

The Impact of International Sulphur Regulations for Ships

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Relevance of sulphur emissions reduction


- ▶ Ships generate 5-10% of global SO_x emissions
- ▶ On average 7-15 million tonnes per year
- ▶ And even larger share of local emissions; e.g. half of SO_x emissions in Hong Kong in 2008.
- ▶ Much more than other transport modes
- ▶ Important health impacts: health care costs and early mortalities



On-going discussions

- 2015 Requirements Emission Control Areas
- 2020 Global sulphur cap
- Fuel availability study; decision by 2018

Outside an ECA	Inside an ECA
4.50% prior to 1 st January 2012	1.50% prior to 1 st July 2010
3.50% between 1 st January 2012 and 2020	1.00% between 1 st July 2010 and 1 st January 2015
0.50% from 1 st January 2020	0.10% from 1 st January 2015

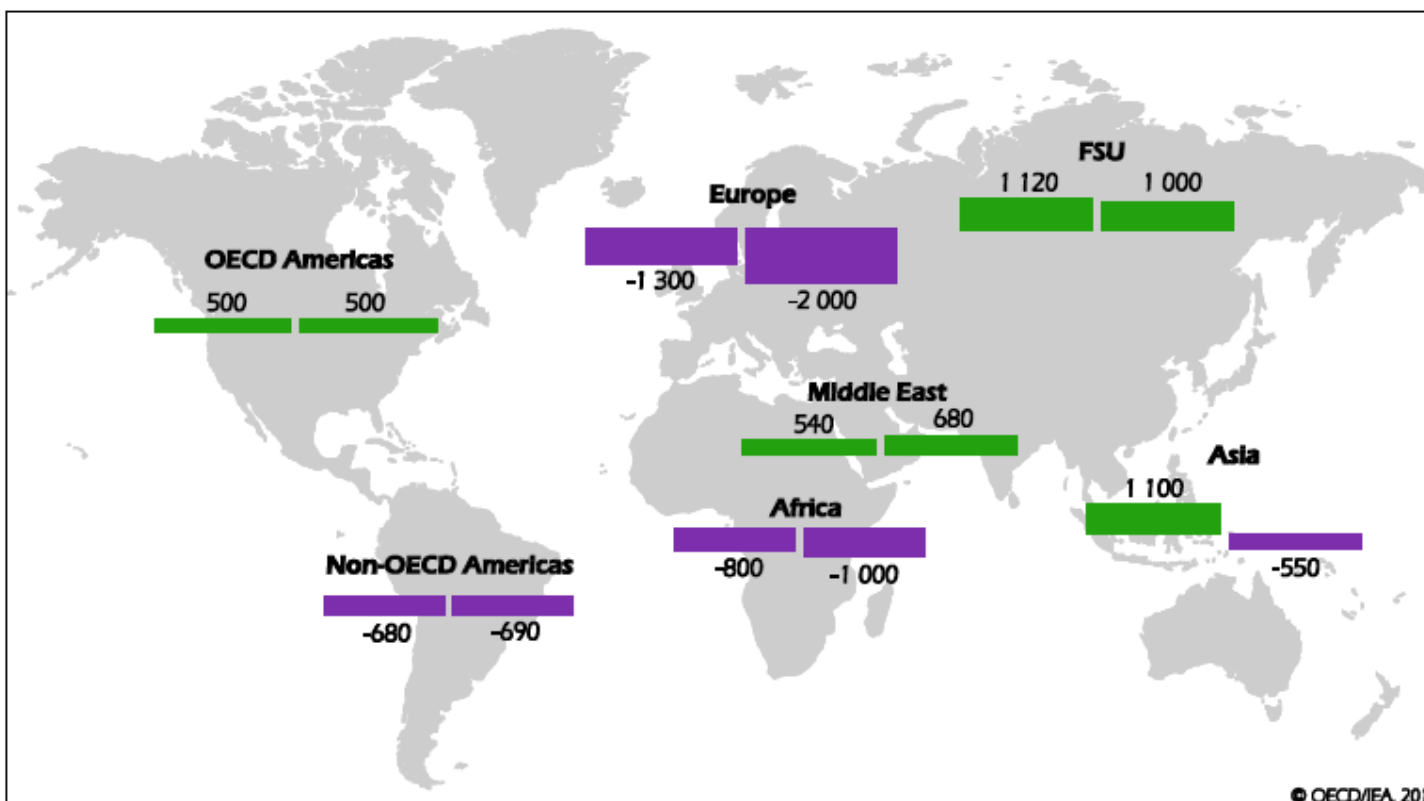


Aim and focus of ITF/OECD study

- ▶ At the request of Corporate Partnership Board
- ▶ Assess cost impacts in 2015 and 2020: maritime transport costs for global trade flows.
- ▶ Overview of the available indications of other impacts of requirements in force since 2015
- ▶ Possible policy and implementation gaps.
- ▶ Analysis via cost modelling for containerships: capital, operational and voyage costs
- ▶ Vessel movements in ECAs in 2015 and other years.

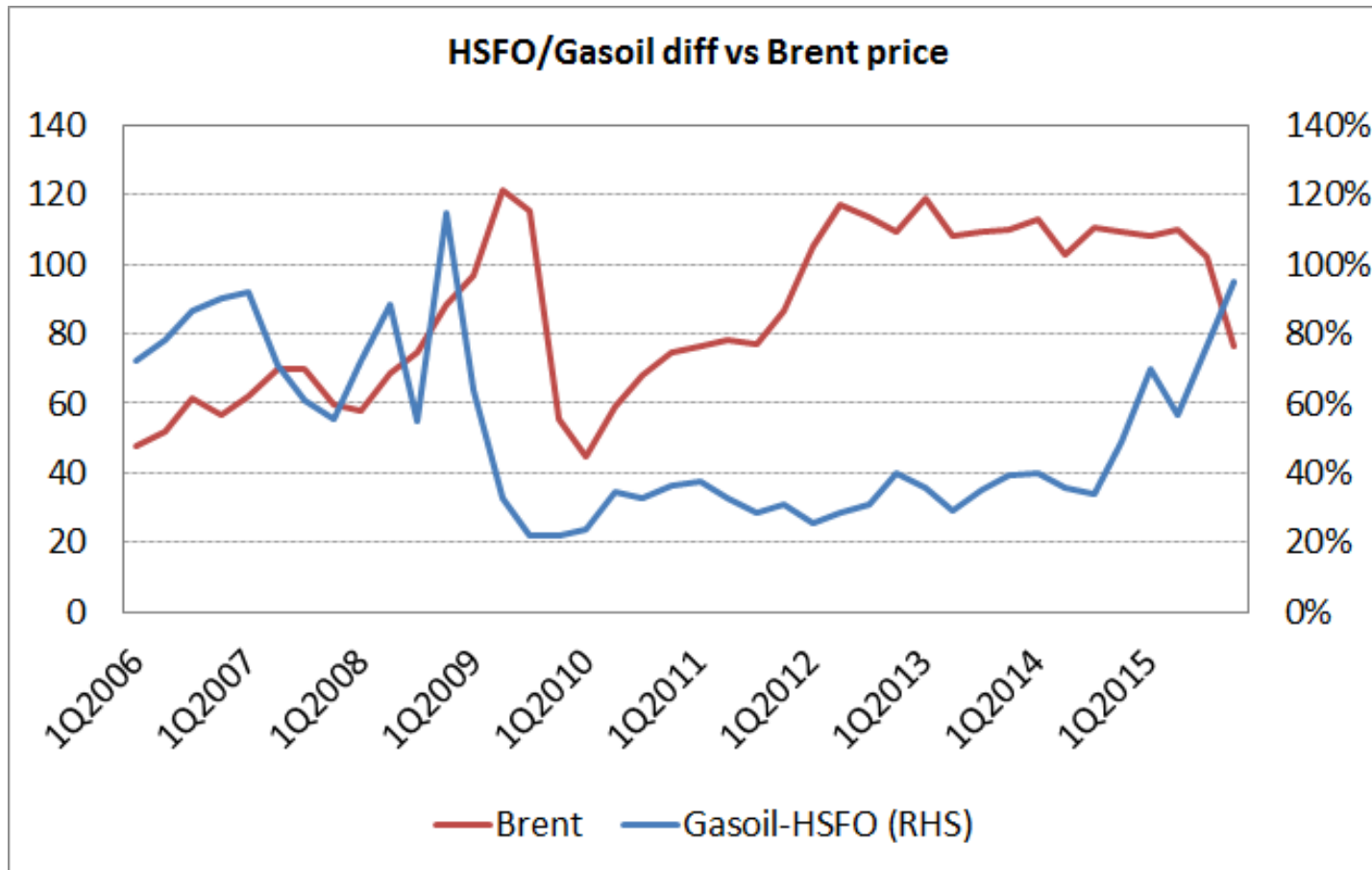
Assumptions on refinery capacity

Supply balances in 2015 and 2021 for gasoil/kerosene (kb/d)



This map is without prejudice to the status of or sovereignty over any territory, to the delimitation of international frontiers and boundaries and to the name of any territory, city or area.

Assumptions on price differentials



Indicative increases in maritime transport costs

Container shipping sector

	Fuel price of US\$ 300/ton	Fuel price of US\$ 450/ton	Fuel price of US\$ 600/ton
ECA 2015 requirements	1-2%	1-2½%	1½-2½%
Global sulphur cap in 2020	20-65%	30-75%	35-85%

Shanghai-Hamburg roundtrip, speed 16-24 knots, size 8,500 – 19,000 TEU ships

For ECA 2015 a price premium of 50% is assumed for 1.0% -> 0.1% sulphur fuel

For global sulphur cap 2020 a premium of 100-120% is assumed for 3.5% -> 0.5% sulphur fuel



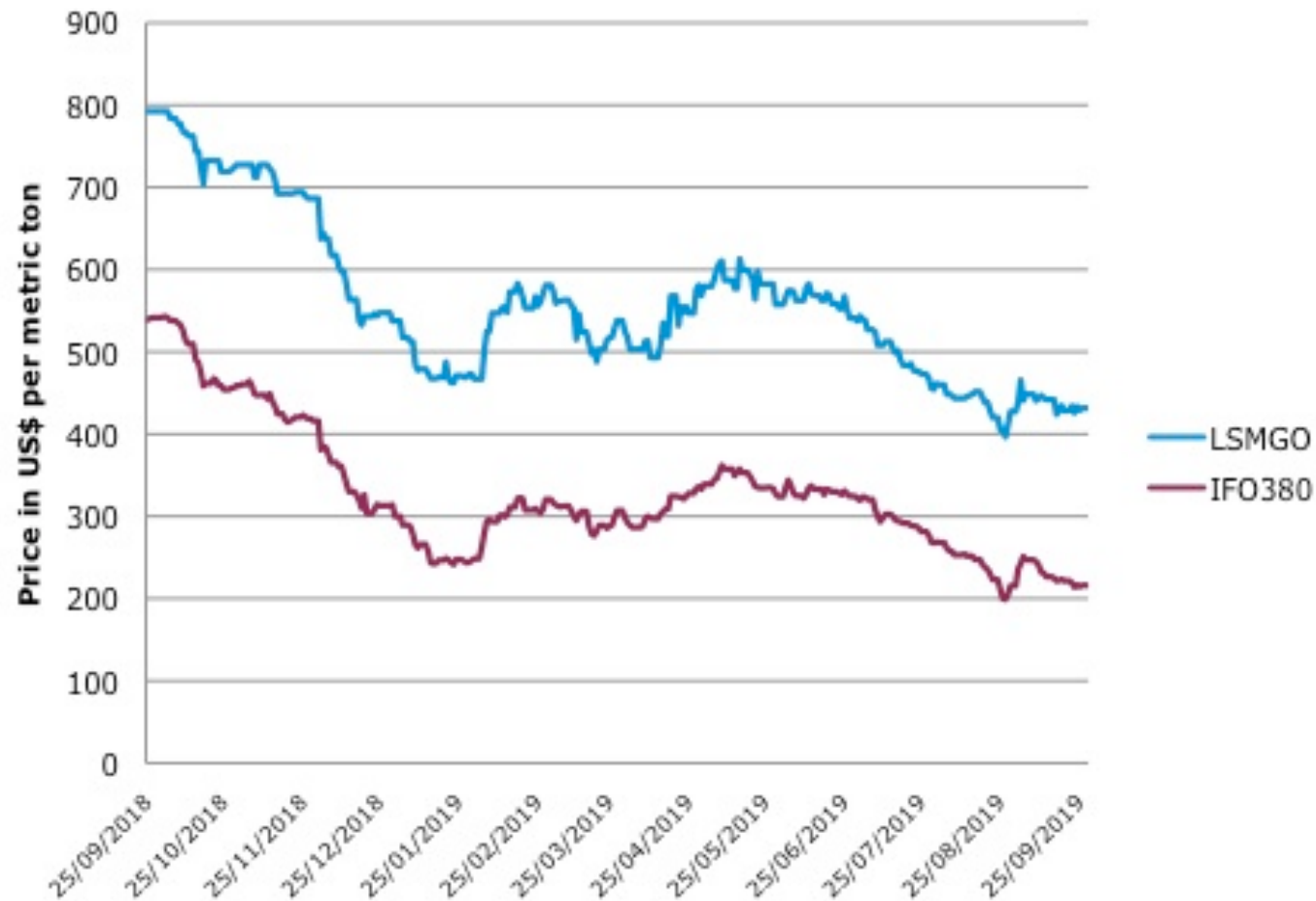
Indicative cost impacts for industry?

	Agricultural goods	Manufactured goods	Industrial raw materials
ECA 2015 requirements	0.0-0.3%	0.0-0.1%	0.2-0.6%
Global sulphur cap in 2020	2½-9½%	1-4%	5-20%

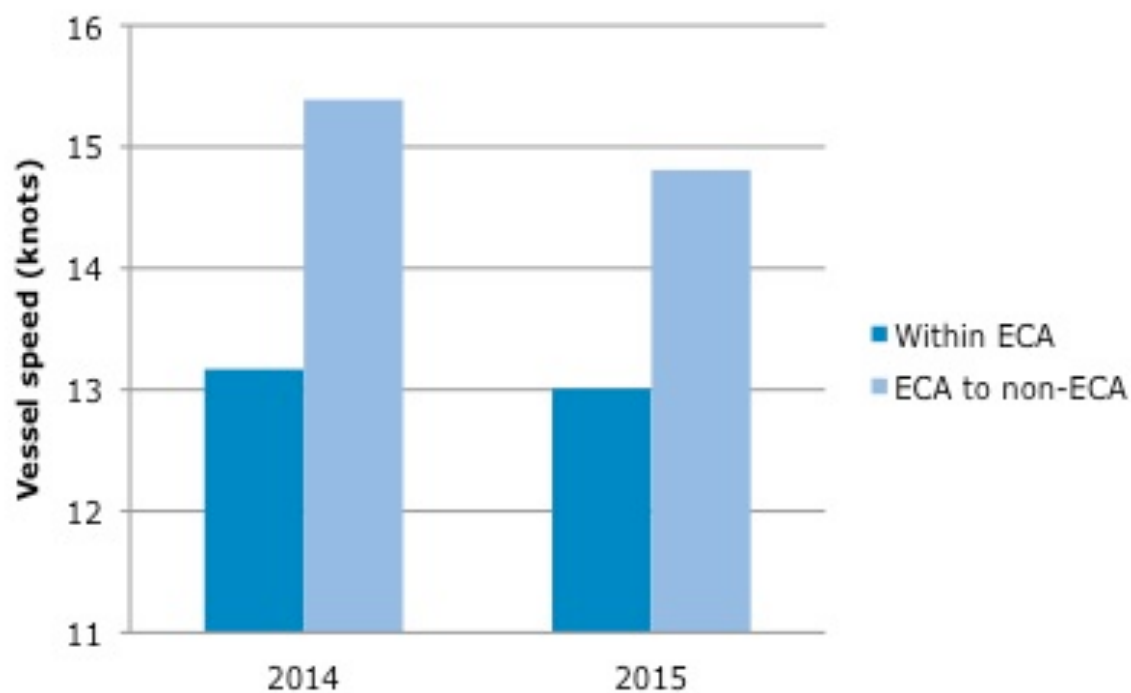
Note: only concerns containerised goods. Assumptions as indicated on previous slide



Dampening of the 2015 cost impacts



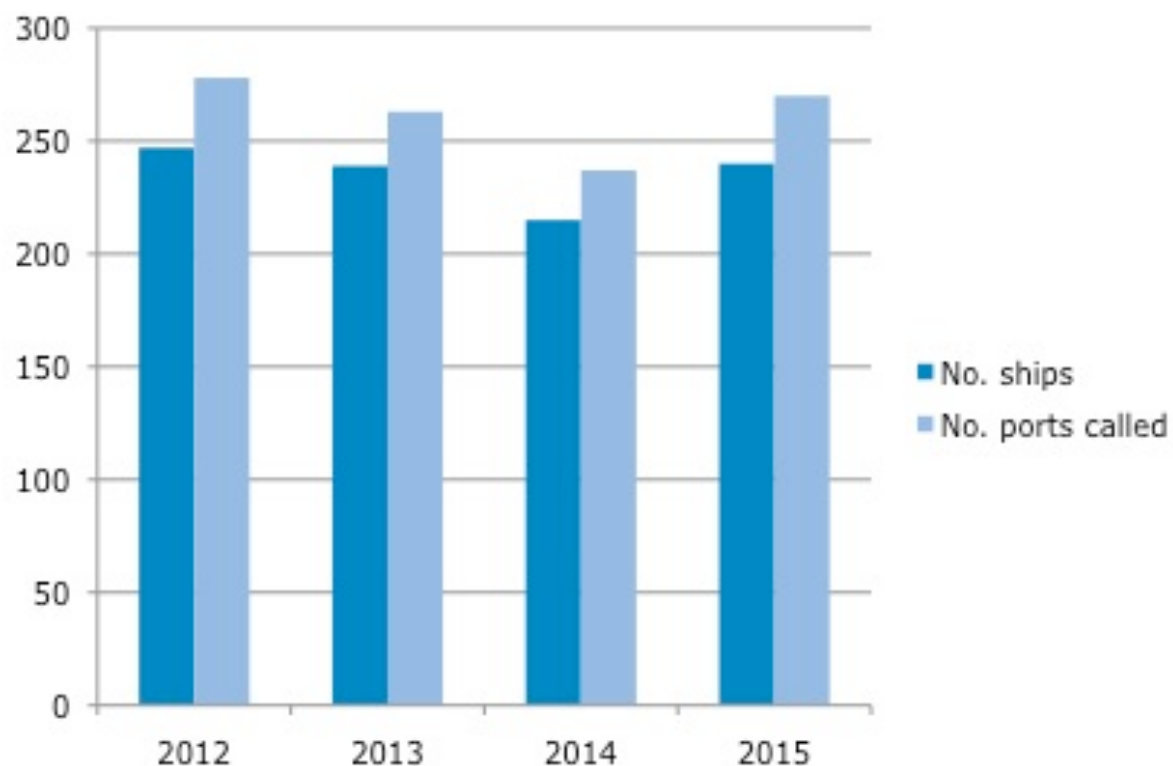
Costs mitigated by slower speeds



ITF/OECD elaboration of vessel movements database of Lloyds Intelligence Unit. Data over May 2014 and May 2015, covering container ships that called ports in Scandinavia, Baltic Sea and North European Atlantic Coast.

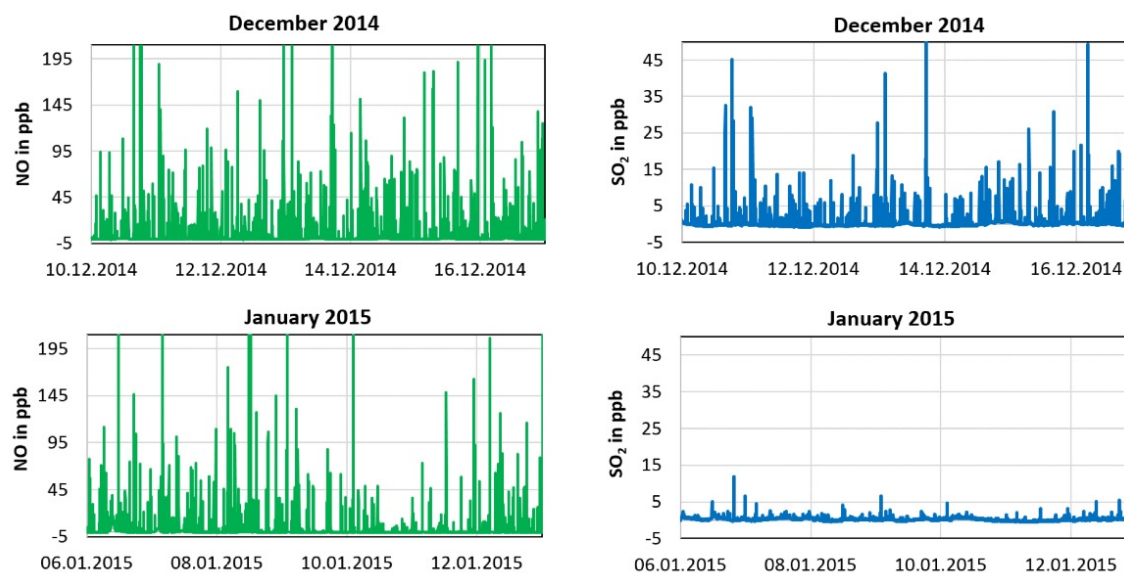


No backward modal shift in Ro-Ro



ITF/OECD elaboration of vessel movements database of Lloyds Intelligence Unit. Data over May 2012-2015, covering Ro/Ro ships that called ports in Scandinavia, Baltic Sea and North European Atlantic Coast.

Environmental impacts



Kattner et al. 2015

- ▶ SO_x reductions measurements: 47-60% in Denmark, 80% in Gothenburg
- ▶ Non-compliance rates: below 5%



Challenges for enforcement

1. Legal gap

The limits of port state control

2. Detection gap

No water-proof technology yet

3. Sanction gap

Too low, too infrequent



Thank you

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