

REDUCE EMISSIONS – EXPAND POTENTIAL

GASSKONFERANSEN I BERGEN

Gas supply to European shipping

- price and availability

Bergen, 4 May 2011

LNG – A CLEAN, COMPETITIVE FUEL. TODAY AND IN THE FUTURE

- Presently doing regular bunkering of 20 ships
- 1500 bunker operations annually
- 40.000 transfers of LNG in flexible hoses up to now

**REDUCE EMISSIONS
EXPAND POTENTIAL**

THE NATURAL GAS VALUE PROPOSITION

REDUCE

COST

EMISSIONS

MAINTENANCE

EXPAND

SAFETY

BRAND VALUE

PROFITABILITY

AGENDA

- ▶ A little about Gasnor
- ▶ Availability of LNG as bunker
- ▶ Pricing og LNG
- ▶ Bottlenecks for increased use of LNG in shipping
- ▶ Conclusions



GASNOR – THE LEADING SCANDINAVIAN SMALL SCALE NATURAL GAS COMPANY

**REDUCE EMISSIONS
EXPAND POTENTIAL**

GASNOR KEY FACTS*

- ▶ Natural gas pioneer – established 1989, first gas delivery 1994
- ▶ 52 employees
- ▶ ISO 9001 and 14001 certified

- ▶ Revenue 2010: 783 mill NOK (98 mill euro)
- ▶ Profit before tax: 68 mill NOK (8,5 mill euro)
- ▶ Total assets: 1.240 mill NOK (155 mill euro)
- ▶ Equity: 331 mill NOK (41,5 mill euro)

* 2010-figures. Euro-figures based on EUR/NOK=8,0



«SMALL SCALE» MEETS «BIG NEED» FOR CLEAN ENERGY



Photo: Hydro

WE SERVE CUSTOMERS IN THREE MAIN SEGMENTS

Industry



Transport



Pipeline customers



- ▶ Industry, commercial, residential and public buildings. District heating and power generation.



A WELL ESTABLISHED INFRASTRUCTURE

► LNG supply capacity: 300 000 tonnes/year

3 LNG production plants



16 semitrailers LNG



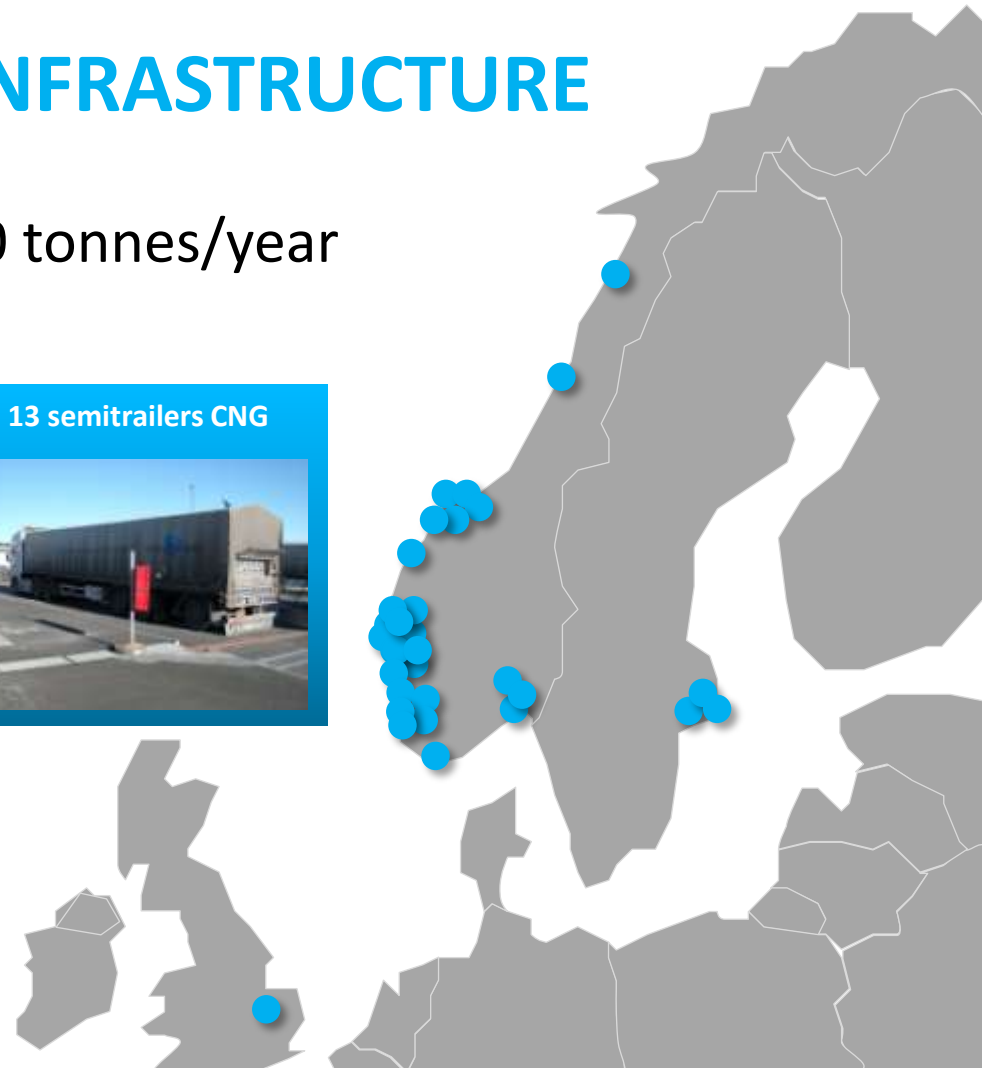
13 semitrailers CNG



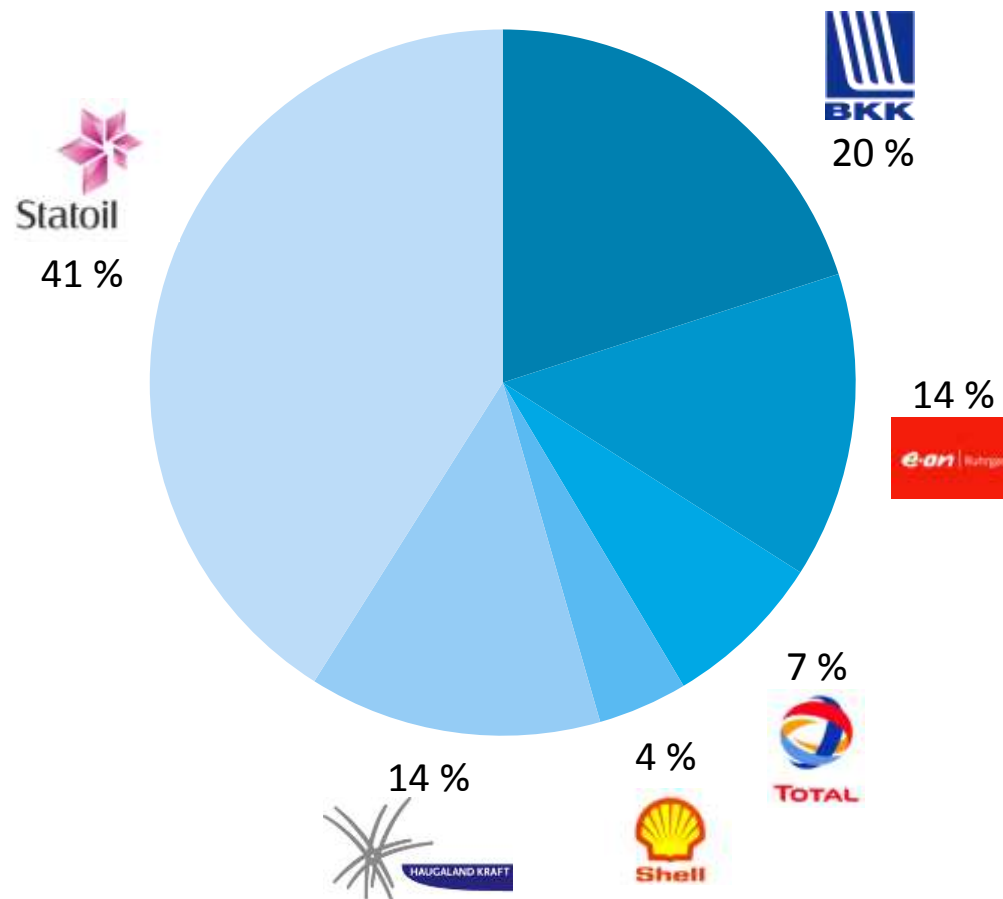
30 terminals



2 tankers



OWNED BY LEADING ENERGY COMPANIES



AVAILABILITY OF LNG FOR BUNKER

**REDUCE EMISSIONS
EXPAND POTENTIAL**

GAS SUPPLY TO EUROPE

LNG



PIPE

PIPE

LNG

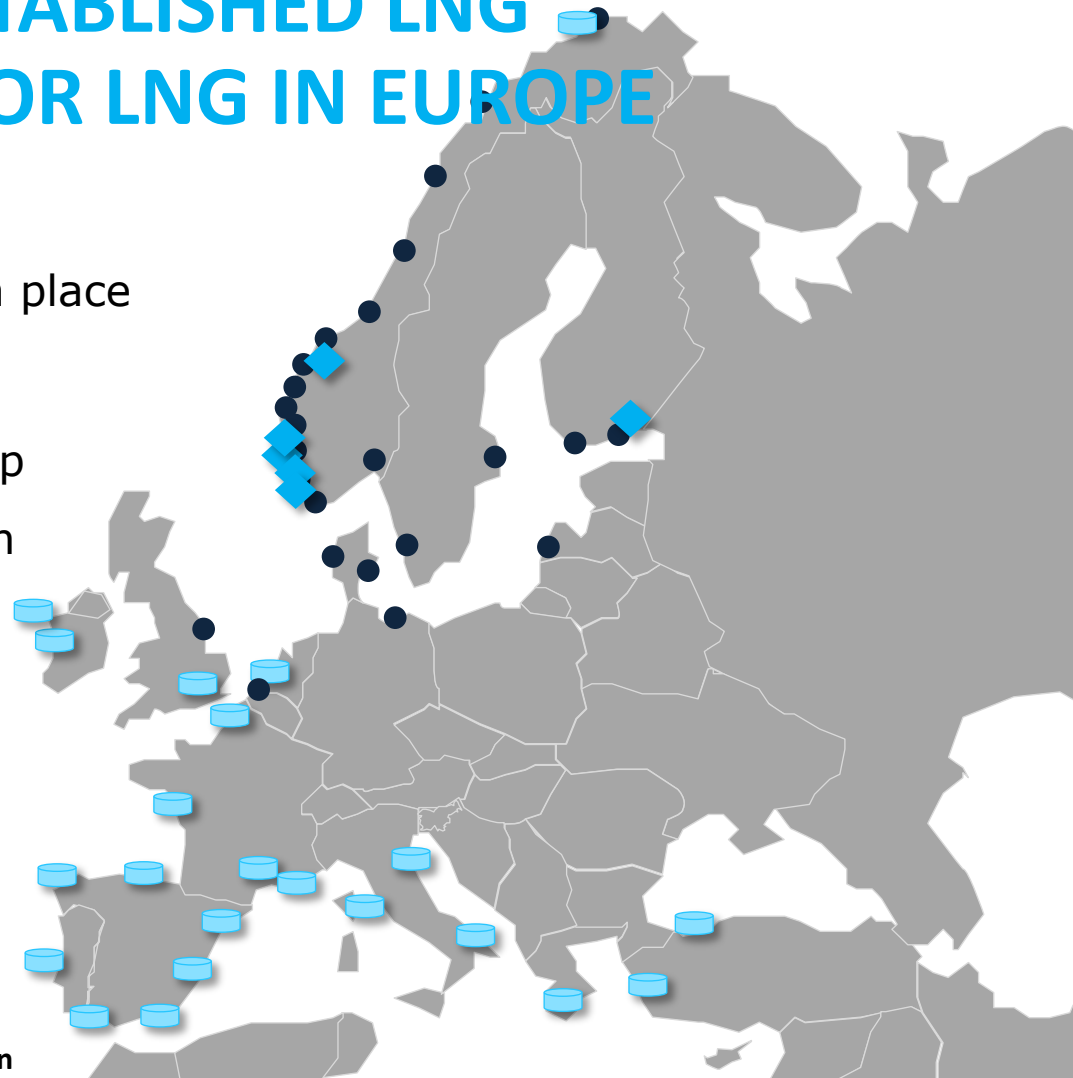
LNG VOLUMES IN EUROPE

- ▶ Annual LNG imports into Europe (2010) 60-70 mill tons
- ▶ Annual bunker volumes in Europe ~ 50 mill tons
- ▶ Annual bunker volumes
in the North- and Baltic Seas ~15-20 mill tons

THERE IS A WELL-ESTABLISHED LNG INFRASTRUCTURE FOR LNG IN EUROPE

- ▶ Tapping contracts from large European LNG-terminals are in place
- ▶ New terminals can be made available in shorter time than normal lead time for a new ship
- ▶ LNG can be supplied to ships in most of Europe

- Bunkering terminal
- Regas terminal
- ◆ Small scale Production



AVAILABLE LOGISTICS

- ▶ A number of small LNG-carriers existing and ordered
- ▶ A relatively large number of LNG semi-trailers are in operation
- ▶ Several European LNG-terminals can fill semi-trailers with LNG
- ▶ Bunker boats are planned
- ▶ Bunker facilities can be made available where needed throughout Europe within the time scope for new LNG-fuelled vessels

AVAILABILITY OF LNG IS PROBABLY NOT A BOTTLENECK FOR INCREASED USE OF LNG IN SHIPPING

PRICING OF LNG

**REDUCE EMISSIONS
EXPAND POTENTIAL**

COST OF THE LNG CHAINS

BASED ON SMALL SCALE LNG-PRODUCTION

Coastal Gas Price

Liquefac
tion

Tran-
sport

Storage
and
bunkering

BASED ON LNG FROM EUROPEAN IMPORT TERMINALS

Coastal Gas Price

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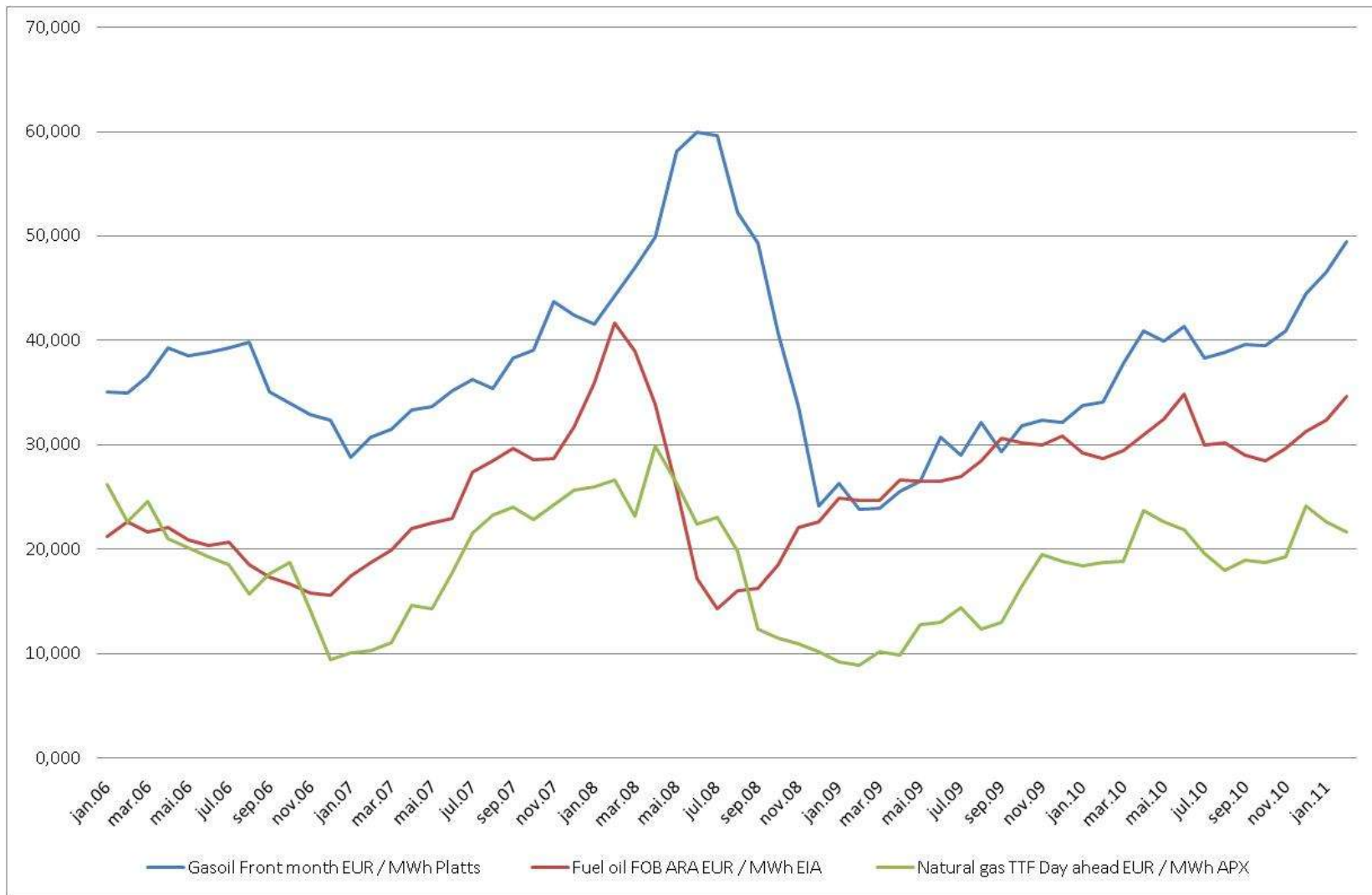
Tran-
sport

Storage
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bunkerin
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INDEXATION OF THE LNG-PRIC

- ▶ By oil (Platts Gasoil, IFO or similar index)
- ▶ By natural gas (TTF or similar index)
- ▶ Today we see a development towards gas pricing more independent from oil

EUROPEAN SPOT PRICES (€/MWH)



PRICE LEVELS

- ▶ Smaller volumes of LNG MGO – level
- ▶ More substantial volumes IFO + 10-20%
- ▶ Larger volumes IFO - level

**LNG CAN ALREADY BE SUPPLIED
AT COMPETITIVE PRICES**

A BOTTLENECK FOR LNG IN SHIPPING

- ▶ A ship using 6.000 tons of LNG can have extra investments for gas equipment of 6-7 mill euro, resulting in 600.000 euro annually, or 100 euro per ton of LNG.
- ▶ It might be better if gas equipment onboard were supplied independent from engine manufacturers
- ▶ Norwegian Nox-fund and new EU-initiative is a welcome remedy, but the industry should give this more attention

THERE IS NOT SUFFICIENT PRESSURE IN THE MARKET TO ASSURE COST EFFICIENT GAS EQUIPMENT FOR SHIPS

SUMMARY

- ▶ LNG is available for shipping in Europe today - and will be more and more available up to 2015
- ▶ The price of LNG is already competitive to MGO and even to IFO for contracts of larger volumes
- ▶ The cost of LNG-equipment on board is a challenge, where grants are not available