Baltic Sea cooperation for reducing ship and port emissions
through knowledge- & innovation-based competitiveness

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Forecasting the future cargo flow in the Baltic

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Baltic Sea Region
Programme 2007-2013

Viewpoint of the presentation

- Maritime cargo flow
- Market orientation, market shaping
- Price pressures and remedies
- Survival strategies
- Level playing field

Baltic Sea cooperation for reducing ship and port emissions
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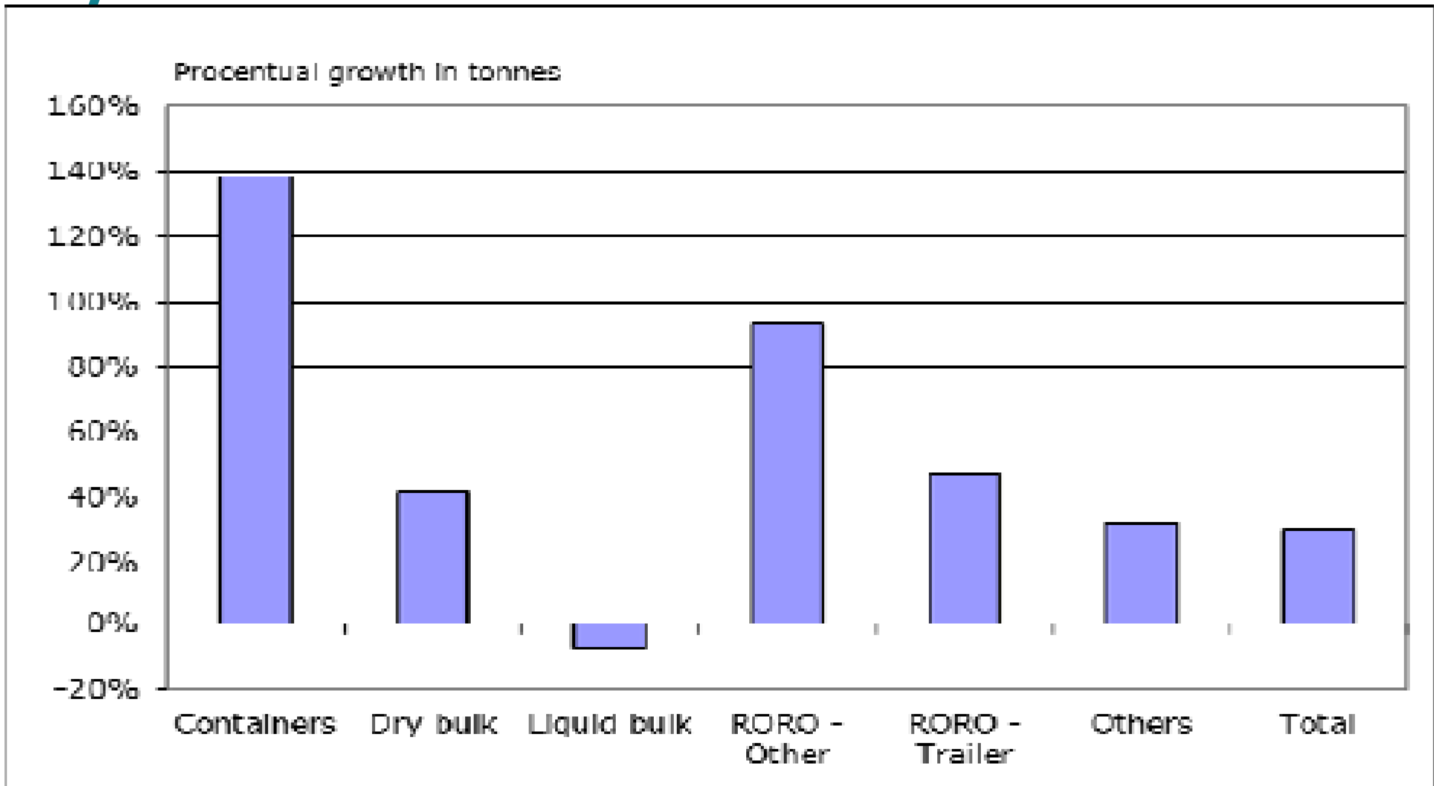
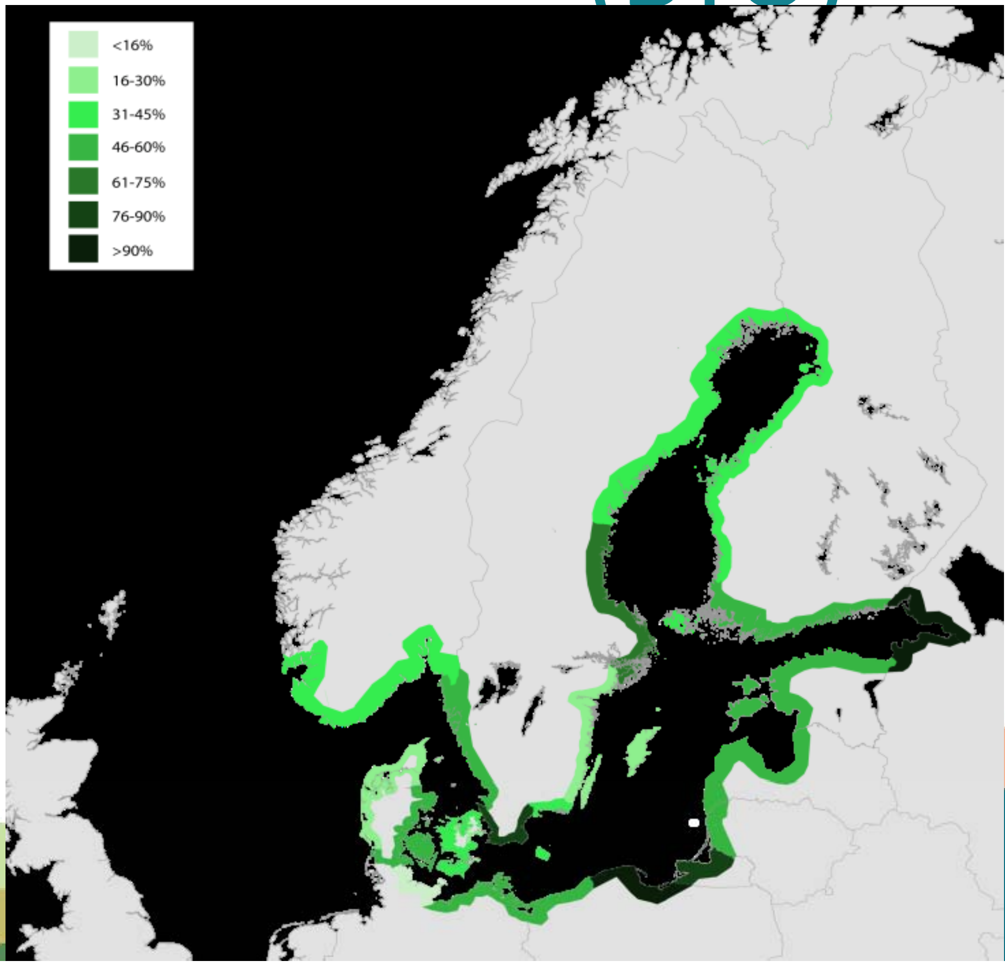
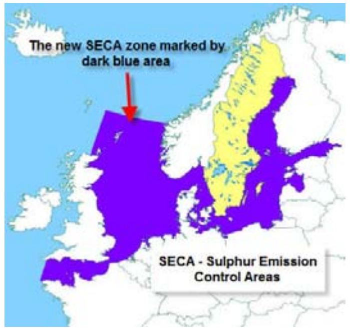
Growth of maritime transport (BTO)



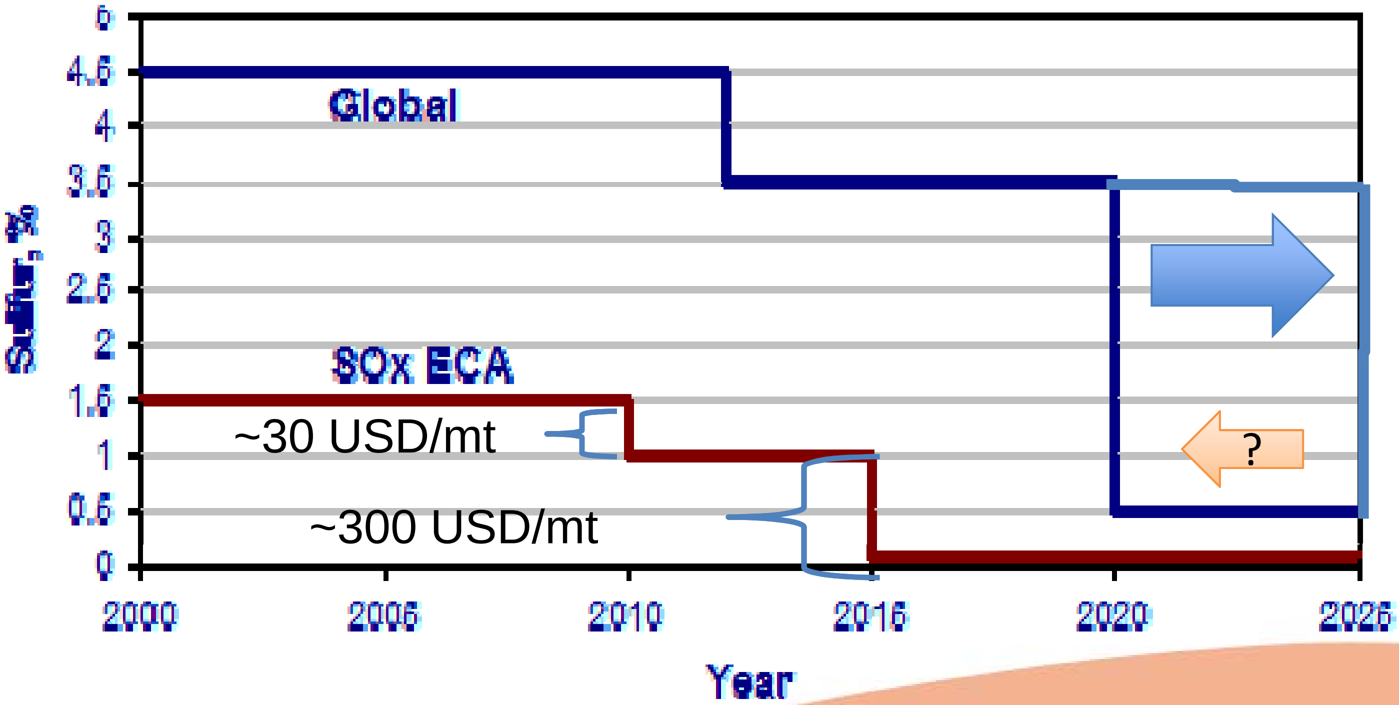
Baltic Sea Region
Programme 2007-2013

Relative cargo volume changes (BTO)

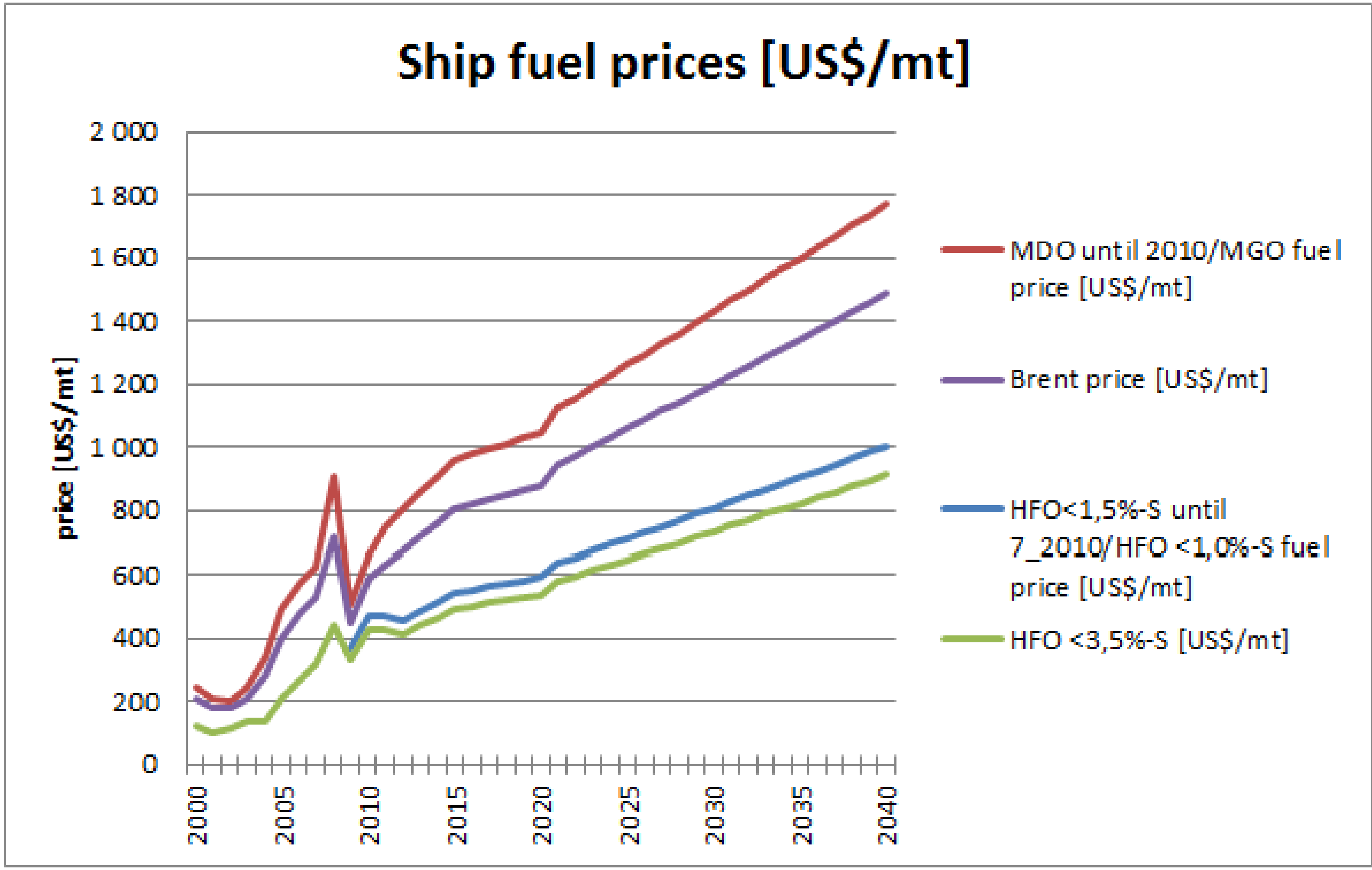




IMO sulphur limit implementation

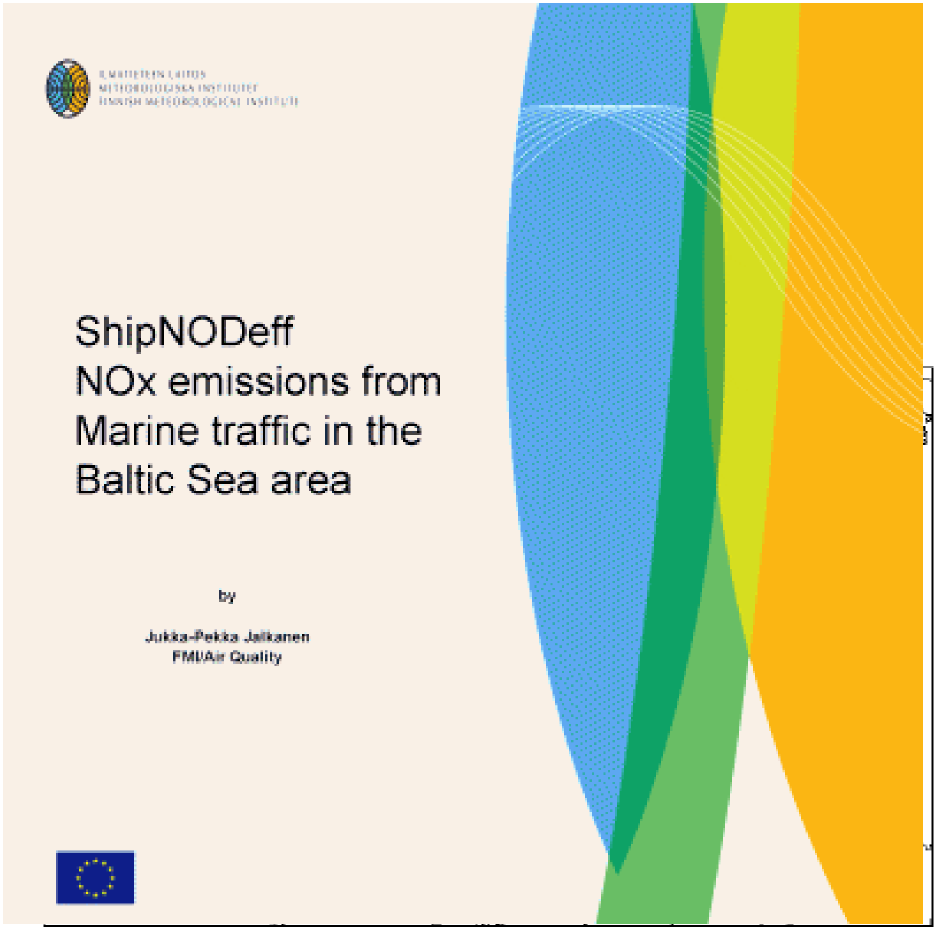


Expected fuel price development



Northern Europe's SECA

- IMO Marpol Annex VI
  - SOx emission control area, SECA
  - Baltic Sea shipping: Fuel consumption 5.7 million tons (2009)
  - North Sea shipping: Fuel consumption 9.7 million tons
  - Total 15.4 million tons
  - Commercial shipping 13 million tons (12 290 ships, 13 ship types)
    - Ro-ro
    - Ropax
    - Product tanker
    - Container
    - Chemical tanker
    - General cargo
    - Vehicle carrier
    - Crude oil tanker
    - Bulk ship
    - LPG tanker
    - Cruise ship
    - Reefer
    - LNG tanker


ShipNODeff
NOx emissions from Marine traffic in the Baltic Sea area

by

Jukka-Pekka Jalkanen
FMI/Air Quality

MARPOL Annex VI additional costs

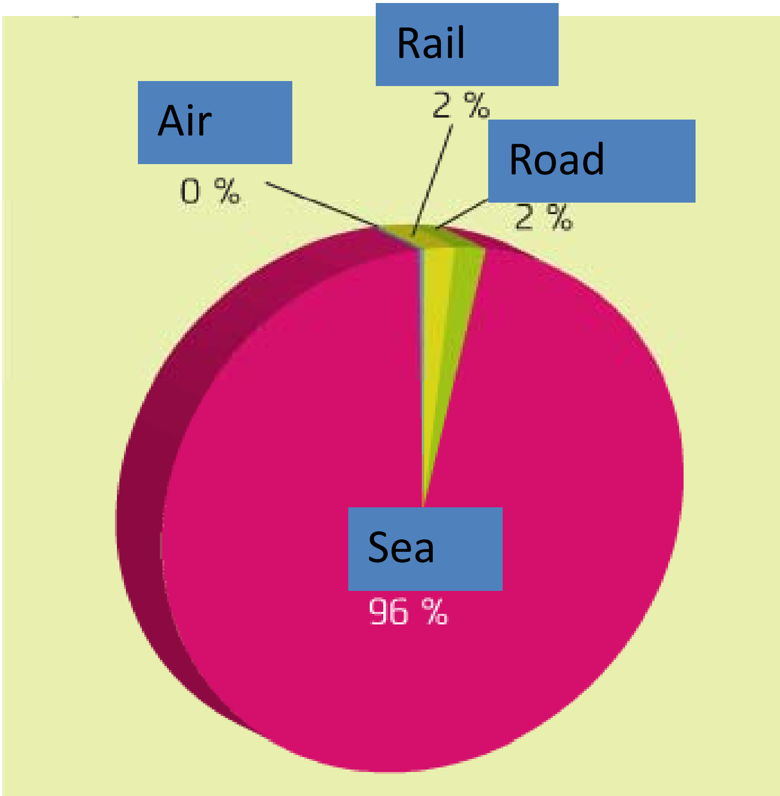
- Additional costs due to fuel switch (HFO → MGO) *today prices*

  = (SECA fuel consumption) * (assumed share of HFO)*(Distillate vs. HFO price difference)

  = 15.7 million tons/year * 0.85 * 294$/ton = **3.9 billion $/year**

Price difference between MGO and HFO will increase in the future!

Export ton kilometers (Finland)



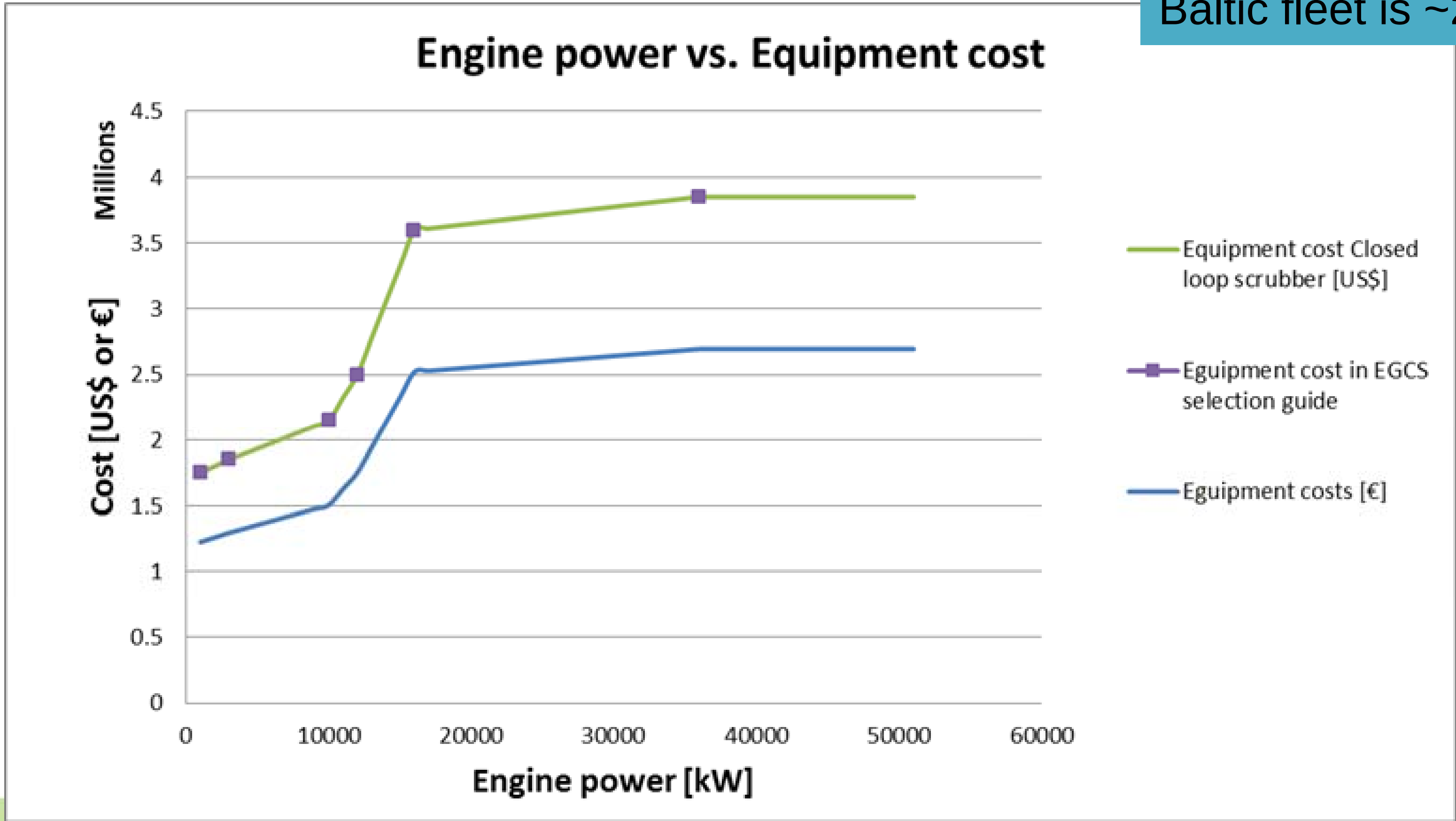
Cost reduction measures (examples)

1. Scrubbers

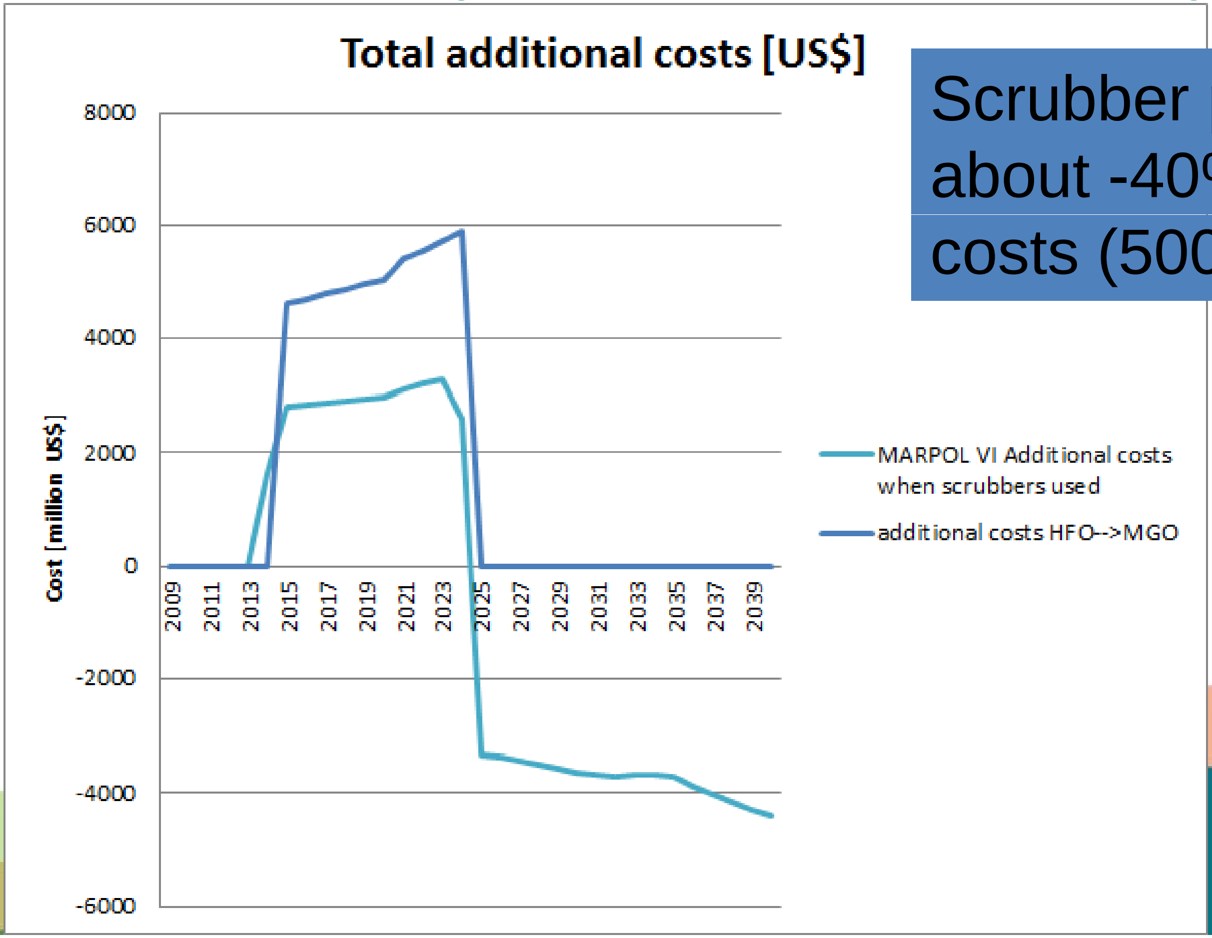
2. Vessel parameters
3. New vessels

Scrubber cost

NB: average age of Baltic fleet is ~20 years



Costs reduction potential of scrubbers (see BTJ 2/2012)



Scrubber potential is about -40% of additional costs (500-1000 vessels)

Baltic Sea Region Programme 2007-2013

Cost reduction measures

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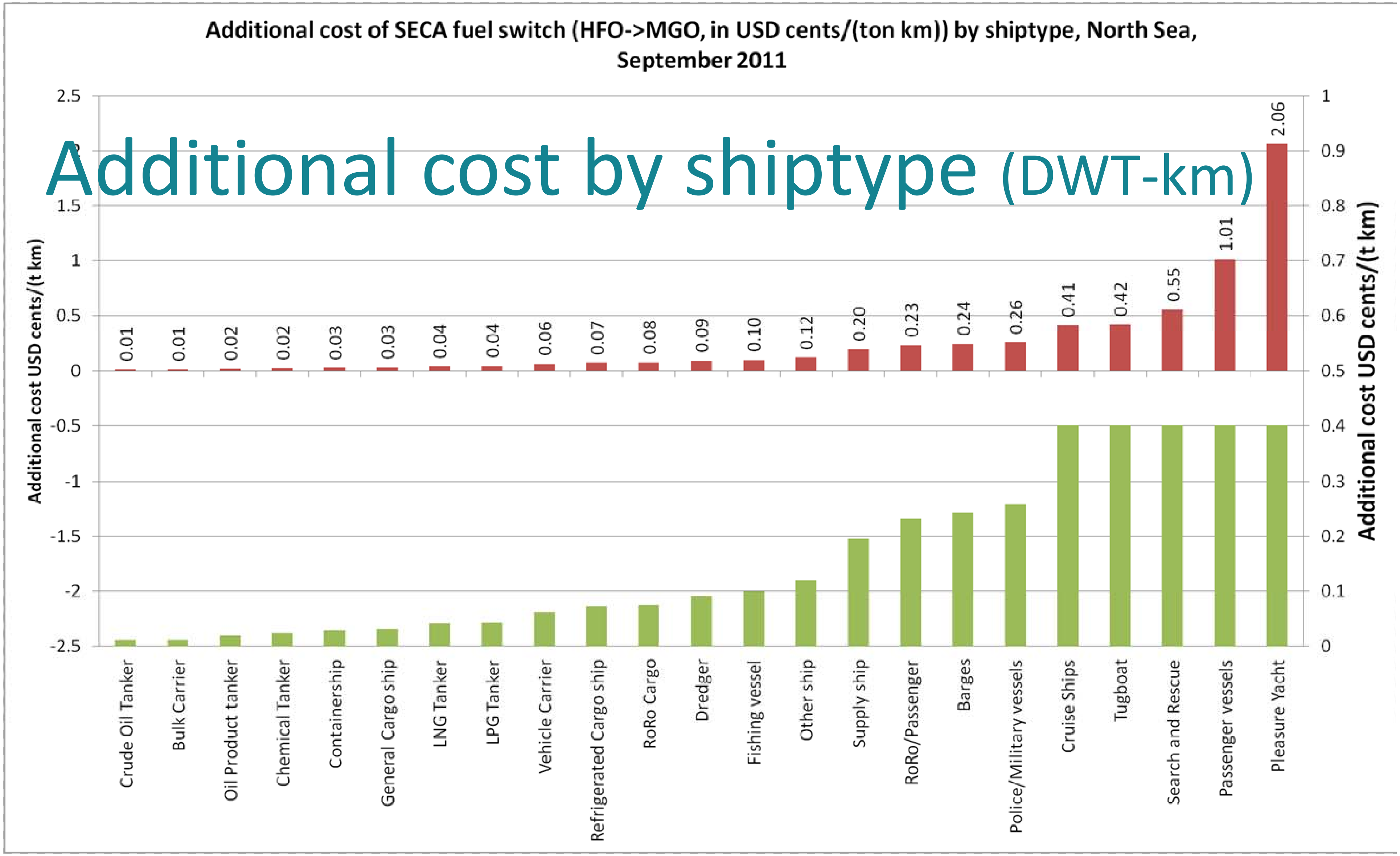
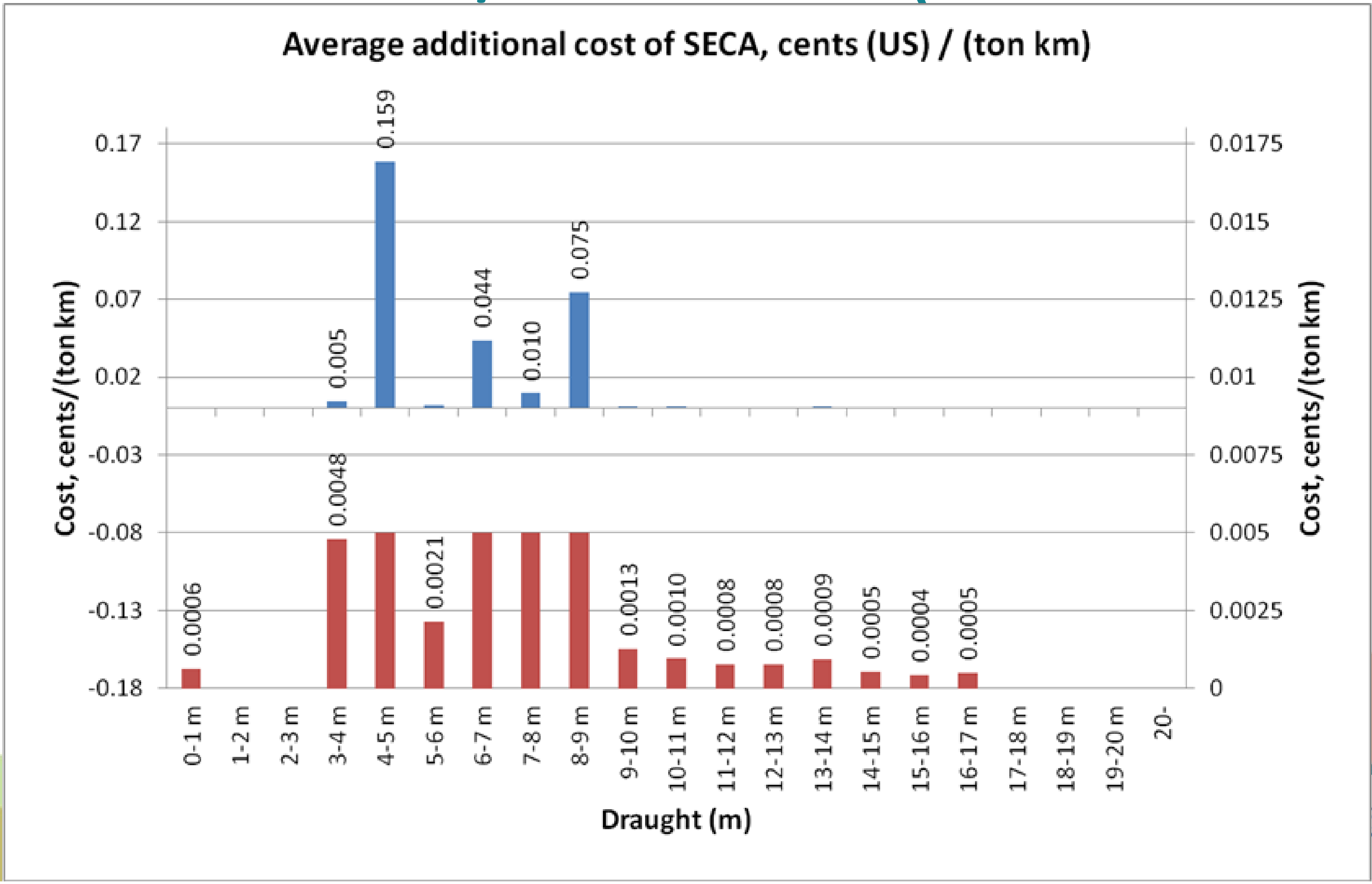
3. New vessels

Additional cost by shiptype (DWT-km)



Add. Cost /DWT-km (Container v.)



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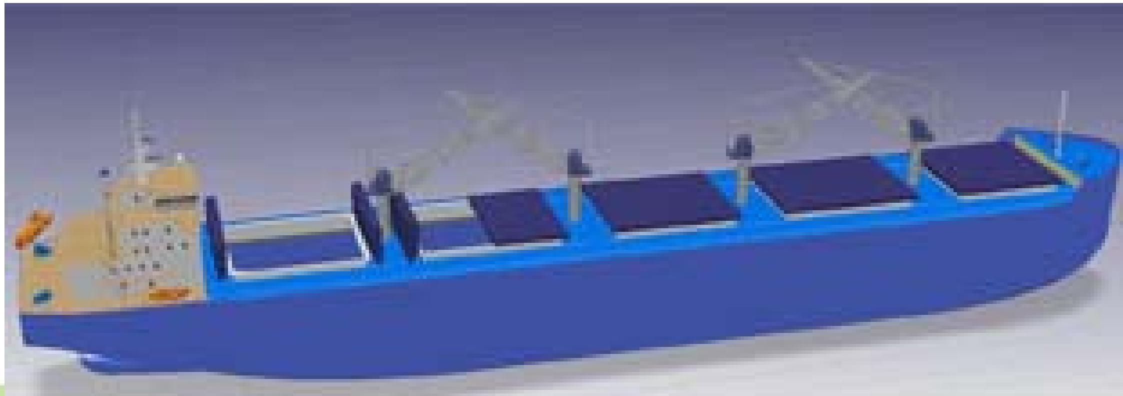


Newbuilds
(incl. replacements; courtesy of Deltamarin)

- Rockbottom prices at shipyards (handysize bulker 2008 28M$, now about 22M$)
- Efficient new designs, standard bulker 15..30% more efficient than some 2006-2008 builds
- NPV of newbuild likely positive compared to MGO-powered old ship
- LNG and other new fuels viable for newbuilds

Logistic chain strategies

Level playing field

Customer intimacy
- Chain length
- Number of steps
- Type of cargo

Blue ocean strategy
- Nuclear?
- LNG (next 5 years)

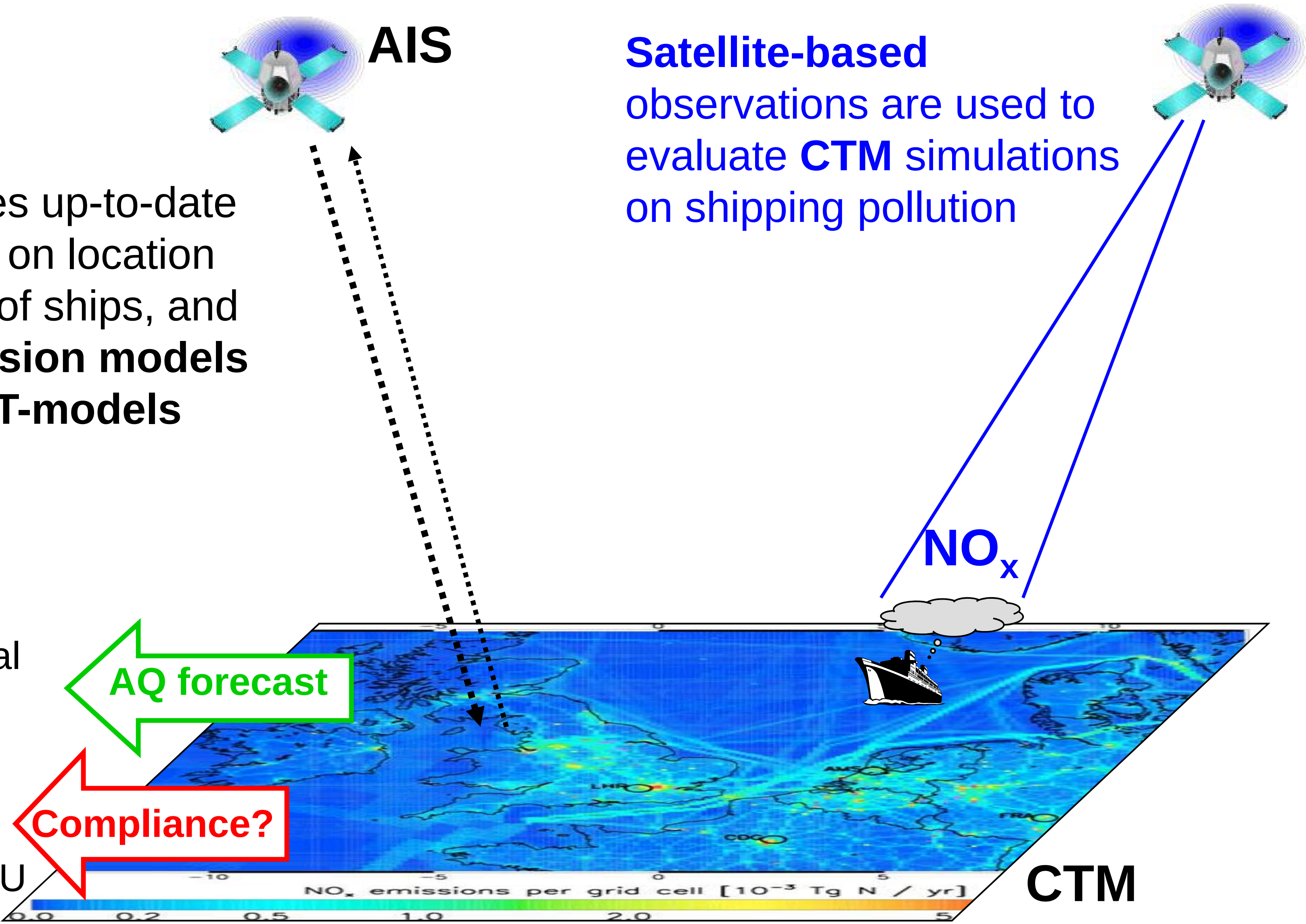
Service leadership
- Speed
- Throughput

Operational excellence
- Economies of scale, e.g. large vessels
- Standardized service
- SCM cost control

Fuel efficiency

Service for a level playing field

AIS provides up-to-date information on location and speed of ships, and feeds **emission models** and then **CT-models**



Environmental agencies

National maritime authorities, EU

Maritime transport

- will have competitive edges over land transportation also after 2015
- needs to
  - rethink its market position
  - build on strengths
  - reap new efficiencies (esp. fuel)
- needs public support for the transition (opportunity cost)

Thank you for your attention!