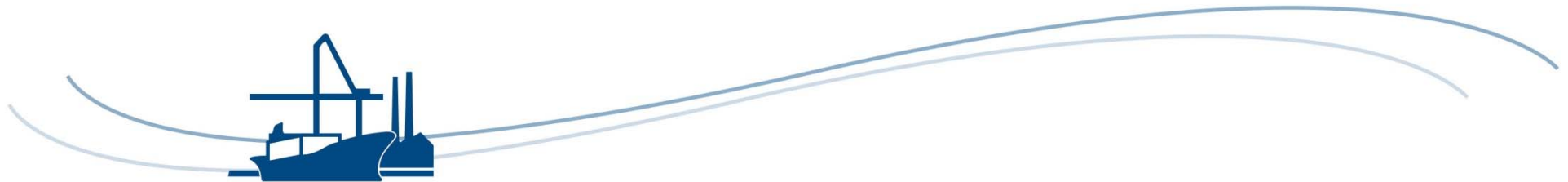


TOWARDS GREEN & EFFICIENT MARITIME CLUSTER
IN THE CENTRAL BALTIC REGION
13.2.2013, Tallinn

**Forthcoming environmental regulations – how will the
shipping companies comply with them**



CENTRE FOR MARITIME STUDIES

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The information of this presentation is based on

- **BSR Innoship –project:** Baltic Sea cooperation for reducing ship and port emissions through knowledge- & innovation-based competitiveness
- **LNG and Satakunta.** Preliminary study of the business opportunities of liquefied natural gas in Satakunta.



- Participating nine countries
 - Denmark, Estonia, Finland, Germany, Latvia, Lithuania, Norway, Poland and Sweden
- Pan Baltic Manual of Best Practices on Clean Shipping and Port Operations
 - Current status of BSR traffic and ship emissions
 - Regulations, legal issues, enforcement
 - Recommendations for shipping, ports and cities



- Information was gathered with questionnaires targeted to
 - Manufacturers of the engines
 - Shipping companies
- Questions concerned existing and future emission abatement technology and emission control methods
- The response rate was not extremely high, but the quality of the answers was excellent
 - Respondents represented the shipping companies that are operating about thousand vessels altogether



Fuels – at the moment and in the future (1/4)

- Fuel types in use
 - One third used fuel containing sulphur less than the regulations require all the time
 - Two thirds used in auxiliary engines MGO at berth and HFO at sea; not any recorded deviations due to fuel switch
- Plans to modify vessels
 - Planned to take place gradually
 - Scrubbers in use at the moment or/and in the future



Fuels – at the moment and in the future (2/4)

- Investments plans concerning fuel
 - Not too many plans yet, but at the same time some have realized modifications already (pumps, pipes upgraded for MGO)
- Availability of fuel (0,1%S) after 1.1.2015
 - YES (50%): no problem in availability (in main bunker ports),but the price could be extremely high
 - NO OR CANNOT SAY (50%): high demand for MGO, poor availability
 - OTHER: LNG will be enough



Fuels – at the moment and in the future (3/4)

- Emission abatement technology investments
 - 75%: no investments yet
 - 25%: fuel scrubber, SCR, onshore electric power, slide fuel valves, energy-conservation devices, optimization of propeller efficiency

- Driving forces behind

STICK

- Legislation, regulations (IMO, MARPOL)
- Regional requirements

AND

CARROT

- National funding
- Reduction in fuel consumption
- Reduced dues (fairways, ports)

Emissions can no longer be ignored, but the shipping sector have to be responsible for its own share.



Fuels – at the moment and in the future (4/4)

- Possible abatement technologies
 - Scrubbers, over half of the respondents expressed that there is no plans to invest before 2015
 - Biofuels and LNG

LOW SULPHUR FUEL

- High costs of scrubbers (installation, caustic soda, space needed, sludge)
- Uncertainty of requirements

vs.

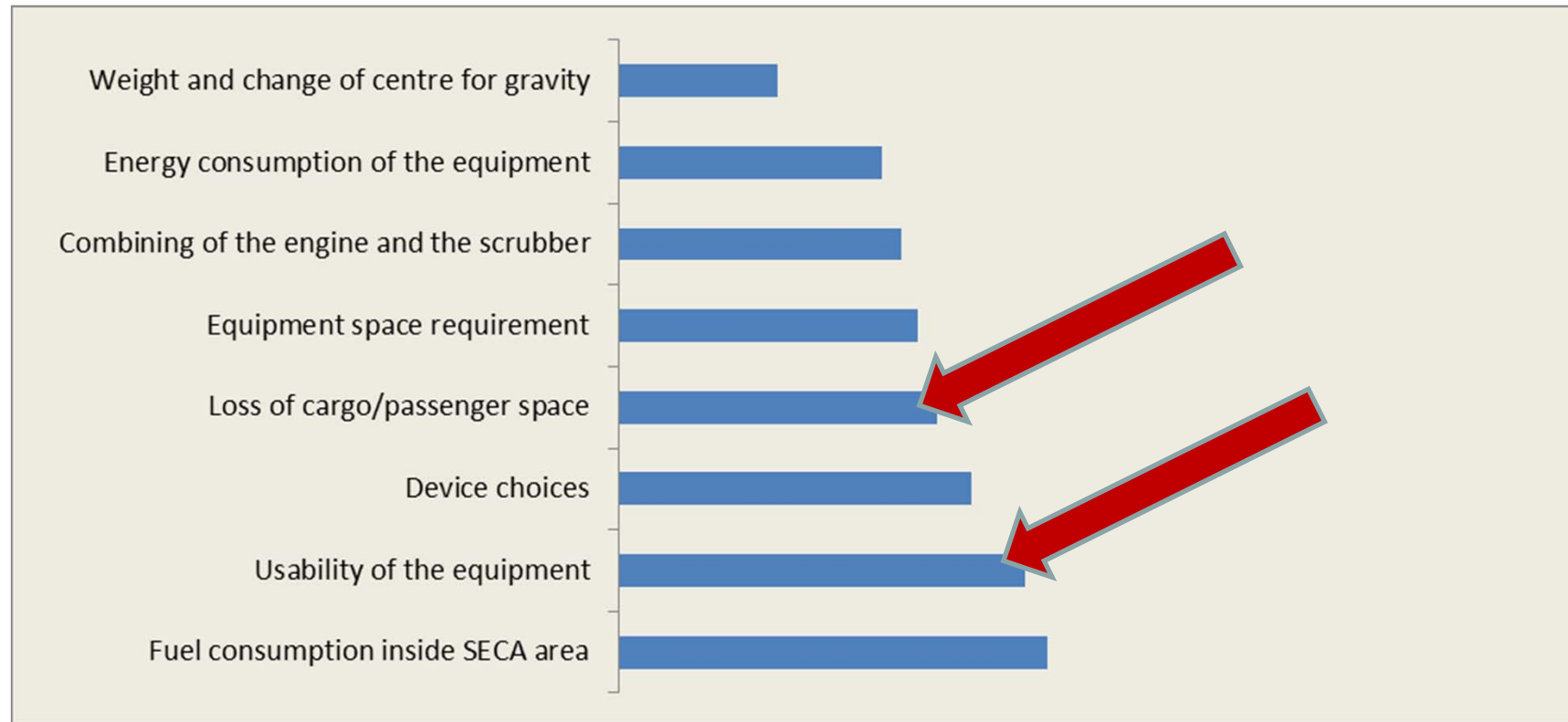
REDUCING TECHNIQUE

- Payback time
- Availability of low sulphur fuel poor
- Investment must be made only once

- Fuels prices and estimated remaining lifetime affect



Issues affecting the scrubber investment decisions



Red arrows points the two most problematic issues



Alternative/renewable energy sources and means to reduce emissions (1/4)

- Majority did not believe to the feasibility of alternative energy..
 - Technology not available
 - Not possible for small vessels with limited lifetime
- ..but minority have strong confidence in them
 - Solar power, wind power
 - Batteries
 - New buildings with biofuel



Alternative/renewable energy sources and means to reduce emissions (2/4)

- LNG as an alternative
 - YES: eco-friendly ~ less emissions (CO₂, NO_x, SO_x), cheaper than oil in future
 - NO: not widely available, space requirements in vessels
 - OTHER: suitable for liner vessels, limited trade in ECA areas
- Slow steaming as alternative
 - YES: many doing already, different kind of experiences
 - NO: liner services/schedules does not allow
 - OTHER: dependent on charterer, to optimize profit (not to save fuel and minimize emissions)



Alternative/renewable energy sources and means to reduce emissions (3/4)

- Short-side electricity
 - Yes: 25%, No 75% of vessels using during port visits
 - Issues affecting to the implementation
 1. Devices in ports (e.g. proper electric connection)
 2. Prices (e.g. unharmonized cost structure)
 3. Regulations and standardization
 4. Other (e.g. requirements in vessels)

CONTINUES



Alternative/renewable energy sources and means to reduce emissions (4/4)

- In general experiences mainly positive
 - Positive: lower costs
 - Negative: not widely available
 - Other: reasonable for longer stays (over 6/8h)
- Third of the respondents have made cost-efficiency calculations
 - Opposite opinions (auxiliary engines vs. shore-side electricity)

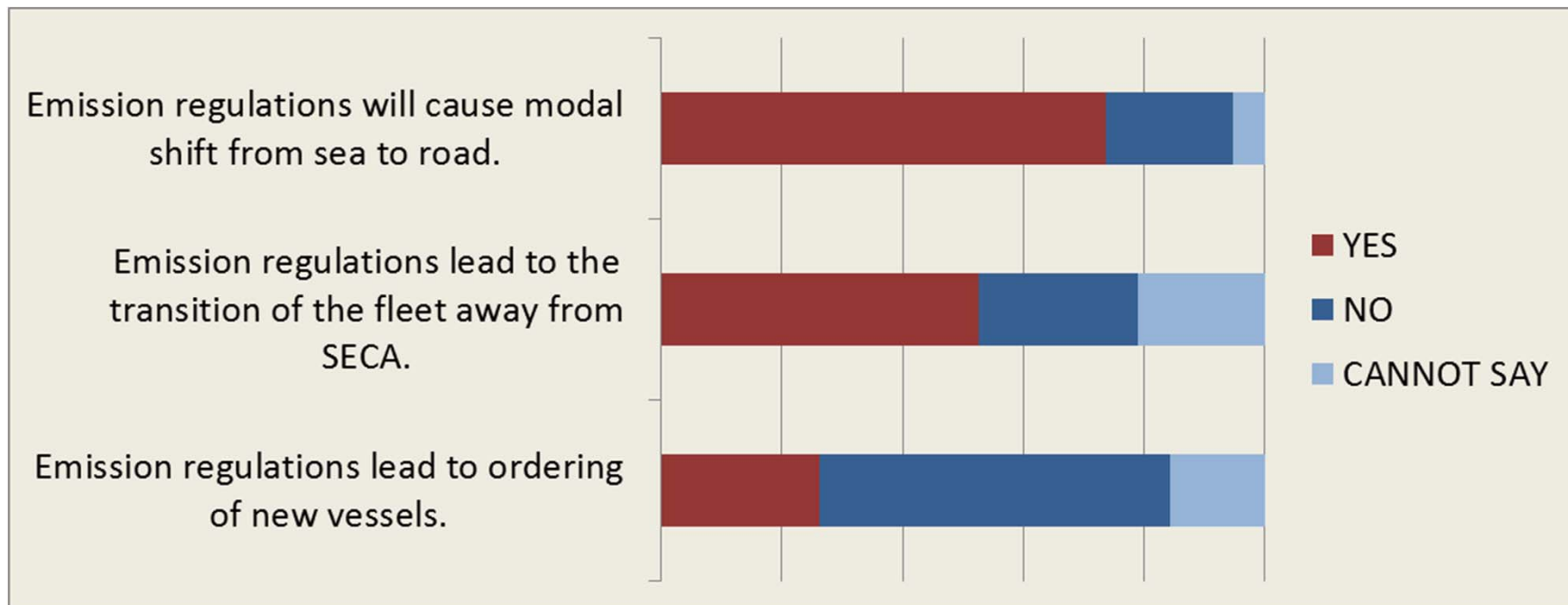
Should be available in all ports as mandatory equipment and with at least 125A connection.

Question of power failure is still not clarified: who is responsible in case of failure?



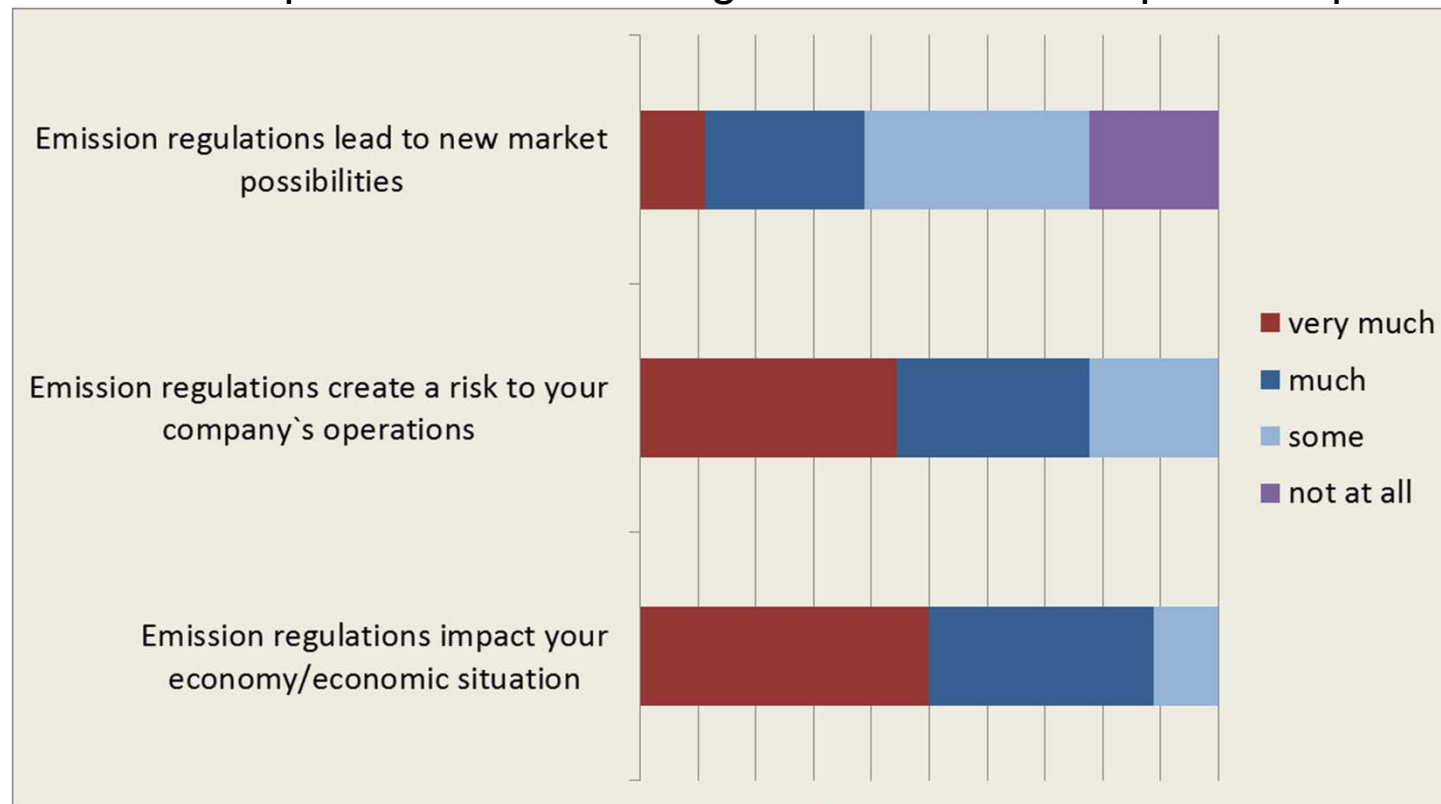
Economic control methods / incentives (1/3)

General economic impacts of emission regulations



Economic control methods / incentives (2/3)

Economic impacts of emission regulations to the companies' operations



Economic control methods / incentives (3/3)

New market possibilities?

- YES
 - New market possibilities for companies which comply with future regulations
 - LNG vessels
- NO
 - Modal shift will reduce cargo
 - No readiness to pay more for greener technologies implemented on transport units



ESN – The Way Forward -project

- Most of the SPS's are participating in the project
- Co-financed by the European Commission, Marco Polo programme
- Aim of the project
 - **To gather** information on various domains. One is environmental domain: the development of SSS in the SECA zones looking at the forthcoming sulphur directive in 2015, developments of LNG, use of scrubbers...
 - **To provide** information for various target groups (e.g. industry and authorities), connected to shortsea shipping, on tools and measures to adapt to the new environmental regulations within the SECA

www-shortsea.info



LNG and Satakunta – preliminary study



Three main targets

1. To survey the current and future global and domestic market of natural gas and LNG
2. To find out the amount of potential consumption of LNG (both land-based and maritime demand)
3. To find out the commercial possibilities of liquefied natural gas in Satakunta



LNG and Satakunta – preliminary study



Conclusions

1. The importance of LNG is increasing rapidly in the global market

- Consumption of natural gas in Europe is 22% and in Finland 10% (from the total energy consumption)

2. Significant business opportunities, although totally affected by the development of the LNG market

3. Potential consumption of LNG is significant in Satakunta

- Land-based demand 165 000 tonnes
- Maritime demand 20 000 tonnes by the year 2020
- The amount is high enough -> a construction of a LNG terminal is reasonable



Thank you for your attention!

More information

<http://mkk.utu.fi>

