Energy market development in Latvia and the Baltic States

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Primary energy consumption

- Coal
- Renewables
- Hydroelectricity
- Nuclear energy
- Natural gas
- Oil
Globalization and regionalization in the World Energy Market

- Bitumen sand in Canada
- Shell gas in USA
- Heavy fuel oil in Venezuela
- Oil production in Brazilian shelf
- Renewables development in Europa
- Gas consumption crisis in Europe
- Availability of the local sources in China
- Oil in the Middle East
- Liquefied natural gas is Qatar
- Increasing demand in China
Natural gas production and consumption by the region

Production

Consumption

Year

Year
Development of natural gas demand and its share in PEC in the Baltic Countries

Demand for natural gas has considerably decreased in all three Baltic countries in the last 6 years.

Gas share in PEC in the Baltic Countries:
- Lithuania: 29%
- Latvia: 24%
- Estonia: 7%
Physical supply options for Baltic region remain limited - Incukalns storage is core asset for current supplies to Latvia

Overview of the physical supply infrastructure in the Baltic region

Basic supply model for Latvia today:

- Inject gas into storage during summer and withdraw during winter
- Manage major changes in demand through available flexibilities in long-term supply agreement

->[Design of future tariff model and absolute tariff level for storage will decide on attractiveness of storage for traders in open market]
Security of gas supply in the European Countries

(Future Development of the Energy Gas Market in the Baltic Sea Region, Ramboll, 2009)
Natural gas demand in Latvia significantly decreased since 2010 with a slight recovery in 2016.

Source: Central Statistical Bureau of Latvia,
Figure for 2016 is based on actual consumption figures of Latvijas Gaze, including consumption for own needs.
Forecast of natural gas consumption in Latvia
- it is expected that natural gas consumption will stabilise at 2020

Source: JSC «Latvijas Gaze»
Latvian natural gas demand strongly depends on heat and power production and is, therefore, also temperature driven.

Shares of natural gas by customer groups in Latvia, 2013/2014

- Residential customers: 19%
- Power and heat production: 57%
- Industry: 15%
- Municipal and commercial companies: 9%


~ 60% of Latvijas Gaze’s total sales volumes are sold to power and heat production companies in Latvia.
Unbundling of Latvijas Gāze

- Unbundling obligation provided for by the Gas Directive 2009/73/EC, and supplemented by amendments to the Energy Law
- Latvia has chosen full ownership unbundling
- Amendments to the Energy Law adopted on February 11 and effective since March 8, 2016

Independence requirements
- Separate Council and Board
- No joint support functions
- Separated premises
- Separate IT systems
- Cannot be part of vertically integrated company
Opening of the Latvian natural gas market leads to several structural and conceptual changes

<table>
<thead>
<tr>
<th>Closed market</th>
<th>Open market</th>
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<tbody>
<tr>
<td>• Customers are served by a fully integrated single supplier</td>
<td>• Customers can freely choose between multiple suppliers/traders</td>
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<tr>
<td>• Regulated price</td>
<td>• Price can be negotiated between customer and supplier/trader</td>
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<td>• Limited product differentiation</td>
<td>• Larger variety of different products</td>
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<td>• Single supplier by law responsible for security of supply</td>
<td>• Supplier/trader has no responsibility for security of supply</td>
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<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>
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Additional changes with direct impact for customers to be expected

1. In case importance of storage in the supply model for Latvia is preserved, open market will gradually shift towards a stronger focus on the gas year (April to April).

2. In a shrinking or stagnant market with increasing competition Take-or-Pay obligations will most likely play a stronger role.

3. In the absence of a fully functioning and liquid trading hub the availability of additional unplanned demand will be limited and come at respective costs.

4. Traditional oil based pricing model with time lag will gradually be complemented by hub based pricing elements/mechanisms.

5. Customers will have more choice but also more responsibility for their own commercial decisions.
Historically gas from IUGS was supplied during winter to Latvia, Estonia, Russia and reserves kept for Lithuania;

2016 is the first year when Gazprom decided not to inject gas in the storage for Russia, and Estonia opted to receive gas through pipeline;

Total volume injected in the storage in 2016 was 1532 MCM and around 200 MCM is Russian gas from previous season;

It is not possible to supply Latvia in winter through pipeline;

Increase of storage tariffs for Latvian customers are inevitable.
Regulation of underground gas storages for security of supply in EU

Obligation of market participants to store gas: France, Spain, Portugal, Belgium, Denmark, Czech, Slovakia, Poland
Strategic storage: Italy, Hungary
No regulation: Great Britain, Germany, Austria, the Netherlands

Source: CEER
Gas transit through Latvia

- In 2015 in total 97 MCM from Lithuania through Latvia was delivered to Estonia, which is 20% of total consumption. The same trend continued in 2016.
- Technically these deliveries could not be possible without Incukalns UGS because actually gas from Lithuania was supplied to customers in Latvia, but to Estonia delivered from the storage and therefore Latvijas Gaze was subsidizing gas customers in Estonia.
Challenges, barriers and opportunities of the gas market in the Baltic Countries

- Shrinking of gas market
  - (Latvia, Lithuania, Estonia, MCM)

- In 2016 Lithuanian gas market is closed because subsidies for the largest customers are still in place and are paid from money received from Gazprom as compensation in the past for very high gas price and therefore is below current gas purchase price;
- Small gas market in Estonia, which is expected to decrease further;
- Unresolved issues regarding Incukalns UGS.

- Very high investments in the infrastructure
  - GIPL (Lithuania 27.45 MEUR, Latvia 14.7 MEUR, Estonia 1.5 MEUR);
  - Balticconnector ~250 MEUR;
  - Inčukalns UGS~ 87 MEUR;
  - LV-LT interconnection ~95 MEUR
  - LV-EE intrconnection~37 MEUR.

- Even after opening of gas market in Latvia on April 3, 2017 functioning of gas market in the Baltic Countries will be problematic;
- The solution of the problem would be creation of the joint Baltic market with the clear and transparent rules, which even might increase liquidity of the market.

Source: TSO forecasts for Frontier Economics study
Investment projects map of the BEMIP region

<table>
<thead>
<tr>
<th>SDG termināls</th>
<th>1</th>
<th>Finngulf SDG projects</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2</td>
<td>Paldiski SD termināls</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>SDG termināls Latvijā</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>Klaipėdas SDG termināls</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>SDG termināls Świnoujścią</td>
</tr>
<tr>
<td>Krātuves</td>
<td>6</td>
<td>Inčukalns</td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>Syderiai</td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>Strachocina</td>
</tr>
<tr>
<td></td>
<td>9</td>
<td>Wierzchowice</td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>Mogilno</td>
</tr>
<tr>
<td></td>
<td>11</td>
<td>Kosakowo</td>
</tr>
<tr>
<td>Maģistrālie vadi</td>
<td>12</td>
<td>FI - EE starpsavienojums (Baltic Interconnector)</td>
</tr>
<tr>
<td></td>
<td>13</td>
<td>LT - LV starpsavienojuma pastiprināšana</td>
</tr>
<tr>
<td></td>
<td>14</td>
<td>Jurbarkas – Klaipeda</td>
</tr>
<tr>
<td></td>
<td>15</td>
<td>PL - LT starpsavienojums</td>
</tr>
<tr>
<td></td>
<td>16</td>
<td>PL - DK starpsavienojums (Baltic Pipe)</td>
</tr>
</tbody>
</table>
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