Multi-year Expert Meeting
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Climate policy instruments for shipping

Presentation by

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Climate policy instruments for shipping

UNCTAD expert meeting on transport and trade facilitation

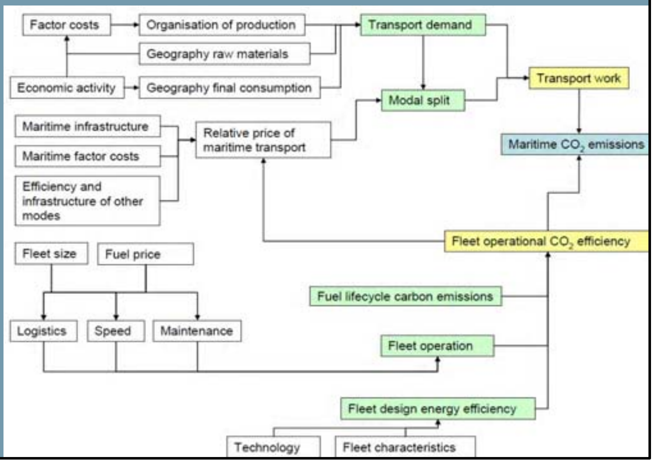
Jasper Faber, 17 February 2009

Outline

- Overview of policy instruments
- Policy assessment
  - Environmental effectiveness
  - Cost-effectiveness
- Impacts on developing countries
- Ways to mitigate undesired impacts
- Steps ahead
- Conclusion

Overview of policy instruments

- Many factors contribute to maritime emissions
- Many of these factors can be addressed by policy instruments



Source: MARINTEK et al., 2009

Overview of policy instruments

- Policy instruments can be
  - Market based
  - Command-and-control
  - Voluntary

Overview of policy instruments

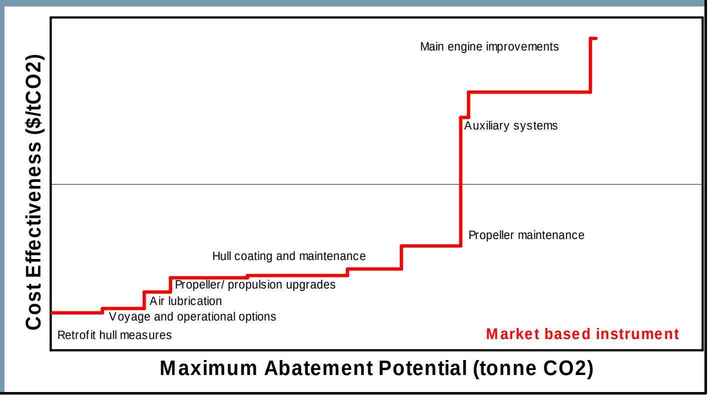
Type / Base	Market based instruments	Command-and-control	Voluntary measures
Maritime GHG emissions	Emissions trading Emissions levy Fuel levy		
Operational efficiency	EEOI levy EEOI levy/benefit scheme	Mandatory EEOI limit value	Voluntary agreement to improve EEOI
Design efficiency	EEDI levy EEDI levy/benefit scheme	Mandatory EEDI limit value	Voluntary agreement to improve EEDI
Fuel lifecycle carbon emissions	Differentiated fuel levy	Fuel lifecycle carbon emissions standard	
Other	R&D subsidies Innovation subsidies	Speed limits	Speed limits

Overview of policy instruments

- Large number of policy instruments
- Instruments have different effects
  - Focus on:
  - Environmental effectiveness – potential to reduce GHG emissions
  - Cost-effectiveness – costs needed to me made to achieve a certain reduction

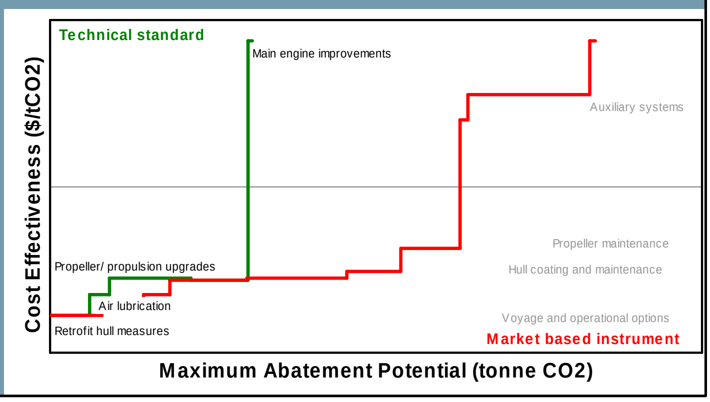
Policy assessment

- Marginal abatement cost curve
  - Market based instruments based on emissions
  - Command-and-control based on design index



Policy assessment

- Instruments addressing emissions directly are more effective and cheaper
  - More measures
  - Larger share of the fleet



Policy assessment

- MBI and instruments addressing emissions are more effective and cost-effective than standards and instruments addressing efficiency indicators
- Voluntary measures are often very cost-effective but not so effective because of free-riders

Type / Base	Market based instruments	Standards	Voluntary measures
Maritime GHG emissions	Most effective Most cost-effective		
Operational efficiency			Not so effective Very cost-effective
Design efficiency		Less effective Less cost effective	

Impacts on developing countries

- Direct effects of climate policy for maritime transport
  - Costs of fuel use increase
  - Effect depends on fuel price and emission costs or costs of abatement measures
  - Fuel price $250, emission price $10:
  - 12% increase in cost of fuel use
  - Higher costs of maritime transport

Impacts on developing countries

- Over half of shipping emissions are on routes to non Annex I countries

Voyages to	Share of global shipping emissions %
Africa	
Arabia	
Australia	
Caribbean	
Central America	
China	
Middle East	
Europe	
India	
Japan	
North America	
South America	
SE Asia	

Source: DLR, 2009

Impacts on developing countries

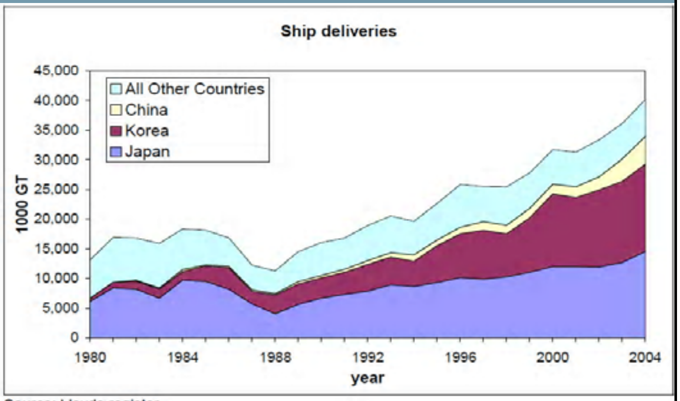
- Higher costs of imports
  - Or higher costs of exports
- Lower demand for cruise tourism
- Transport demand probably not affected much
  - Demand is probably inelastic
- Registry income probably not affected
  - As long as policy is flag-neutral
- Higher demand for new fuel efficient ships
- Higher demand for ship maintenance

Impacts on developing countries

- Higher costs of imports
  - E.g., some isolated island states spend 10% - 25% of GDP on food imports
  - This could increase by 0.1% to 1% of GDP
  - Analysis of total import cost increases is currently being done
- Lower demand for cruise tourism
  - Tourist destinations have high cross-elasticities
  - If a destination becomes more expensive, demand decreases
  - So an increase in cruise costs could lower demand significantly
  - Unless other modes of transport also face higher prices because of climate policy

Impacts on developing countries

- Higher demand for new fuel efficient ships
- Higher demand for ship maintenance
- Would benefit shipbuilding nations



Source: Lloyds register.

Impacts on developing countries

- Most developing countries' maritime import costs would increase
  - The size of the impact is currently being assessed
- Some developing countries' tourism receipts could decrease
  - The size of the impact is currently being assessed
- Some developing countries would benefit from increased demand for ships

Mitigation of undesired impacts

- How can the undesired impacts be mitigated?
- Differentiation
  - Of responsibilities
  - Of use of revenues
  - Or a combination of both

Mitigation of undesired impacts

- Differentiation of responsibilities
- Route-based differentiation
  - Could lead to some evasion, but …
  - Evasion can be limited by design
  - Environmental effect would be reduced
  - Subject of further study
- Cargo-route based ('Global but differentiated')
  - Could lead to some evasion , but …
  - Evasion can be limited by design
  - Environmental effect would be reduced
  - Subject of further study
- Differentiation according to flag, ownership
  - Would distort markets and have very little impact

Mitigation of undesired impacts

- Differentiation of responsibilities
- Ship-size threshold
  - reduce negative impact on food imports in small islands
  - little impact on imports in large developing countries
  - Could distort short-sea shipping markets
  - Environmental effect would be reduced
  - Subject of further study
- Exclusion of certain cargo types
  - Food?
  - But what about food in containers?
- …

Mitigation of undesired impacts

- Differentiation of use of proceeds
- Use proceeds of auctioning allowances to finance climate policy in developing countries
  - Based on GDP per capita
  - Balance of costs and benefits is being studied

Mitigation of undesired impacts

- Combination of responsibility and use of proceeds, e.g.
  - Route to Annex I countries only
  - Size threshold
  - Differentiation of use of proceeds

Steps ahead

- Discussion will continue
  - Maritime emissions 3.3% of global CO_2
  - More than Germany, Canada, UK
  - Large cost-effective reduction potential
  - On agenda in IMO and UNFCCC
  - Link with climate policy finance

Conclusion

- A large number of policy instruments is conceivable
- Emissions trading and emissions charges are the most effective and cost-effective
- Developing countries would be affected
- Mitigating undesired impacts is possible by differentiating responsibilities and use of proceeds

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Thank You

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More information

- MARINTEK, CE Delft, Dalian Maritime University, Deutsches Zentrum für Luft- und Raumfahrt e.V., DNV, Energy and Environmental Research Associates (EERA), Lloyd's Register-Fairplay, Manchester Metropolitan University, Mokpo National Maritime University (MNMU), National Maritime Research Institute (Japan), Ocean Policy Research Foundation (OPRF), 2009, *Study of Greenhouse Gas Emissions from Ships*, London: IMO
- CE Delft, 2008, *Left on the High Seas Global Climate Policies for International Transport*, Delft, http://www.ce.nl/pdf/08_7748_37.pdf