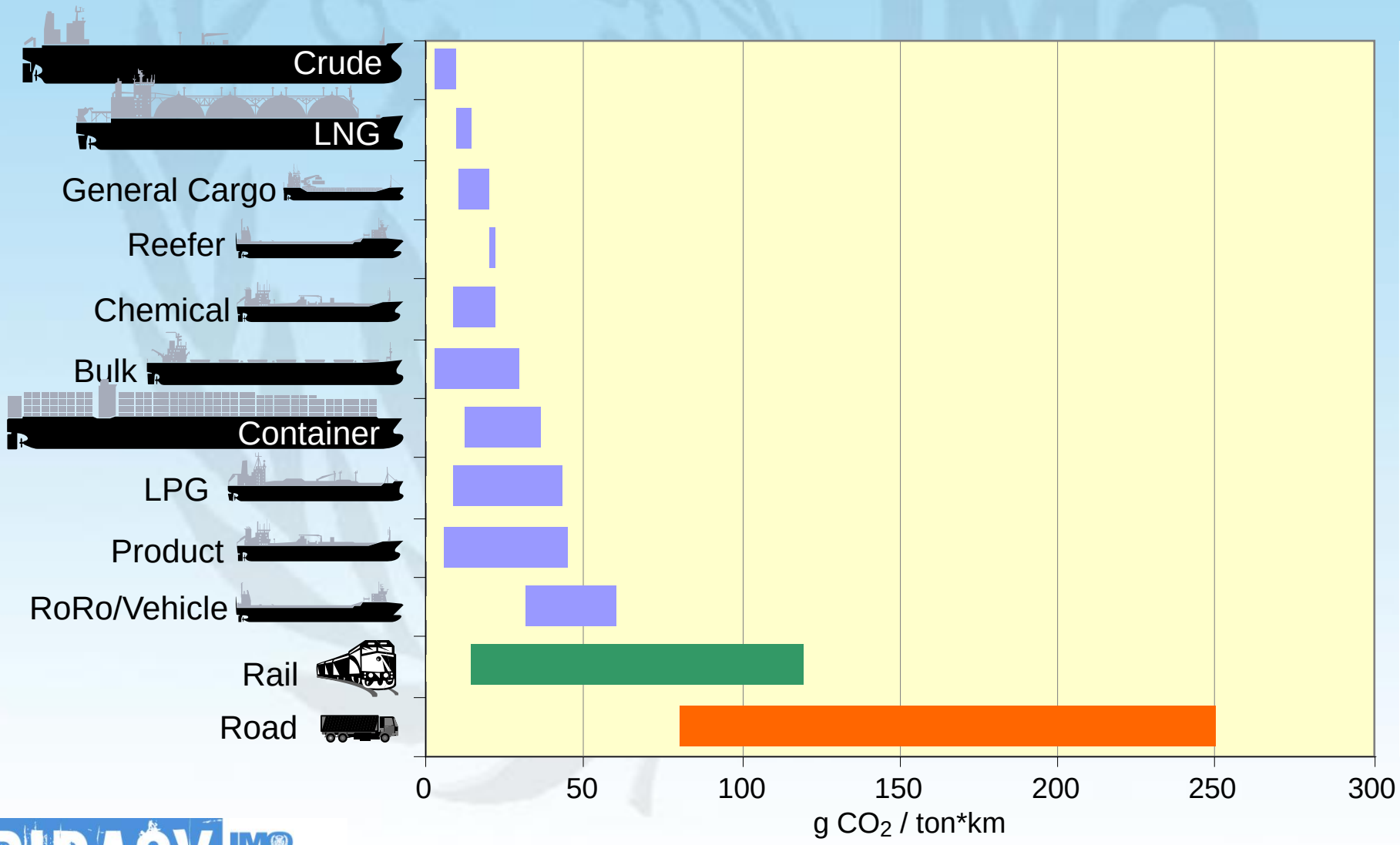
Demand is the primary driver

Technical and operational efficiency measures can provide significant improvements but will not, without breakthrough tecnologies, be able to provide real reductions if demand continues





Range of typical CO_2 efficiencies for various cargo carriers



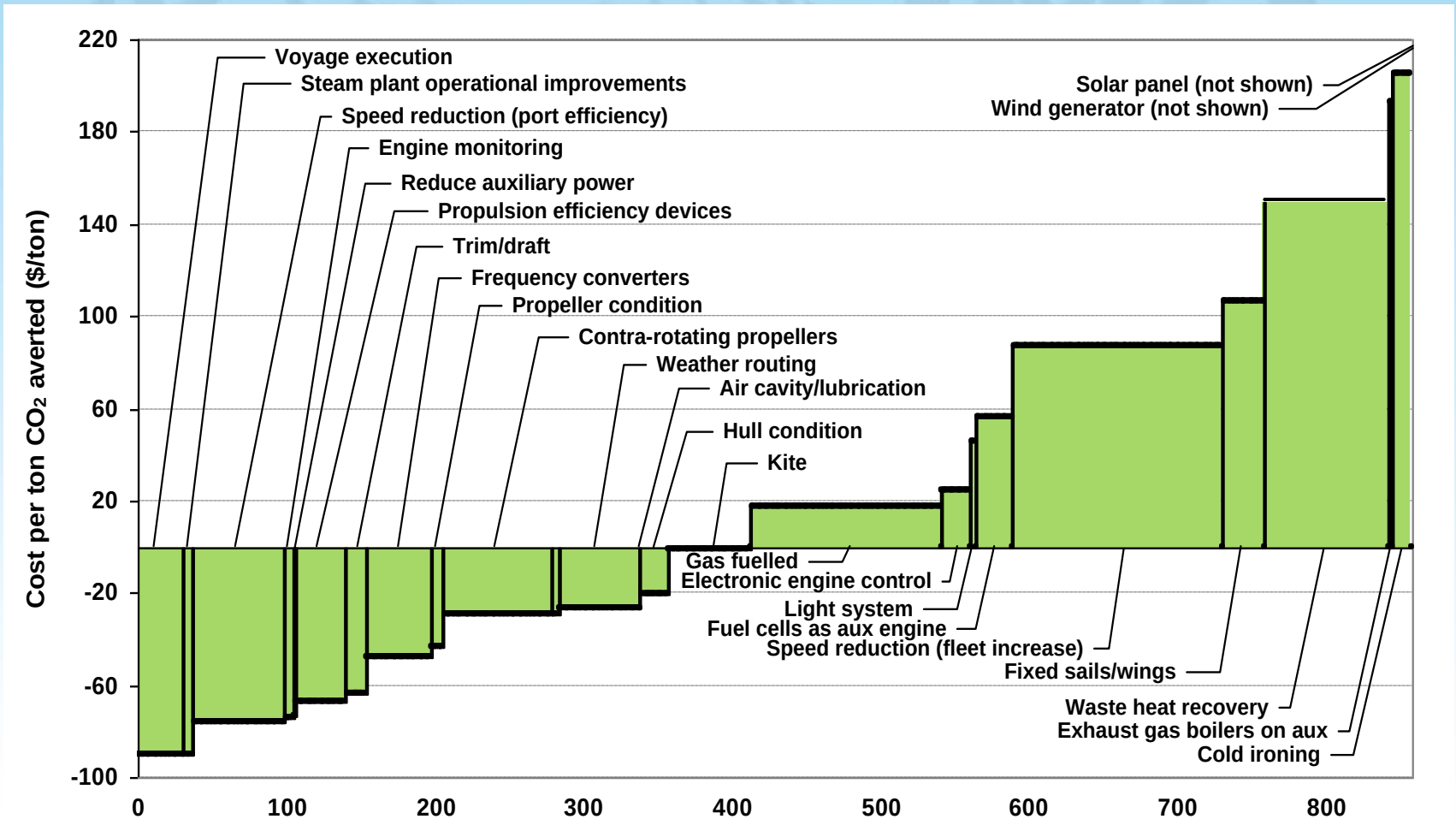
Data: Second IMO GHG Study 2009

Potential reductions of CO_2 emissions

DESIGN (New ships)	Saving of CO_2/tonne-mile	Combined
Concept, speed & capability	2% to 50%$^+$	10% to 50%$^+$
Hull and superstructure	2% to 20%	
Power and propulsion systems	5% to 15%	
Low-carbon fuels	5% to 15%*	
Renewable energy	1% to 10%	
Exhaust gas CO_2 reduction	0%	
OPERATION (All ships)		
Fleet management, logistics & incentives	5% to 50%$^+$	10% to 50%$^+$
Voyage optimization	1% to 10%	
Energy management	1% to 10%	

Modeling of 2030 – abatement potential and costs

Average marginal CO_2 reduction cost per option - World shipping fleet in 2030 (existing and newbuilds)



Note; abatement potential for individual ship types and size segments vary widely

Baseline: 1,530 million tons per year

CLIMATE CHANGE: A CHALLENGE FOR IMO TOO!

Technical and operational measures

Regulations and guidelines to promote implementation of energy efficiency measures developed for new and existing ships, widely implemented voluntarily, industry & NGO involvement and support, industry initiatives (slow steaming, 'Virtual Arrival', LNG)**, MRV tools and certification schemes tested; leading to well matured measures**

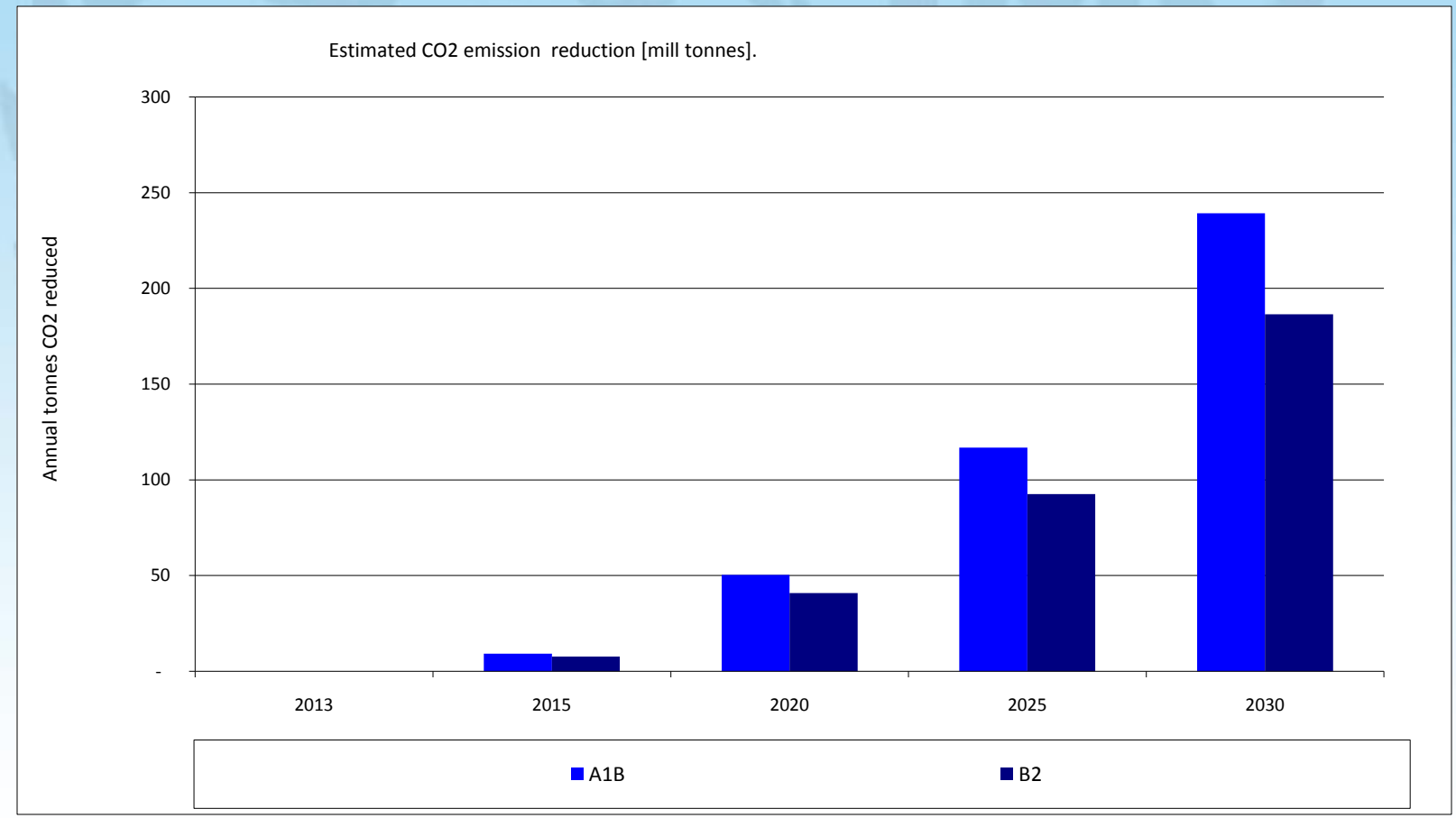
New part to MARPOL Annex VI to incorporate mandatory energy efficiency measures (for all ships in international trade above 400 GT):

- Energy Efficiency Design Index (EEDI) for new ships
- Ship Energy Efficiency Management Plan (SEEMP) for all ships requiring performance monitoring and continues improvement, using the operational indicator (EEOI) as monitoring tool and benchmarking

Regulatory text finalized by MEPC 61 (Sept 2010)

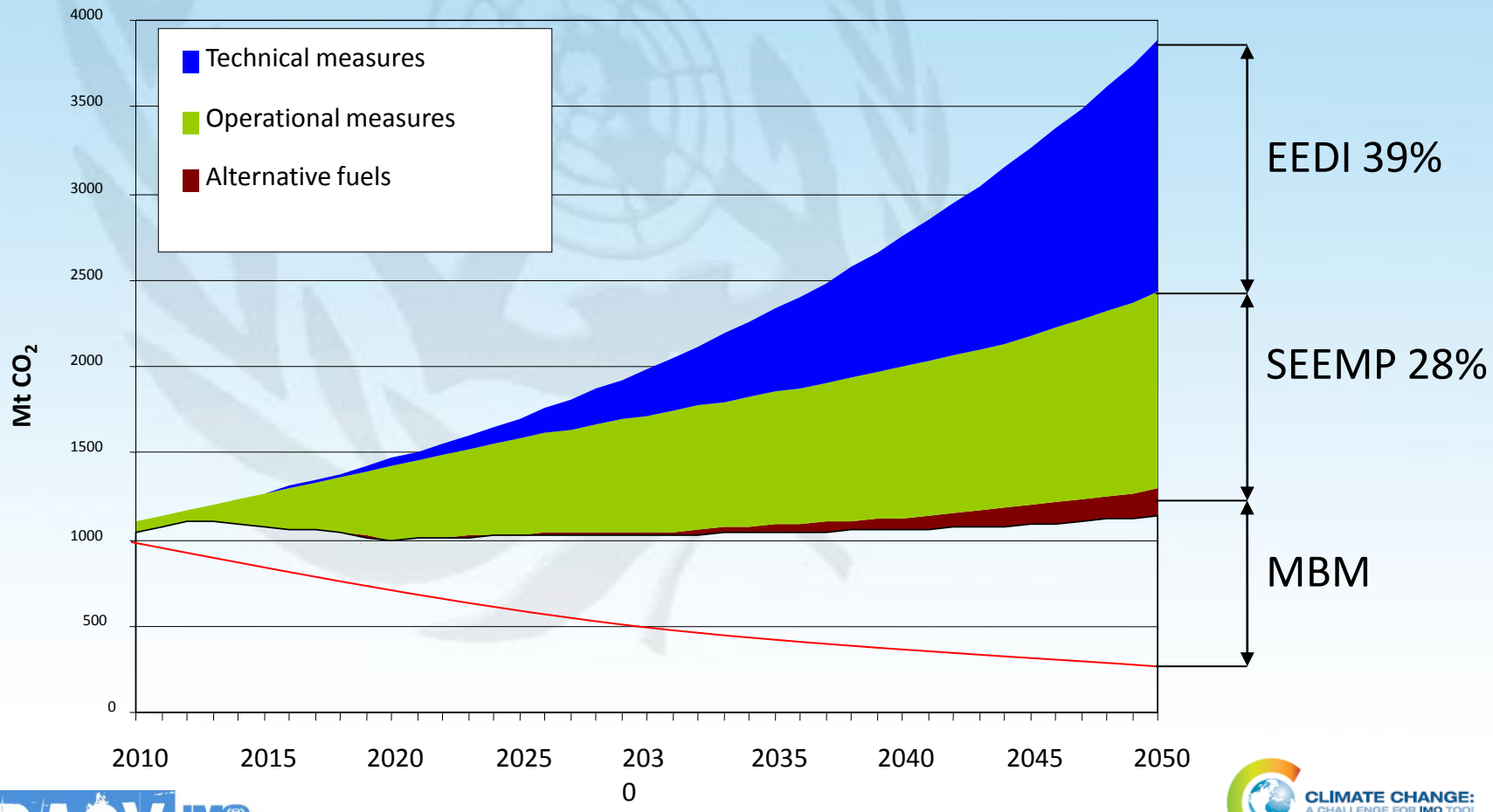
To be considered for possible adoption at MEPC 62 (July 2011)

190 – 240 million tonnes of CO_2 reduced annually by 2030 compared with BAU from introduction of EEDI



EEDI and SEEMP Effects

Scenario: A1B Optimistic



Market-based reduction measures – MBM – for international shipping

An MBM would serve two main purposes:

- An economic incentive for the shipping industry to invest in more fuel-efficient ships & technologies and to operate ships more energy-efficient (in-sector reductions)
- Off-setting in other sectors of growing ship emissions (out-of-sector reduction)

10 MBM proposals under review:

Contribution scheme (Levy), Port State levy, Efficiency based MBMs, ETS, Incentive Schemes, Refunding.

Emission reductions in 2030

Modelled emission reductions across various scenarios

	SECT	VES	Bahamas	GHG Fund	LIS	PSL	ETS (Norway France)	ETS (UK)	RM
Mandatory EEDI (Mt)	123 - 299	123 - 299	123 - 299*						
MBM In sector (Mt)	106 - 142	14 - 45		1 - 31	32 - 153	29 - 119	27 - 114	27 - 114	29 - 68
MBM Out of Sector (Mt)				152 - 584			190 - 539	190 - 539	124 - 345
Total reductions (% BAU)	19 - 31%	13 - 23%	10 - 20%	13 - 40%	3 - 10%	2 - 8%	13 - 40%	13 - 40%	13 - 28%
Potential supplementary reductions (Mt)		45 - 454		104 - 143	232 - 919	917 - 1232	696 - 870		187 - 517

* Included if the mandatory EEDI is adopted by the committee

CLIMATE CHANGE: A CHALLENGE FOR IMO TOO!

Potential climate change financing*

Modelled “remaining proceeds” across various scenarios

MBM	**2020** ($ billion)	**2030** ($ billion)
GHG Fund	2 - 5	4 - 14
LIS	6 - 32	10 - 87
PSL	24 - 43	40 - 118
SECT	0	0
VES	8 - 41	5 - 18
ETS (Norway, France)	17 - 35	28 - 87
ETS (UK)	0	0
Bahamas	0	0
RM	10 - 13	17 - 23

* Excludes financing of out-of-sector emission reductions

CLIMATE CHANGE: A CHALLENGE FOR IMO TOO!

Impacts of an MBM – Conclusions:

Impacts on consumers depend on stringency of MBM, e.g. the carbon price, if it is equal to a 10% increase in fuel price, it translates into a 2 – 10% increase in transport costs and means an increase of 0.0 – 0.2% on end prices and 0.02 – 0.8% of GDP:

Market share – Domestic production - Value-to-weight ratio

Impacts on developing countries:

Will vary by country independent of level of economic development

As a result, developing countries, especially SIDS and LDCs, should not be treated as a collective bloc in assessing impacts

Those that are closer to their trading partners or have large exporters will, in general, be less affected than countries that are further away or have many small exporters

IMO's MBM impact study to continue

Shipping under UNFCCC

Consultations in the lead up to and at Copenhagen were constructive but did not lead to an agreed text. The negotiations did not move much in 2010, and not much progress in 2011 as there are still three challenging obstacles:

- Should a reduction target be set for international shipping, and if so, what should the target be and should it be set by UNFCCC or IMO?
- Should the new UNFCCC treaty state how revenues from a market-based instrument under IMO should be distributed and used (climate change purposes in developing countries)?
- How should the balance between the basic principles under the two conventions be expressed in the new treaty text (UNFCCC and its fundamental CBDR principle, and on the other hand, the IMO constitutive Convention with its non discriminatory approach -NMFT)?

No text on international transport in the Cancun Agreements

Links with and effects on UNFCCC negotiations

As the regulations address ships and not States, and as they do not impose any reduction obligations, quantified or otherwise, on States, as well as the fact that the cost of introducing EEDI/SEEMP will be borne by the industry, there are no incompatibility issues with UNFCCC

KP 2.2 are still interpreted differently by Parties

Adoption of mandatory T&O [by MEPC 62 in July 2011] will clarify

Disbursement of revenues from an MBM for international shipping under IMO is seen by many as a way to reconcile the two sets of principles under the two conventions:

- CBDR under UNFCCC and non-discrimination under IMO

An MBM for international shipping could be a predictable source to the Green Climate Fund and thereby facilitate the UNFCCC negotiations

MEPC 62 11 – 14 July 2011

Further progress expected to be made on all three elements of IMO's GHG work

Technical and operational measures

Consider the technical and operational measures for adoption as mandatory measures for all ships by inclusion in MARPOL Annex VI

Further development of supporting guidelines on:

- Calculation of EEDI – Reference lines
- Survey and Certification – development of SEEMP

Market-based measures

Report from intersessional meeting held in March/April 2011

Agreement on further work – impact assessment

CLIMATE CHANGE: A CHALLENGE FOR IMO TOO!

Summary - IMO's GHG Work

- **Technical and operational measures likely to be adopted in July 2011 – in force 1 January 2013**

  Important step - Energy efficiency standard for new ships, operational measures for all ships - Significant reductions

- **MBM for international shipping under IMO**

  Continued development - Possible adoption of treaty 2015 – 2017

- **Climate Finance and the Green Climate Fund may be the key to unlock the UNFCCC/IMO deadlock**

  Application to all ships via IMO is the only way to raise revenues from international maritime transport (precedence in IOPC)