

# Shipping GHG Issues



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# UNFCCC

- Bunkers back on Durban Agenda
- 1 negotiating session this month in Bonn
- Additional options incl mutual agreement
- Hard to see progress
- No net incidence condition for CBDR
- Annex 1 not yet accepting no net incidence
- 1 extra session before Durban

# IMO

- 2<sup>nd</sup> 3 year work plan on MBMs about to end
- Progress on analysis of MBMs
- Impact on developing countries key
- EEDI vote will polarise
- MEPC62 little time or political space
- Need to advance work on Black Carbon
- Will new Sec Gen be committed?
- Impact Assessment next step

# EC Action

- End 2011 commitment if no IMO action
- DG Move and others oppose action
- EU ETS aviation fatigue, ECJ decision critical
- EU action relies on UNCLOS port state authority
  - 7 unchallenged precedents
- 5 option impact assessment begins Sept 2011
- No decision on proposal before 2013
- Presidency questions
  - 2012 DK, Cyprus, 2013 Ireland, Lithuania, 2014 Greece, Italy, 2015 Latvia, Luxembourg, 2016 NL

# ETS versus Levy/charge/tax

## ETS

- Complexity
- Look at aviation
- Little in-sector cuts
- proposals partial allocation
- Problem of revenues
- Look at inbound aviation ETS
- evasion

## Levy/charge/tax

- Intra EU tax/charge simpler
- Levy relies on buying credits
- Only on emissions above cap
- Little in-sector cuts
- Levy must be high
- linked to CO<sub>2</sub> price?
- No net incidence

# In sector issue critical

- Kyoto Protocol; Annex 1 to limit/reduce shipping emissions
- EC White Paper; 60% transport emission cuts
  - In *Europe*, not Brazil
- 1990-2008 tenfold increase in fuel price
  - Virtually no impact on ship fuel efficiency
  - fact not disputed at ECCPII
  - ETS/Levy little impact on ship emissions
  - Fuel price needed; \$3000/tonne

# Why speed limits for ships

- Need deep GHG cuts fast
- Speed limit cuts are **in-sector & immediate**
- Recent studies show potential of speed cuts:
  - Over 60%. Ulysees up to 85% @ 5 knots
- Speed cuts -> other environmental advantages: lowered SOx, NOx, BC, safety
- Voluntary slow steaming helps
  - but we must capture these savings long term
  - Ships always speed up in boom despite cost

# The scale of emission reductions

- Container ship emissions down by 75% when speed halved (Corbett, 2009)
- Fleet emissions down by 30% when slowed just to the extent necessary to bring overcapacity back into operation (CE Delft, 2009)
- High estimates (75%) of feasible emission reduction only possible with speed reduction (IMO GHG Study, 2009)
- Global 28% emissions cut at no industry cost (Lindstad, 2011) with 19% more ships



# Speed Reduction Potential

Study by Lindstad *et al* (2011):

- Includes newbuilding and inventory costs
- Various ships representing 80% of deep water trades
- Resistance by wind & wave action is factored in

Emissions cuts at zero abatement cost;

RoRo:	17%	17.7 knots - 13% slower*
Bulk:	14%	12.5 knots - 13% slower*
Container:	53%	12.0 knots - 52% slower*

\* than design speed.

Only speed limits cut emissions without constraining capacity

# Ulysses Project

- EU co-funded project; show ultra slow steaming feasible
- Before 2020, GHG cuts of 30% compared to 1990 levels,
- Beyond 2050, GHG cuts of 80% compared to 1990 levels
- Initial focus on tankers and bulk carriers
- Phase 1 existing vessels 10 knots, 2020
- Phase 2 new vessels built 2020, 7.5 knots
- Phase 3 new vessels 2050, 5 knots
- [www.ultraslowships.com](http://www.ultraslowships.com)

# Issues surrounding ship speed limits

- The cost
- Jurisdiction
- What do we mean by a speed limit?
- The need for more ships
- Modal shift
- Safety
- Technical constraints
- Monitoring compliance
- Inventory costs
- Logistics chain

# Conclusions

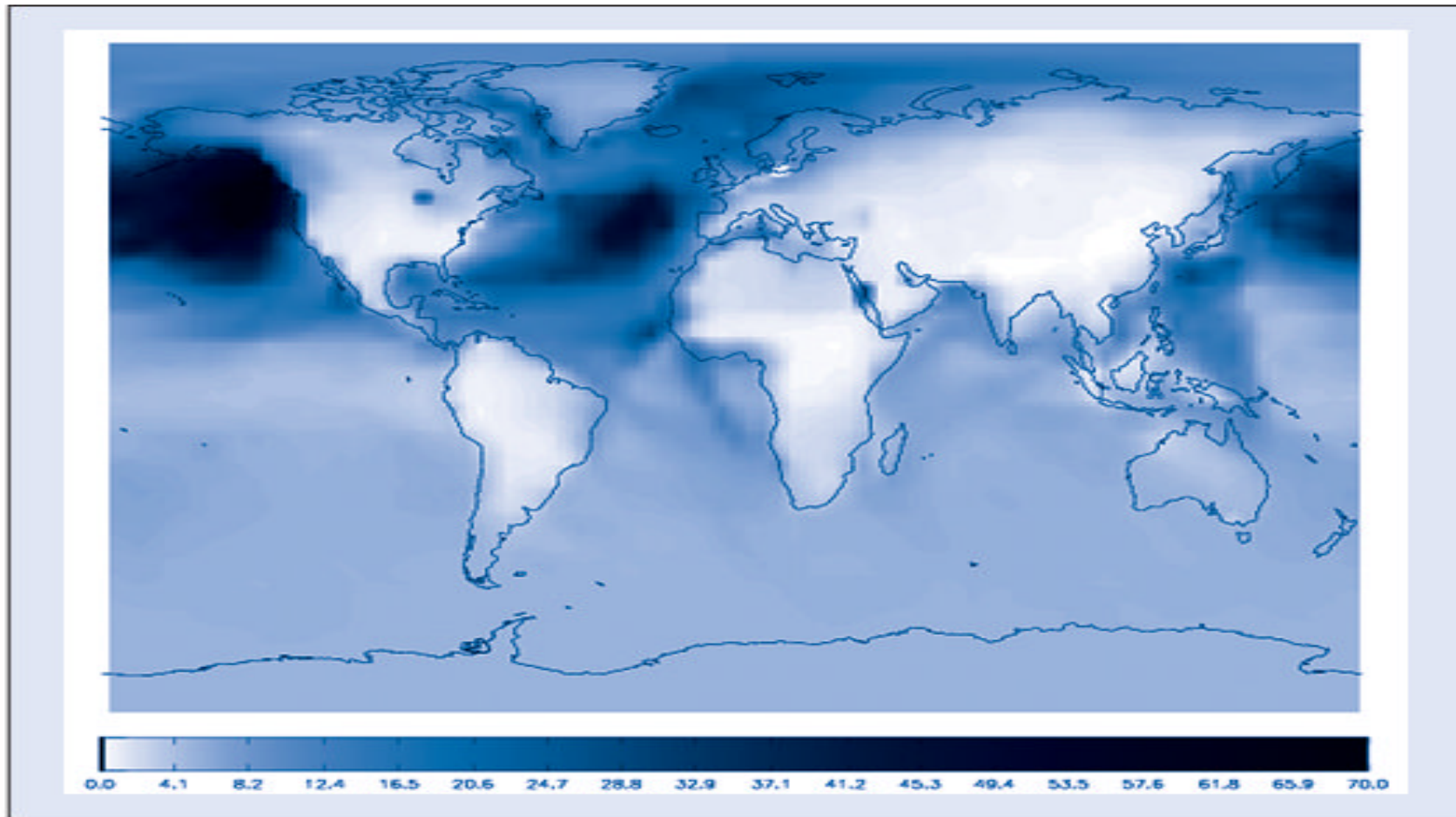
## Global Speed reduction

- Lindstad study showed that ship emissions can be cut from 1122 million ton CO<sub>2</sub> per year to 804 million ton CO<sub>2</sub>,
- ie 28% reduction at zero abatement cost, by speed cuts
- To maintain transport capacity this requires a 19 % increase of the fleet
- Requires IMO agreement

## EU Speed Limit

- EU can act alone
- Similar legal basis to ETS etc
- Port state authority enforces speed limit from last port
- Limit is speed over land
- Satellite tracking (AIS)
- Short sea shipping; give extra hours (grace period)?
- Pay levy to exceed limit

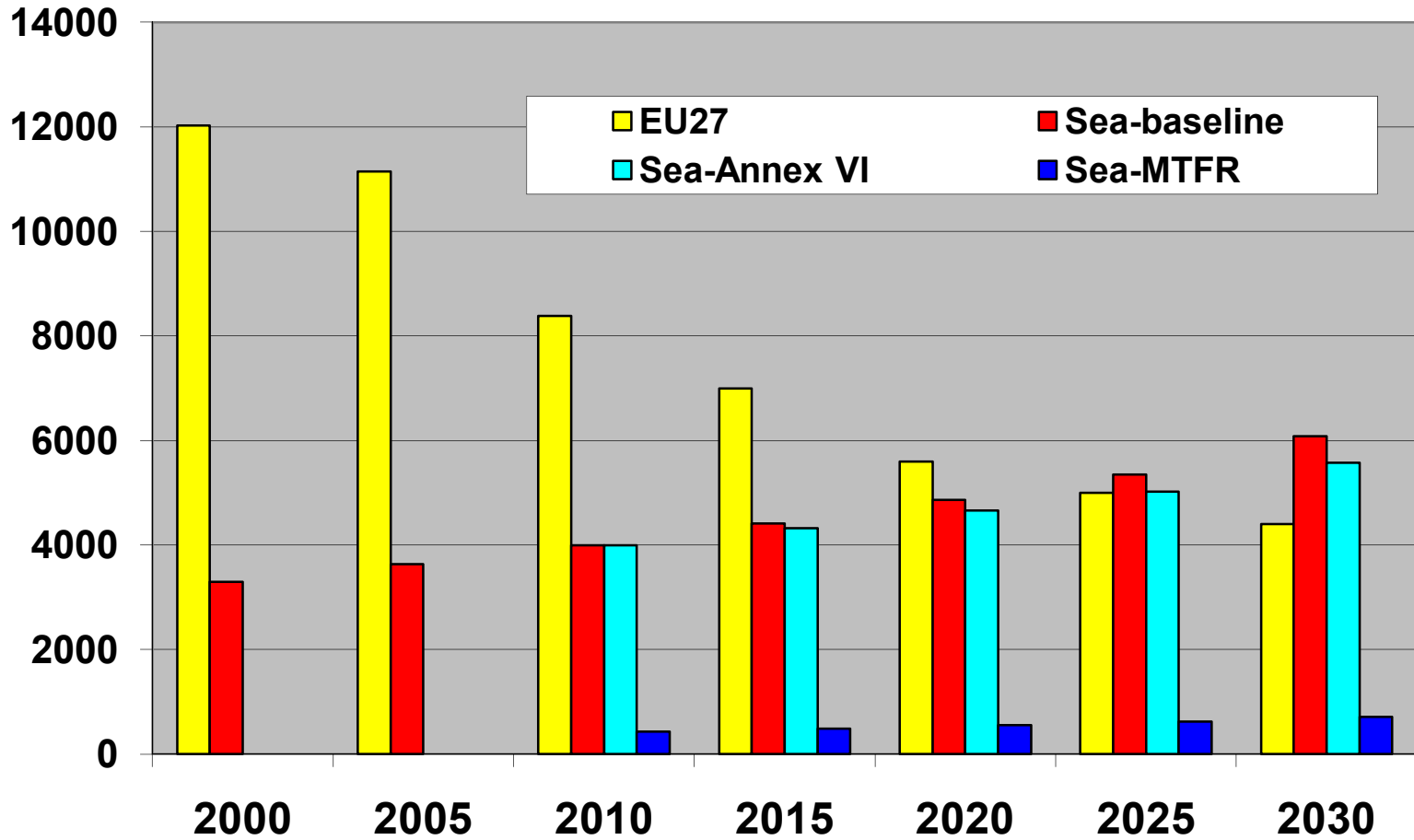
# Higher surface Ozone concentration from shipping



Source: Dalsøren et al. (2007) – which presents a graph with higher resolution.

Source: Globalisation, Transport and the Environment © OECD 2010

# EU NOx – The MARPOL Effect



# EU action on shipping NOx

- NOx both climate and air quality challenge
- Existing ships the problem
- NOx charge/fund
- No IMO action planned
- For EU action
- DG ENV postponing Annex VI NOx to 2013
- No guarantee of action

# Shipping BC and the Arctic

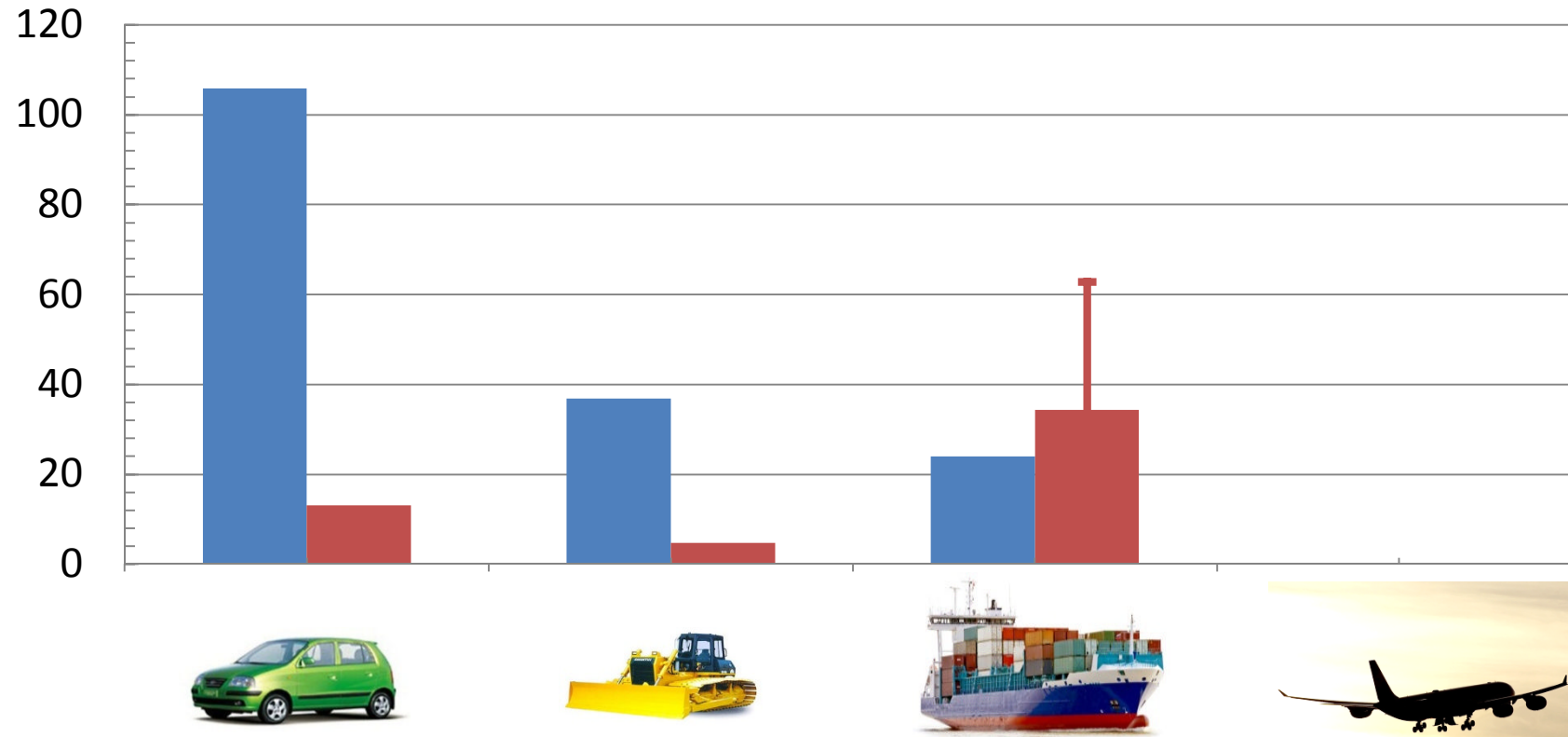
- Arctic already most sensitive region to BC
- Arctic shipping activities expand as ice recedes.
- Transport among largest sources of black carbon
- Shipping 2-3% global BC
- 30% of EU transport BC emissions by 2030
  - maritime share growing as regulation and abatement technologies for on and off-road cut in
  - But the science/figures are unclear
  - Eg exact relationship between low sulphur fuel and BC



# BC projections

## EU transport ( kt)

■ 2010 ■ 2030



**EU ship BC = 40-60+% EU Transport BC by 2030** IIASA 2010

# What to do at IMO and EU

- IMO to adopt fine particle standards into the MARPOL Annex VI
- intermediate IMO goal; regional measure to reduce ship BC emissions near the Arctic
  - Eg development of Polar Code, PSSA
  - technical and operational measures ; eg speed limits
- and/or Arctic measure via EU port state control
- EU Short sea shipping – engine standards
  - Emission limits for small marine engines (expansion of the requirements for the non-road sector)
- Expansion of ECAs, 0.5% global limit
- Improve knowledge shipping BC & abatement

# Fuel Efficiency

## IMO Shipping EEDI

- 10-20% emissions reductions by 2030 versus BAU
- MARPOL Annex VI Amendment
- Vote MEPC 62 July
  - **China, India, Saudis etc oppose**
- Global, binding climate measure

## ICAO CO<sub>2</sub> standard new aircraft

- Impasse after 2 years
- Industry opposes standard which cuts emissions
- Wants benchmark only
- ICAO members passive
- EU wants noise standard
  - **Modest due open rotor**
- US wants weak CO<sub>2</sub> standard
- US-EU trade-off likely
- DE must press for strong CO<sub>2</sub>