ENERGETIKA XXI:
Economy, Policy, Ecology

Developments in the Baltic Region
after the Opening of the Latvian Gas Market

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JSC Latvijas Gāze

St. Petersburg, 15 November 2018
Latvijas Gaze Group at a glance - key facts 2017

- Purchase, **trading and sale of natural gas**
- Wholesale trading and sale of natural gas to industrial and commercial customers as well as to households

<table>
<thead>
<tr>
<th>Turnover</th>
<th>Sales</th>
<th>Employees</th>
</tr>
</thead>
<tbody>
<tr>
<td>281 000 thsd. €</td>
<td>~ 13 900 GWh</td>
<td>98</td>
</tr>
</tbody>
</table>

- Provision of **natural gas distribution services**
- “Gaso” holds an exclusive license for the distribution of natural gas on the territory of Latvia which is valid until 6 December 2037

<table>
<thead>
<tr>
<th>Turnover</th>
<th>Distribution pipelines</th>
<th>Employees</th>
</tr>
</thead>
<tbody>
<tr>
<td>50 000 thsd. €</td>
<td>&gt; 5200 km</td>
<td>868</td>
</tr>
</tbody>
</table>

100% Subsidiary of the JSC Latvijas Gaze with own independent Supervisory Council and Management Board
Shareholders of Latvijas Gaze Group

- **34.00%** PJSC “Gazprom”
- **28.97%** Marguerite Gas II S.á.r.l
- **18.26%** Uniper Ruhrgas International GmbH
- **16.00%** SIA “Itera Latvija”
- **2.77%** Others

*Uniper*
EU and national Latvian law required the unbundling of the formerly fully integrated gas company Latvijas Gaze.

Key milestones of liberalization process in the Latvian natural gas market:

1. **Unbundling of transportation & storage business**
   - Founded on 22 Nov 2017
   - 100% Subsidiary of the JSC Latvijas Gaze
   - Own and independent Supervisory Council and Management Board

2. **Market opening (business customer segment)**
   - 3 Apr 2017

3. **Unbundling of distribution and trading business**
   - 1 Jan 2018

4. **Full market opening (household customer segment)**
   - 1 Jan 2019

- Founded on 22 Dec 2016
- Completely independent from the JSC Latvijas Gaze due to legal and ownership unbundling
For decades natural gas in the Baltic states was exclusively supplied via pipelines from Russia

Overview of physical supply infrastructure in the Baltic region

Key features of the Baltic gas market

- Pipelines from Russia and Incukalns Underground Gas Storage ("IUGS") form backbone of regional supply infrastructure
- Construction of LNG terminal in Klaipeda has opened up new supply opportunity
- However, until now no pipeline connection to western European gas infrastructure/markets
- Until opening of Latvian gas market in April 2017 the Baltic region comprised three separate national gas markets
- Trading activity is picking up but no fully liquid regional trading hub developed yet
In 2014 Lithuania with EU support commissioned a FSRU enabling LNG supplies to the Baltic region.

Key characteristics of the Klaipeda LNG terminal:

- **Technical regasification capacity:**
  approx. 10.2 mln. m³/d

- **Total capacity of LNG tanks:**
  170,000 m³

- **Date of commissioning:**
  28 Oct 2014

- **Operator:**
  AB Klaipedos Nafta

- **Major supplier under long-term contract:**
  Statoil

Source: Klaipedos Nafta

-> Since the start of operations only 35% of the annually available capacity was utilized.
Natural gas demand in the Baltic region dropped significantly since 2010

- Latvian gas market comprises approx. 35% of Baltic gas market
- Demand decline is in line with developments in major EU gas markets
- Promotion of renewables & energy efficiency are amongst the main drivers behind the demand drop

Source: Central Statistical Bureau of Latvia; ENTSOG; Amber Grid
No quick recovery of natural gas demand expected in the Baltic region
Moving from a closed to an open market model brings across several structural and conceptual changes

<table>
<thead>
<tr>
<th>Closed market</th>
<th>Open market</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Customers are served by a fully integrated single supplier</td>
<td>• Customers can freely choose between multiple suppliers/traders</td>
</tr>
<tr>
<td>• Regulated price</td>
<td>• Price can be negotiated between customer and supplier/trader</td>
</tr>
<tr>
<td>• Limited product differentiation</td>
<td>• Larger variety of different products</td>
</tr>
<tr>
<td>• Single supplier by law responsible for security of supply</td>
<td>• Supplier/trader has no responsibility for security of supply</td>
</tr>
<tr>
<td>• Decision making of supplier is not solely guided by commercial considerations</td>
<td>• Decision making of traders is solely based on commercial rationale and competitive positioning</td>
</tr>
</tbody>
</table>
Key features of the open Latvian natural gas market

- > 35 registered natural gas traders
- Storage, transmission and distribution remain regulated; non-discriminatory access to infrastructure at the same commercial conditions for all market participants
- Two contract entry-exit system
- Different storage and transmission products available at regulated tariffs
- Exchange and trade of natural gas via Latvian Virtual Trading Point (VTP) possible
Trends and developments since opening of the Latvian gas market

1. Customers request **different types of products** with regard to pricing and flexibility (e.g. fixed price, formula-based pricing, sales in storage, virtual storage etc.)

2. General trend towards **shorter contract periods** (e.g. next months, quarter)

3. Number and frequency of transactions is increasing

4. **Customers actively request offers** with short response periods for traders

5. **Decisions** of traders are strongly **commercially driven** (e.g. use of storage)

6. New product variety leads to new optimization and hedging needs for traders

7. **Balancing** and quality of demand forecast are becoming more important

-> What about the development of market prices and security of supply?
Do open markets inevitably lead to lower absolute prices for customers?

Old (closed) market environment

- Regulated prices for all customers essentially reflecting purchase conditions of market incumbent
- Mainly indexation to oil products with respective time lag; no short-term price volatility

New (open) market

- Customers can freely negotiate price with traders
- Majority of customers in the Baltic region have chosen German GASPOOL price as a reference
- Reference prices at European gas hubs exhibit higher short-term volatility than old regulated price
What about security of supply? - Natural gas traders can essentially choose between two different supply models

Supply Model I
- Pipeline and/or LNG deliveries only

Supply Model II
- Combination of pipeline and/or LNG deliveries and strategic use of storage

-> In the new open market environment traders have no security of supply obligation (i.e. obligation to use storage)!
Use of strategic storage is driven by rational commercial considerations - example

- **Use storage or not?**

  - **Injection Period (summer)**: Price: 17.72 Euro/MWh
  - **Withdrawal Period (winter)**: Price: 18.36 Euro/MWh

  **Summer / Winter Spread**: 0.64 Euro/MWh
  **Storage Tariff**: 1.50 Euro/MWh

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**Graph Details**

- **Forward Gas Price**

  - **Historic Prices**
  - **Forward Prices**

  - **Jan** - **Dec**
After market opening, storage operator could ensure sufficient injections only through special incentives.

Total quantities injected into IUGS at the end of the injection seasons in TWh:

- 2014: 24.15 TWh (-38%)
- 2017: 15.04 TWh (-10%)
- 2018: 13.51 TWh

Development of storage and exit (to distribution) tariffs:

<table>
<thead>
<tr>
<th></th>
<th>Current EUR/MWh</th>
<th>Planned EUR/MWh</th>
<th>Change in EUR</th>
<th>Change in %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group product</td>
<td>2.95</td>
<td>3.68</td>
<td>+0.73</td>
<td>+25%</td>
</tr>
<tr>
<td>(firm capacity)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Market product</td>
<td>0.92</td>
<td>1.37</td>
<td>+0.45</td>
<td>+49%</td>
</tr>
<tr>
<td>(interruptible capacity)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exit into</td>
<td>2.13</td>
<td>2.77</td>
<td>+0.64</td>
<td>+30%</td>
</tr>
<tr>
<td>distribution system</td>
<td></td>
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</tbody>
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Addition of new infrastructure will further drive up tariffs - more coordinated investment approach necessary

- **Existing infrastructure**
  - Incukalns Underground Gas Storage ("IUGS") – aquifer gas storage with 24 TWh working gas capacity and seasonal usage pattern
  - Klaipeda LNG terminal with approx. 10 mln. m³/d regasification capacity (lease term until 2024)

- **EU promoted projects of common interest ("PCI projects")**
  - #1 – Baltic Connector
  - #2 – Estonian/Latvian interconnection
  - #3 – Improvement/Upgrade of IUGS
  - #4 – Extension of Latvian/Lithuanian interconnection
  - #5 – Gas Interconnector Poland Lithuania ("GIPL")

-> Baltic Connector is the most advanced project with planned completion and commissioning in 2019!
Some progress in regional coordination and market integration but several key issues not yet resolved

- Latvia, Estonia, Lithuania and Finland are actively working on a single Baltic gas market with one entry-exit zone
- The goal is to harmonize market rules and unify the entry-exit tariffs by 2020
- Advantages of a single entry-exit zone
  - Interconnections points between Members States are commercially removed
  - Gas can be freely moved within the system to any location in any country of the region
  - Single balancing zone
  - Single virtual trading point

-> Discussions of a suitable pricing model for the natural gas entry-exit system for the common Baltic-Finnish market were commenced in early April 2018
Some general conclusions

1. Natural gas demand in the Baltic region dropped by more than 25% since 2010 – at the same time supply options became more diversified

2. According to different forecasts no quick recovery of demand to be expected

3. Opening of Latvian gas market triggered structural changes with mixed results on gas pricing and security of supply in the region

4. An uncoordinated addition of major supply and transportation infrastructure will further drive up tariffs and undermine the competitiveness of natural gas as a source of energy in the region

5. Regional market integration and the development of a single liquid natural gas trading hub may up open new opportunities for all market participants; however, both not to arrive very soon