

Impact of new regulations on fuel pricing



**Seminar on impact of the new IMO marine fuel regulations on
transport in the Baltic Sea, Copenhagen, 19 January 2010
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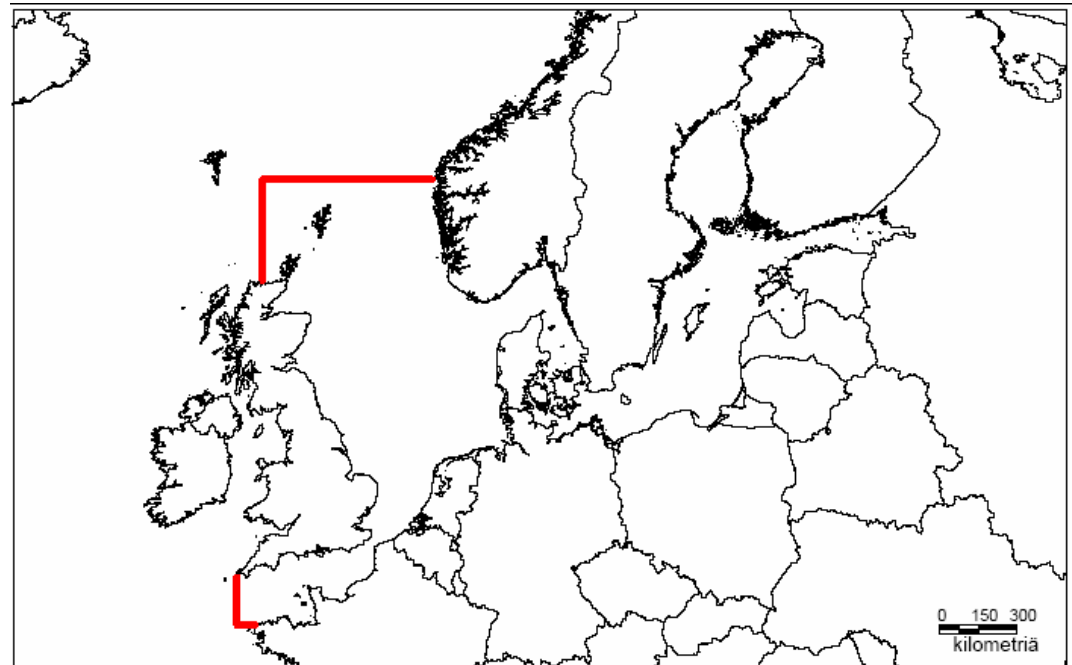
Introduction



- After restructuring of the government transport agencies in Finland, the land, air, railroad and maritime transport safety authorities have been merged to form the **Finnish Transport Safety Agency**.
- All functions related to maritime safety of ships of the **Finnish Maritime Administration** have been transferred to this new agency.

New IMO regulations

- SECA areas:
 - The Baltic Sea
 - North Sea (latitude 62° north and longitude 4° west) and the English Channel
- New Annex VI, regulation 14, SO_x and PM
 - Sulphur content of fuel oil less than 1% (1 July 2010)
 - Sulphur content of fuel oil less than 0.1% (1 January 2015)
 - SO_x scrubber can be used as an alternative, when the use of any type of fuel is possible.



Finnish study on the impacts of the new IMO regulations

- The Finnish study on the impacts of the new IMO regulations on transportation costs, "**Sulphur content in ships bunker fuel in 2015**", was published in April 2009.
- The study was ordered by Finnish Ministry of Transport and Communications.
- The study is available at the web-site of the ministry, www.lvm.fi -> Publications -> 31/2009

Contents of the study

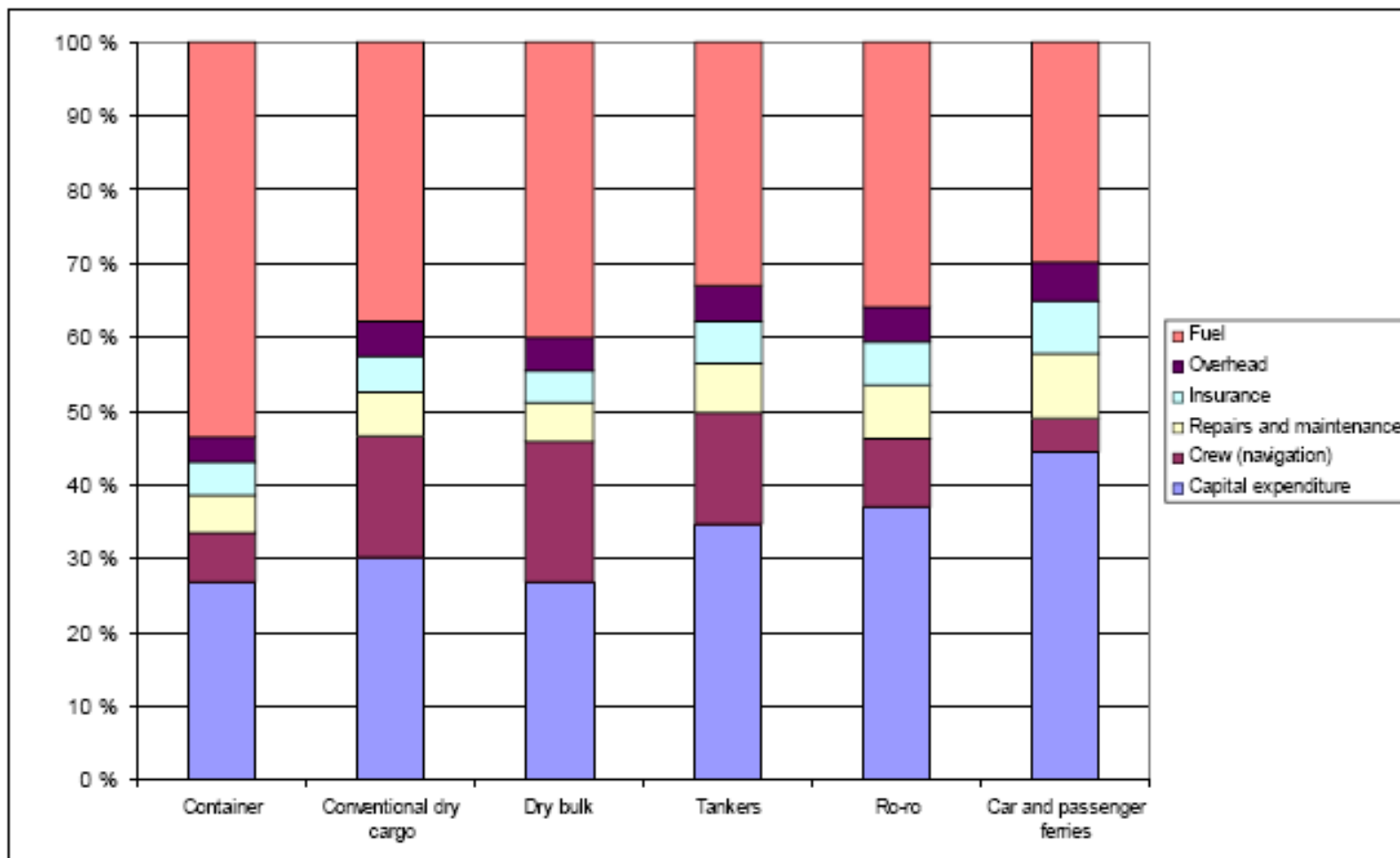
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- The following issues were analyzed:
 - Day-to-day running costs of various vessel types
 - Effect of the estimated fuel price rise on the change to the day-to-day running costs of vessels
 - An estimate of total costs to Finnish marine traffic

Methodology and limits of the study



- It was assumed that the new sulphur limits of Annex VI will be met by using fuel oil with sufficiently low sulphur content.
- The use of exhaust gas scrubbers was not considered.
- The use of other types of fuel, e.g. natural gas, was not considered.
- Estimates of fuel oil costs were made based on past experience of cost of fuel oil with different sulphur content.
- Manufacturing costs of different fuel oil types was not analyzed.

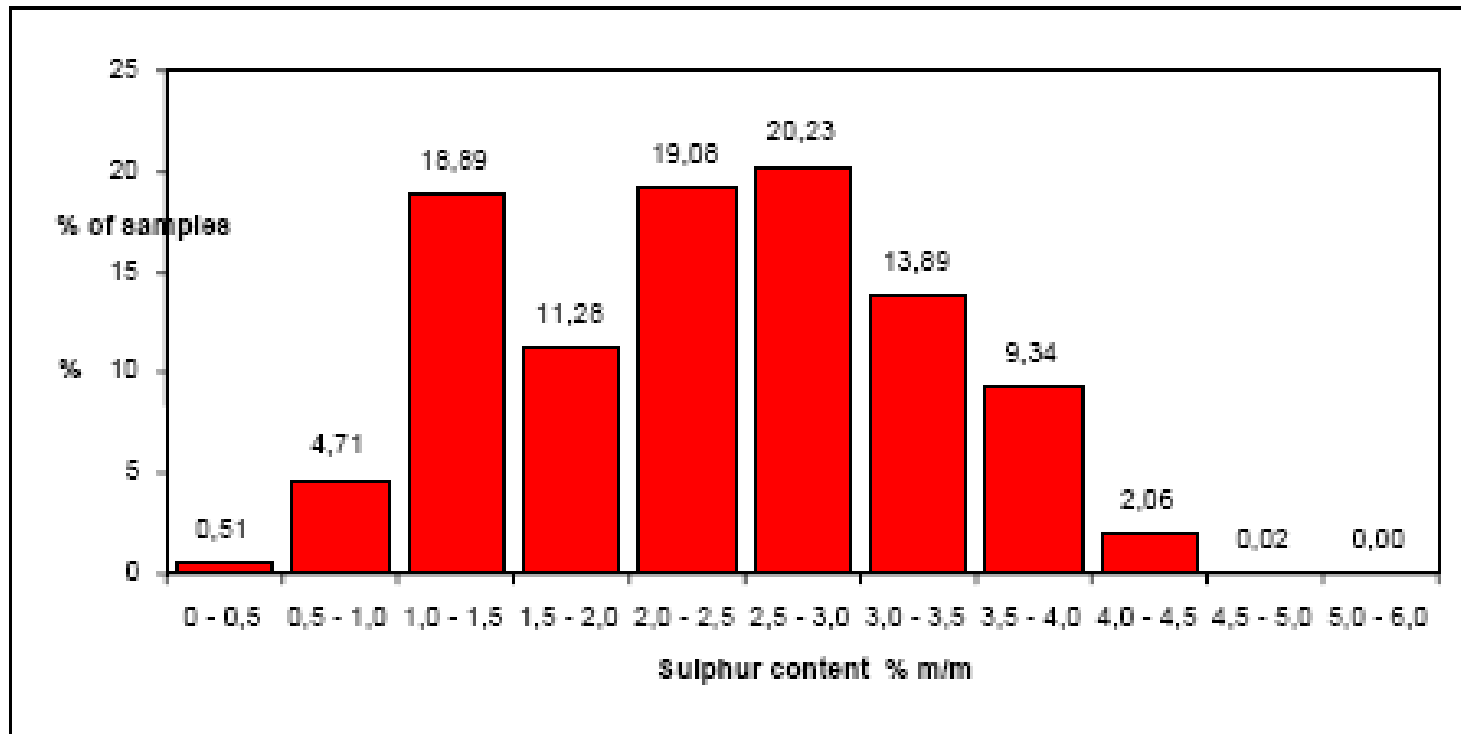
Day-to-day average running costs of various vessel types in Finnish trade



Effect of the estimated fuel price rise on the change to the day-to-day running costs of vessels

- Today 95% of the fuel used by ships sailing in the Baltic Sea is heavy fuel oil (HFO) with a sulphur content less than 1.5%.
- 5% of the fuel is marine diesel oil (MDO) or marine gas oil (MGO).
- HFO with a sulphur content less than 1.5% can be made of crude oil which has sufficiently low sulphur content, or it can be made by mixing HFO with high sulphur content with fuel oils with low sulphur content.

Sulphur content of fuel oil (HFO) currently in use by ships



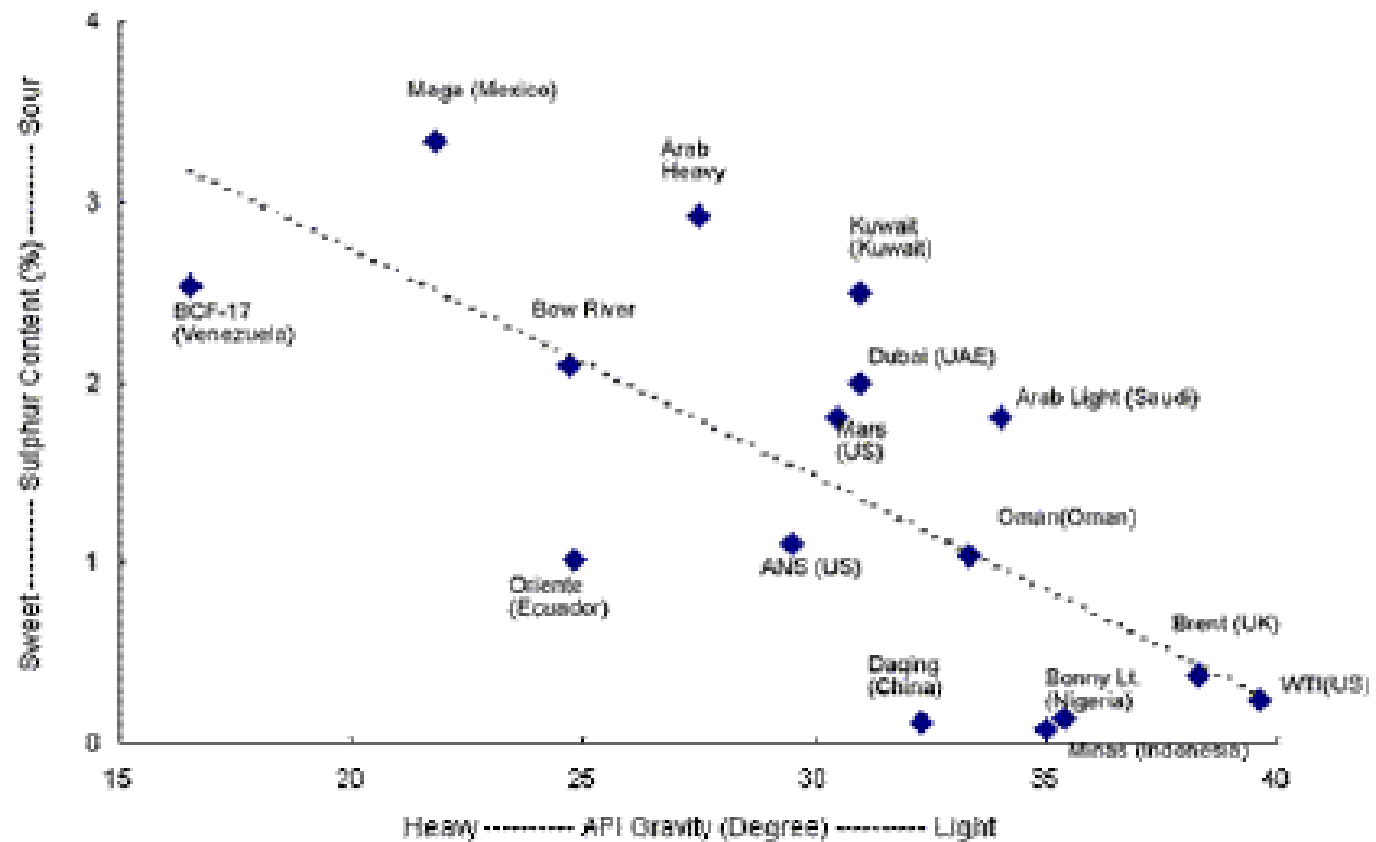
- The sulphur content of heavy fuel oil grades used by ships in global marine traffic (IMO, 2009)

Effect of the estimated fuel price rise on the change to the day-to-day running costs of vessels

- Assumptions made in the study:
- Fuel oil with sulphur content less than 1% can still be made of crude oil which has sufficiently low sulphur content, or by mixing HFO with high sulphur content with fuel oils with low sulphur content.
- Fuel oil with sulphur content less than 0.1% is gas oil. It cannot be made by mixing. It could be residual oil made of crude oil, but crude oil grades with sufficiently low sulphur content are extremely rare.

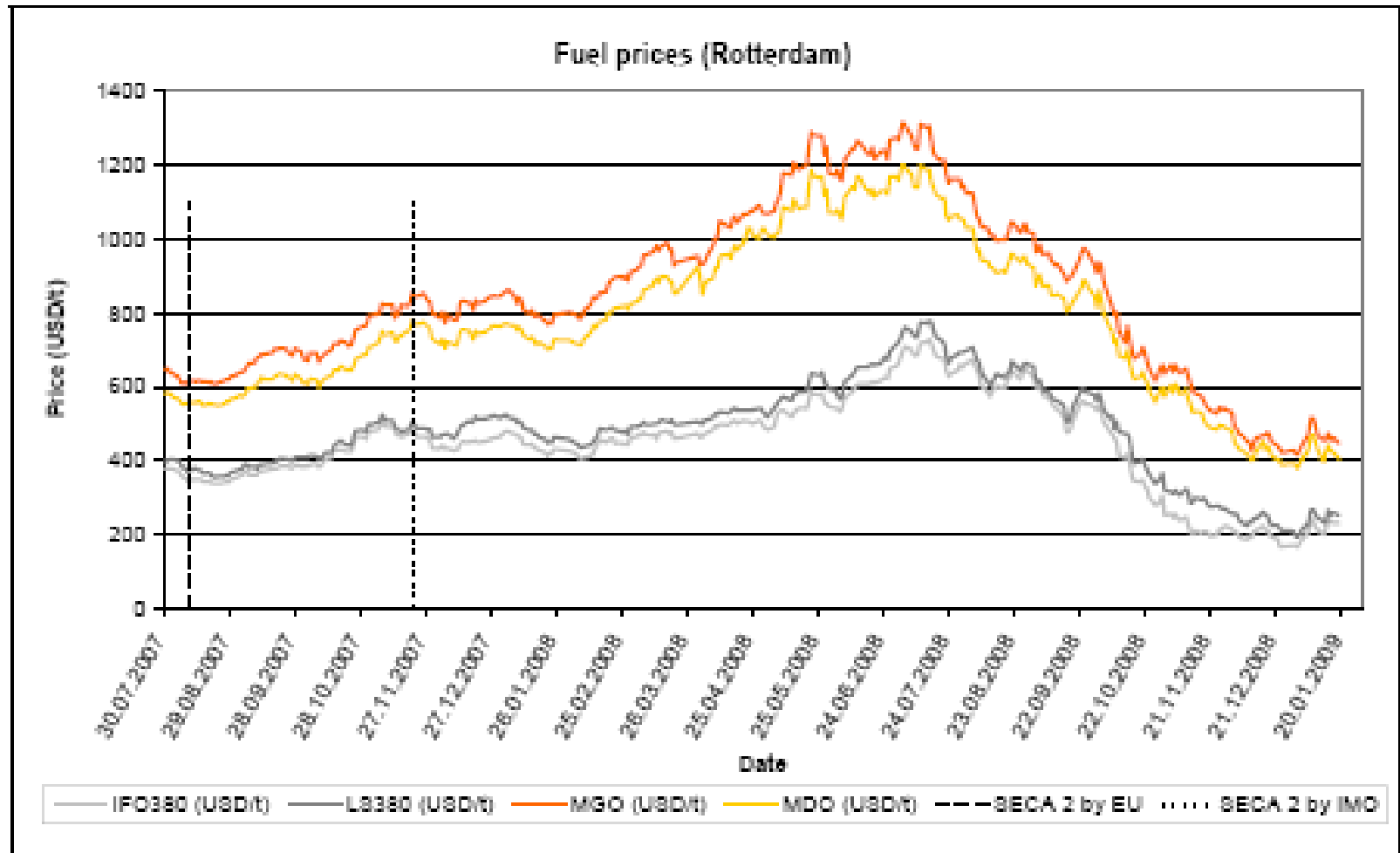
Sulphur content of certain crude oil grades

Grades of Crude Oil



Source: The International Crude Oil Market Report

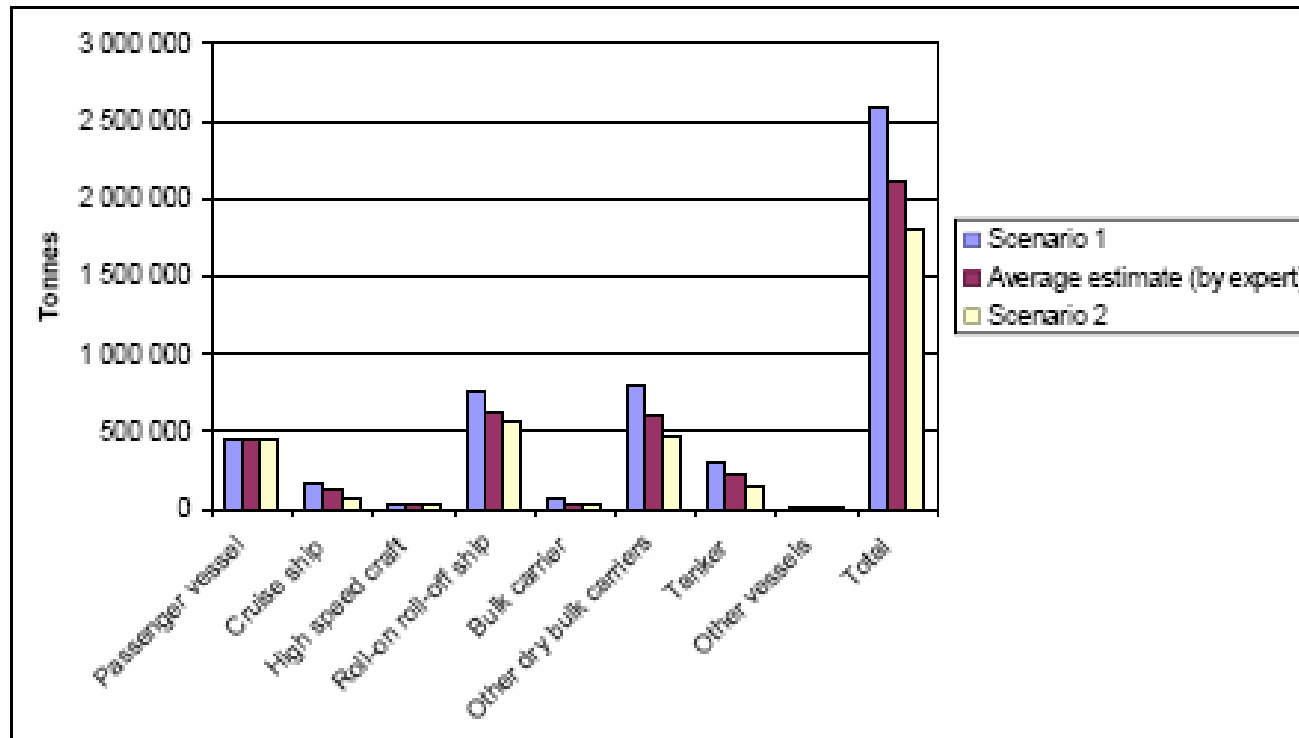
Fuel oil prices



Estimated price of low sulphur fuel grades

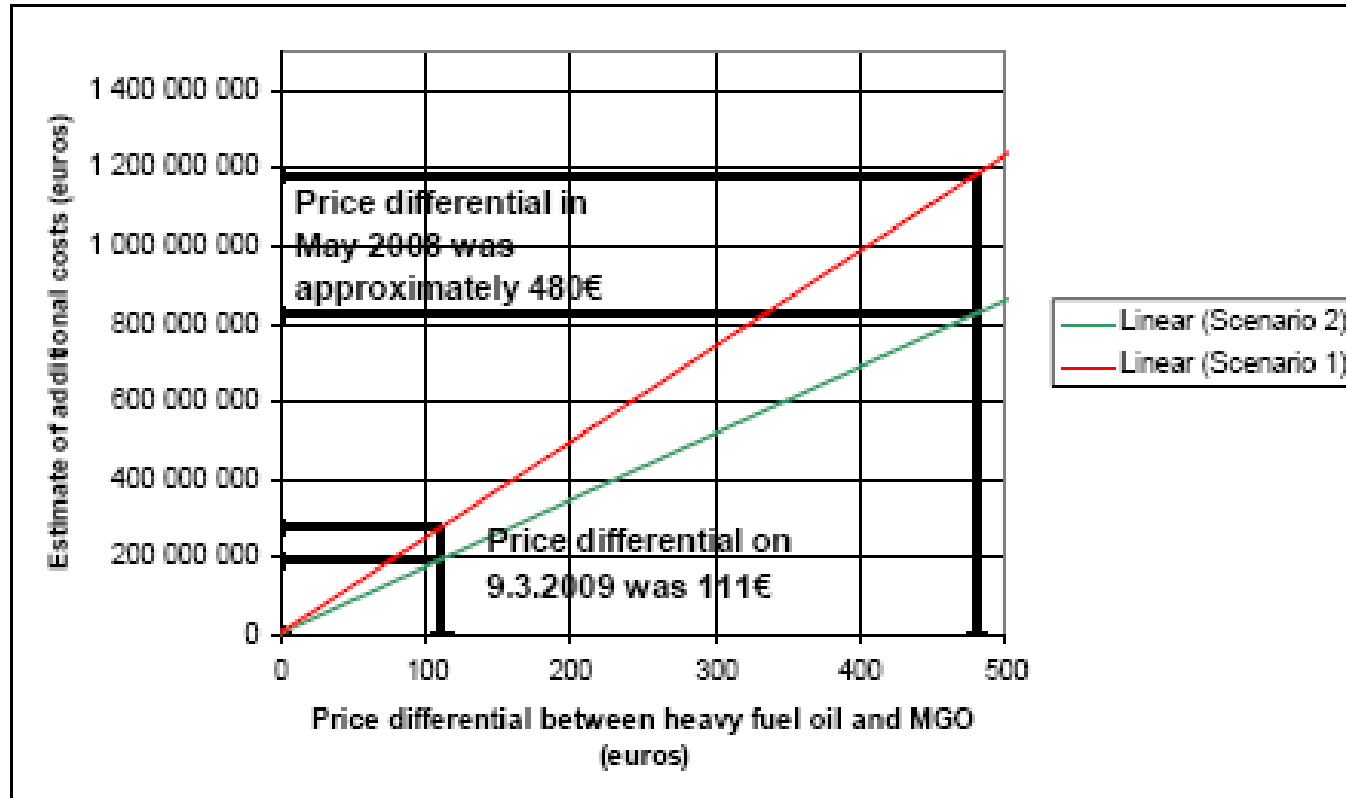
Fuel grade	Price per tonne [€/t]	Price difference per tonne [€/t]
Current heavy fuel oil (1.5%)	271	
Heavy fuel oil (1%)	290 - 330	+19-59
Light fuel oil (0.1%)	470-500	+199 - 229

Fuel oil used by ships sailing to Finnish ports



- **Total fuel oil consumption for ship traffic connected with Finnish imports and exports in 2007 was estimated to be between 1.8 (skenario 1) and 2.6 (skenario 2) million tons.**

Estimated total costs to the Finnish import and export industry



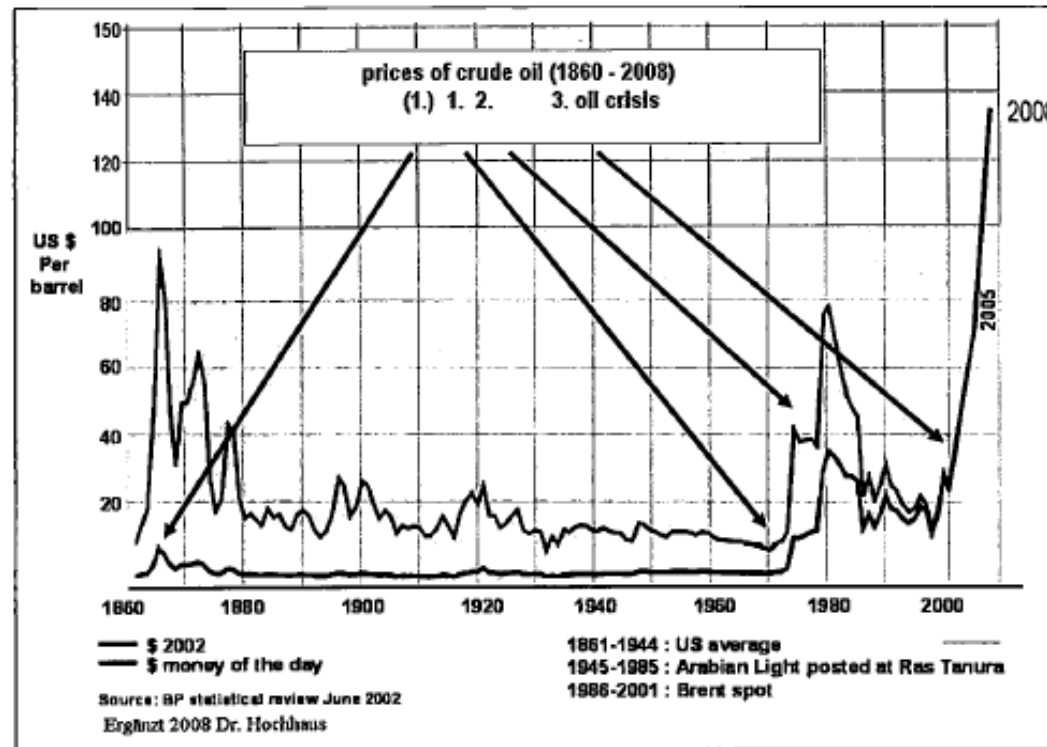
- It was assumed that the rising fuel oil costs will be incorporated in their entirety in sea freight costs.

Conclusions of the study

- The fuel and vessel running costs for ships operating in the current special areas, i.e. the Baltic Sea, the North Sea and the English Channel, will rise considerably as the provisions on sulphur content of 0,1 % in the revised MARPOL Annex VI enter into force in 2015.
- This will also affect global navigation when the global switch to fuel with 0.5% sulphur content in 2020 or no later than 2025 takes place.
- The estimate is that if vessels bound for Finland were to switch from heavy to light fuel – in this case gas oil with a maximum sulphur content of 0.1% - the following additional costs would be incurred depending on the differential in prices for fuel grades:
 - at 111 euros per tonne the maximum would be 273 million euros and the minimum 190 million euros
 - at 480 euros per tonne the maximum would be 1.182 million euros and the minimum 823 million euros

Discussion

- The actual cost of fuel oil depends very much on supply and price of crude oil. Crude oil price development absolute and inflation-adjusted to the year 2002 (source BP 2002, The Naval Architect, June 2009) is shown below.



Discussion

- The actual cost of fuel oil depends very much on supply and demand of different types of fuel oils.
- The new ECA areas along the coasts of Canada and USA will have an effect on demand of low sulphur fuel oil.



Discussion

- The use of exhaust gas scrubbers may turn out to be a more cost efficient alternative to the use of high quality fuel oil with low sulphur content.
- The use of other types of fuel oils, for example natural gas, may also turn out to be an economically attractive alternative.
- The benefits of the the regulations should also be considered!

Finally, thank you for your attention!

