



The NOx Fund: A successful financial instrument for emission reduction

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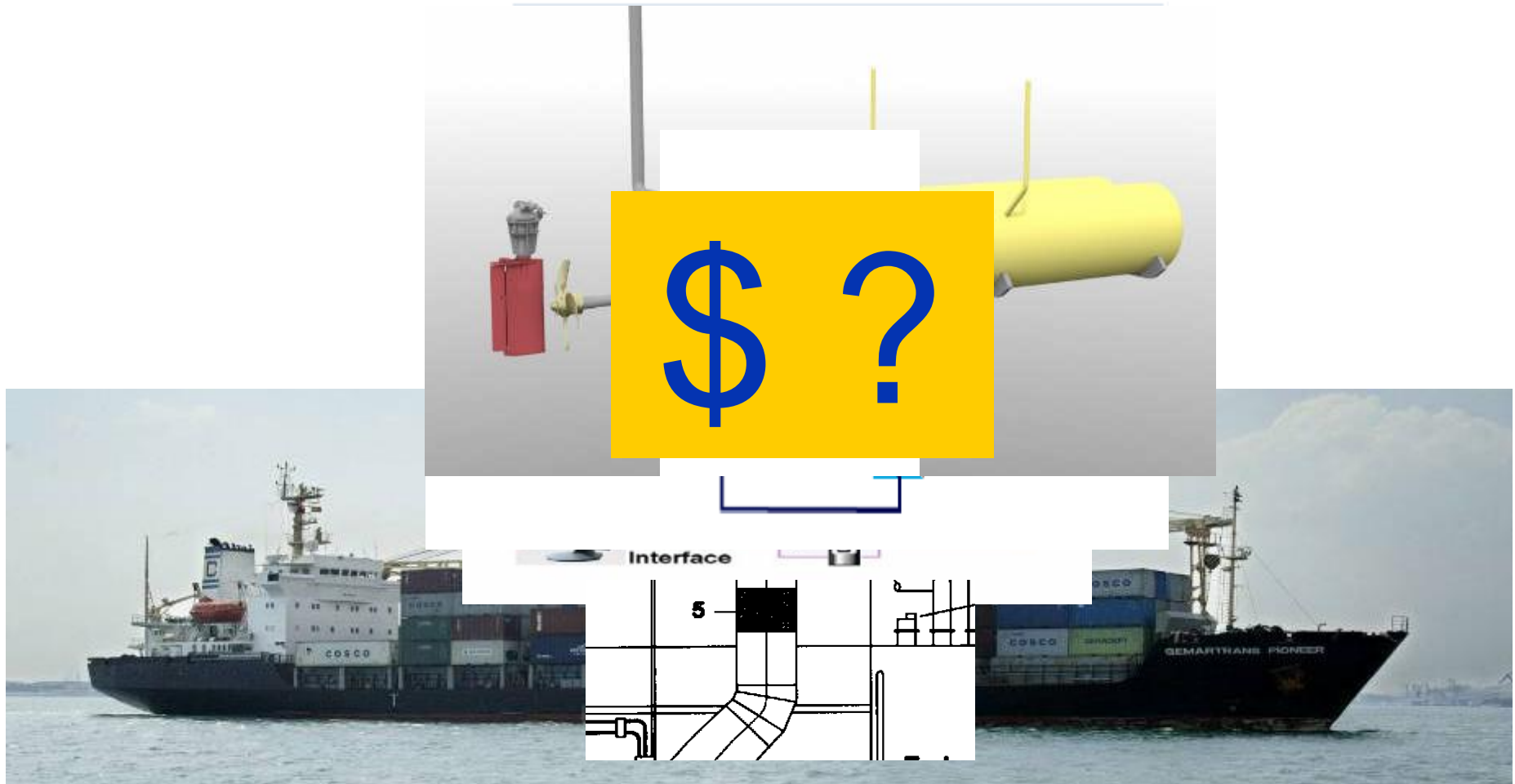
The challenges:

- Norwegian NOx emission tax
- IMO NOx emission regulations, ECA
- Financial crisis

The Norwegian NOx tax

- Governmental NOx tax since 2007, currently 2 700 USD per ton NOx emitted
- Taxation affects more than 1500 ships
- **Subject for taxation:**
 - Ships with propulsion power exceeding 750 kW
 - Boilers, turbines and motors over 10 MW
 - Flares
- **Primary subjects to taxation:**
 - Ships sailing between Norwegian ports
 - Ships sailing between Norwegian port and offshore installations in Norwegian sector
 - Offshore industry in Norwegian sector
 - On-shore industry (parts of)
 - Railway with diesel engines, Air traffic at take-off and landing
- Taxation level: Typically 100 000 – 200 000 USD/year per ship

NOx-reduction: How to finance? Cost-efficiency?



The solution:

The business sector's NOx Fund

The NOx fund: The alternative to governmental NOx tax!

■ Environmental agreement

- In May 2008, 14 business organizations and the Norwegian Ministry of the Environment signed the “NOx agreement”

■ Affiliation

- Affiliated enterprises are entitled to exemption from fiscal NOx tax in 2008 – 2010
- All enterprises subject to NOx tax may be affiliated, foreign and Norwegian (633 enterprises, 1700 ships)

■ Fund’s obligations:

- Reduction of Norwegian NOx emissions with approx 19 000 tons (a large chunk of Norway’s obligations to the EU for emission reduction)

The NOx fund: The alternative to governmental NOx tax!

NOx-Tax 2700 USD/ton NOx



No NOx-Tax



670 USD/ton NOx



M USD

NOx-Fund

■ Fund's finances:

- Oil and gas producers pay to the fund 1 850 USD per ton NOx emitted
- All other emitters pay to the fund 670 USD per ton NOx emitted (30'-50' USD/year)
- Total disposable funds for NOx reducing measures: 300 M USD

- The fund may be prolonged until 2018 due to its recognized success.

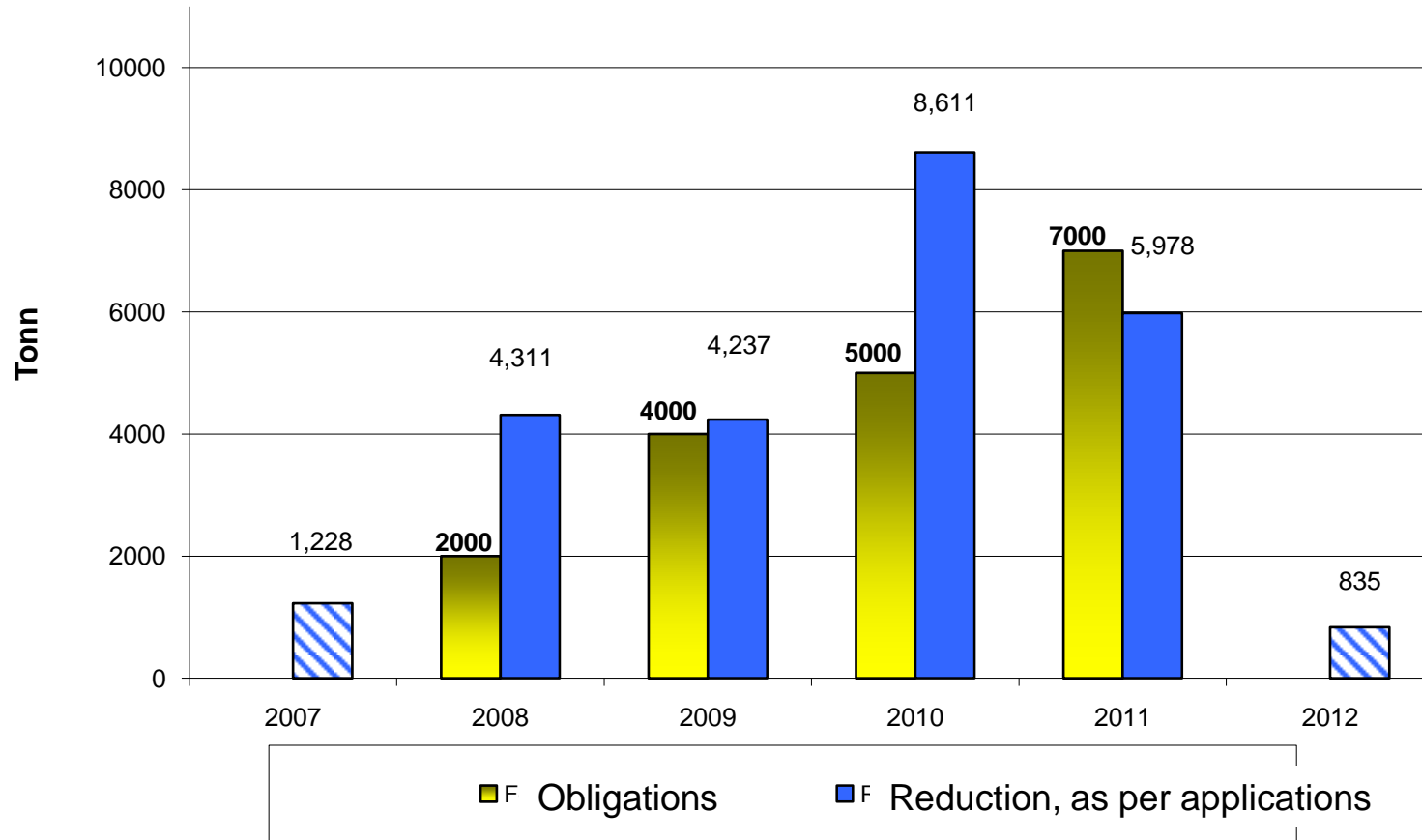
2,5 years of financing indicates fund's success

- 460 applications have now been granted support, many completed, with total NOx reduction of:
 - about 23 000 tons/year
 - about 40% reduction of ship NOx emissions
 - approx 12% reduction of national NOx emissions
- Reduction goal is 19 000 tons, seems within reach!
- Costs and financial support:
 - Overall costs: Approx 1 BN USD
 - Total support granted: Approx 300 M USD
 - Typical support: 0.4 – 0.7 M USD/ship
(10 000-25 000 USD/ton NOx eliminated)



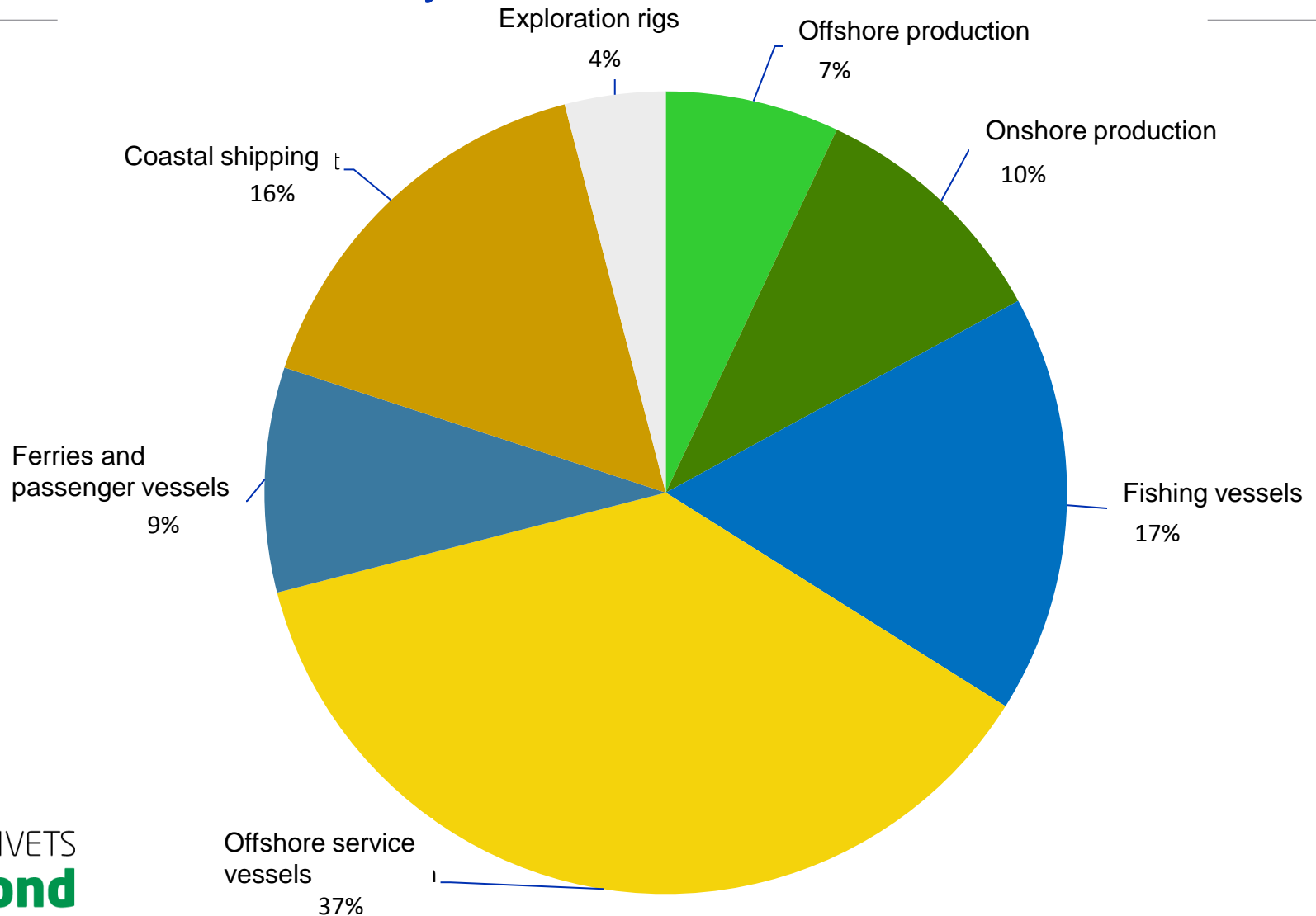
LNG fuelled Stril Pioner

23 000 tons NOx reduced, if all projects are fulfilled

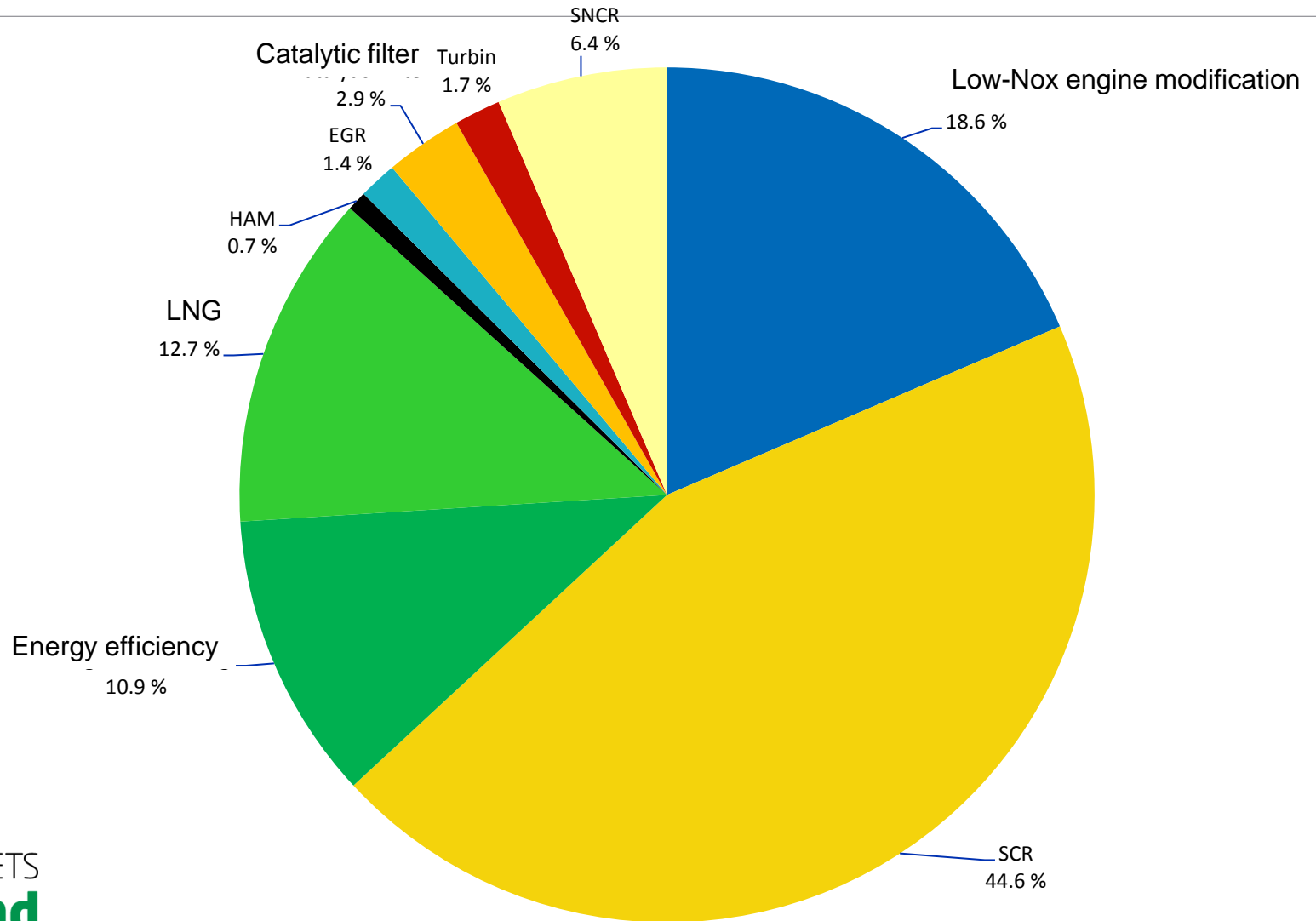


Based on initiatives on 460 ships (not all yet completed), 300 M USD granted

Offshore service vessels has received most support, followed by fishing fleet and coasters.



Most grants to SCR systems, followed by Low-NOx engine modifications and LNG fuel propulsion.

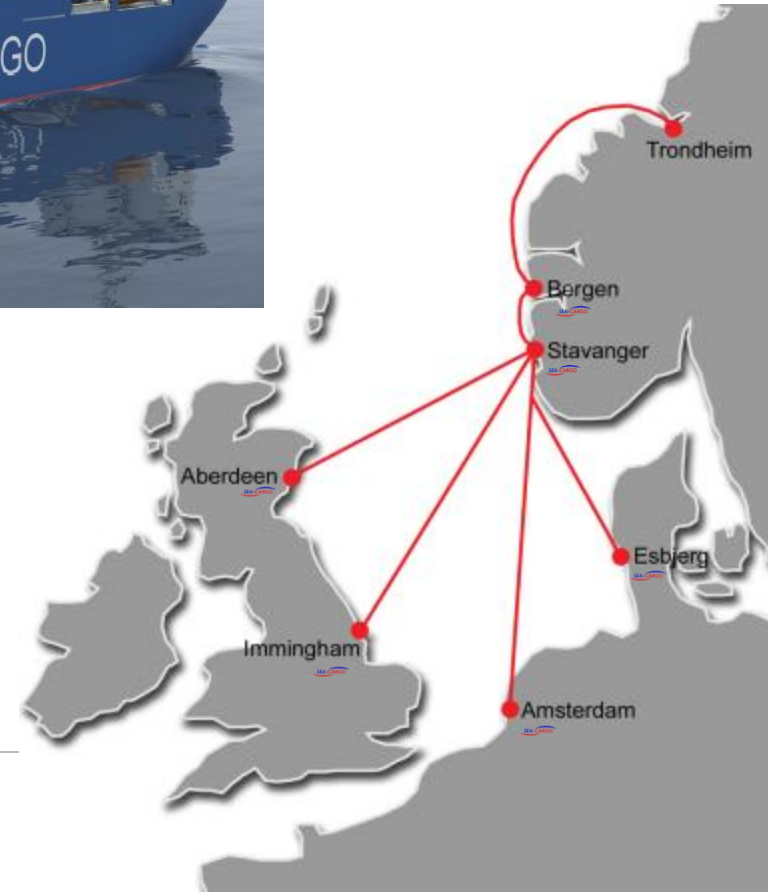


LNG propulsion

“Sea Cargo” received support in May 2008 for selecting LNG for two new ships



- 2 ships granted 80 % support of the additional cost of LNG propulsion
- Granted 5.0 and 3.7 M USD for reductions of 200 and 146 ton NO_x, respectively (25 000 USD/ton NO_x reduced)



DNV's contribution:

- Technology assessments
- Application assessments
- Validation of performance
- Data collection, technical reporting

Thank you

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