LNG and global gas market trends: Challenges and opportunities for the Baltics

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Baltic Energy Forum
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Sund Energy helps navigate into the energy future...

...by understanding the full picture of stakeholders...

Learning between countries, industries, energies, technologies, and more..
What has happened to LNG – why more interest now?

Traditional view: Last resort for stranded gas to stranded market
- Only way to monetise gas from large reserves without markets nearby
- Payability only where all alternatives were more expensive
- Long distance and long term business – integrated chain

Several small revoultions and a dash of uncertainty – lately
- Oil prices are higher than expected – coal prices much lower
- More gas reserves than expected – demand much lower
- Different trade-offs and new realities – new solutions
- Optionality more appreciated in uncertain times

Easier to build infrastructure in bits
- LNG more flexible and scalable
- Recession gives cost focus!
LNG flows becoming more significant

Major gas trade movements in 2012 (bcm)

Source: BP Statistical Review of World Energy, June 2013
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328 bcm of gas as LNG in 2012 – slightly down from ‘11

LNG trade movements in 2012

Source: BP Statistical Review of World Energy, June 2013

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Liquefaction capacity is expected to grow significantly.

Source: BP Energy Outlook 2030, January 2013

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There is much spare capacity in Europe’s terminals

LNG import vs. capacity at key EU terminals (2012)

Data: IEA, GLE LNG, 2013
From expected imports of more than 120 bcm/yr…

Reference scenario for US net imports of LNG

…US may export 20 bcm/yr: Significant “loose” LNG

Data: Energy Information Administration (EIA), Annual Energy Outlook (AEO) 2007-2012
What if Japan gets a better price?

Will the US LNG really be the game changer for global LNG?
- There is enough room for reducing the margin…
- … although sellers will always try to defend high Asian LNG price

What will be the alternatives for the sellers?
- Qatargas is offering some discount in exchange for long-term deals

Indicative economics of LNG export from the US Gulf Coast (at current prices)

Unconventional gas – shale only one type

Coal bed methane
- China, Australia,…

Tight gas
- US, Norway, rest of the world

Underground coal gasification
- UK and others

Shale gas
- Global

Methane hydrates
- Offshore and rivers, cold areas (tundra)
- By far largest!
- Also most expensive
UK planning a mini shale revolution – will it succeed?

UK: “We cannot afford to miss out on shale gas” (PM David Cameron)

- UK Chancellor: Britain must be "at the forefront of the shale gas revolution"
- Aim: “to provide the UK with greater energy security, growth and jobs”
- 1-year ban on fracking (due to earth tremors) removed in December 2012
- Generous tax breaks for shale gas industry proposed for Finance Bill 2014
  - Tax rate reduction from 62% to 30%
  - Incentives to local counties: £100,000 for each exploratory (hydraulically fracked) well, and 1% of revenues from every production site

June 2013 – estimated shale gas resources doubled

- British Geological Survey: 37 000 bcm of shale resources in place (N England)
  - Even at only 10% recovery, this is gas for 50 years of current demand

Focus now: Balance efficiency vs. environment

- Streamline and simplify regulation and planning processes without sacrificing on safety and environmental protection
- Target: 40 exploratory wells by end 2015

Source: Reuters
The picture is complex, and drivers change over time

- Supply
  - Gas price
  - Infrastructure: Supply and storage (and bottlenecks)
  - Trading activity: Balancing, Hedging
- Demand
  - Alternative energy to gas, Relative prices, incentives
- Energy policy
  - Voters
  - NGO's
  - Investors
- Geopolitics
  - SoS + Reduced vulnerability (overall)
- Economic condition
  - (recession/growth) balance of trade

Investors
- TSO
- Private
- Government

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Gas prices have become more diverse...

Source: BP Statistical Review of World Energy, June 2013
* Data from Heren LTD
...both in level and mechanism: More spot now

Monthly average import unit cost of gas

Data: Eurostat, Montel, BAFA, Sund Energy
NBP – marker for EU market prices

Longer term trends:
Shale, transportation, global LNG (US, China and Japan matter)
LNG contracts changing rapidly – what’s better?

Source: Sund Energy, Montel, EIA, Platts; September, 2013
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Could the gas price globalise more? YES!

Current regional difference strong – partly due to bottlenecks
- USA artificially low – will increase with more demand and exports
- Asia artificially high – will fall with new import pricing and hubs
- Europe in the middle – partly old contracts, partly lack of LNG

These differences will lead to more portfolio optimisation
- Sellers going to best markets – more flexible with new contracts
- Buyers going to best sellers – more flexible with more alternatives

A global price could develop to meet the electricity market
- As the coal price is global, this would set the level, with some nuance
- This would be the wholesale price of gas
- Could package for value to transportation, balancing, etc

Alternatively, go for a high price - and suffer the consequences…
Do we really believe in the supply-cost curve?

Gas costs and prices vary

- EU ex storage/ peak price
- EU wholesale gas price
- US gas price
- Own, conventional production
- Near pipeline imports
- Far pipeline imports
- European shale?
- Conventional LNG import
- FLNG

Unit costs assumed

Volume

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Or should we focus more on payability of segments?

Assumed demand curve

- Transportation
- Distribution
- Electricity
Transportation sector is growing gas demand

Several markets see more use in transportation sectors
- US, China, EU, Asia, Latin America

Compressed natural gas (CNG) to cars and buses
- CNG filling at stations or homes + biogas

LNG for ships, buses and trucks
- Around ports first, but also filling stations

Source: EIA, AEO 2013, Reference case

<table>
<thead>
<tr>
<th>Nationwide average fuel price in US</th>
<th>$/mmbtu</th>
<th>$/DGE*</th>
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<tbody>
<tr>
<td>LNG**</td>
<td>24,82</td>
<td>3,19</td>
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<tr>
<td>CNG</td>
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<td>Diesel</td>
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</table>

Source: US DoE: Alternative fuel price report, April 2013
* DGE – Diesel Gallon Equivalent
** Data from 10 LNG filling stations
LNG as marine fuel is growing

LNG as marine fuel is taking off

● Three environmental drivers
● But economic potential is key!

37 LNG-fuelled ships in traffic

● 31 new-builds confirmed during 2013-2015
● Potential for 1000 ships in traffic globally by 2020

Fjord Line: World’s 1st LNG passenger ferry with LNG-only engines

● Award-winning energy efficiency
● Low levels of emissions:
  • No SOx, 98% less particles, 92% less NOx, and 22% less CO2

Source: Fjord Line, 2012
Baltic countries – from traditional to liberalised

High gas prices today
- Some of the highest in EU
- Only one supplier: Gazprom
- More competition planned

What will the incumbent do?
- Lower prices possible
  - Negative impact on unconventional
  - LNG could become less competitive
- Same high prices
  - Shift away from gas?

Small scale options
- LNG can be repackaged:
  Regasification to distribution is not the only option
- Competition with oil and environment: When? Who? How?

Source: EU DG Energy Quarterly report on European gas markets; Q2 2013
More cooperation could be the solution for gas

High value for Baltic states from stronger ties
- Potential in interconnection, shared flexibility
- Cooperation of gas supplies, storage
- Development of trading hub

Common LNG supplying strategy?
- Common discussion and strategy
- How much LNG does the region need
- How many terminals and where?

Shale gas - uncertain for now
- What will happen after Chevron’s pull-out?
We are happy to discuss further!

We offer strategic and commercial advice + partner selection
- Producers, TSOs, large buyers, governments
- Gas, electricity, environment and more

Selected recent work
- Scenarios for European gas 2020 prices and flows in full energy picture

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