Sustainable Transport

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Sustainable transport

- Modal Shift
- SECA
- A brighter tomorrow
Intermodal container is winning

45 ft container in Norway

000 tonne/quarter

Short distant solutions
Ship owner plans

- LSMGO
- Newbuilding with LNG
- Upgrading to LNG
- Scrubber
- Moving ships to other region

Share of ship owner considering (%)
Scrubber Orders

75 orders with European suppliers in April 2014
48 existing LNG powered ships

Current Fleet of LNG-Fuelled Ships by country of Ship Owner

- **Norway**: Car/passenger ferry (27) + Chemical tanker (9) + RoPax (2) + General Cargo (1) + High speed RoPax (1)
- **China**: Tug (2)
- **Korea**: Harbor vessel (1)
- **Finland**: Patrol vessel (1)

*Note: The diagram uses different colors for each type of ship and shows the number of ships for each country.*
LNG powered car carrier
53 LNG powered ships on order

LNG-Fuelled ships on order

- Norway
- USA
- Denmark
- Sweden
- Canada
- UK
- Saudi-Arabia
- Germany
- Finland

Number of ships

Legend:
- Bulk ship
- Ice breaker
- Patrol vessel
- Product tanker
- Tug
- Car carrier
- Chemical tanker
- Gas carrier
- General
- LEG carrier
- Ro-Ro
- Car/passenger ferry
- Container ship
- PSV
LNG is too expensive

1000 TEU container vessel, 8000 kW engine, € 6 mill LNG investment, € 3 mill. scrubber investment, 100 % of time in SECA

April 2014

Required price range
A brighter tomorrow
Low emission solutions
Higher efficiency – No methane slip

High Pressure Dual Fuel - Cycle

- Pure air intake
- Compression of air
- Injection of pilot fuel
  Ignition, injection of gas
Carbon-free solutions
Business process reengineering
Self-service always-open small ports

20 lifts per hour 20 lifts per hour

120 containers of 45 ft

CargoFerry
Summary

- Modal Shift
- SECA back-shift
- Carbon free