CAN SHALE GAS KILL GAZPROM?

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Unconventional Gas Market Scenarios
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This is a part of Slide 24 of Gazprom Investor Day presentation of 2010.

- At that time Gazprom was aiming to take 10% of the US gas market by 2015.
- Gazprom planned to export LNG from Sakhalin and Shtokman to North America.
- In April 2010, Gazprom signed an agreement to supply LNG to Lake Charles, La.
- “The so called shale gas revolution is one and the same thing as American Hollywood”, - Alexey Miller’s interview with Süddeutsche Zeitung, Jan-26, 2012.

“Shale gas <..> can dramatically restructure the hydrocarbons market”, - Vladimir Putin, April 11, 2012.
• Gazprom still foresees its 2020 exports to Europe at about 225 bcm.
• Gazprom reports the minimum guaranteed contracted volume for the period from 2020 to 2025 at 158 bcm (it could be too optimistic).
• After the crisis of 2008, the target for 2015 was lowered by 13 bcm, while the one for 2020 remained intact.
• Gazprom anticipates faster growth of exports than in 2002-2006.
  – Gazprom may need high plans to justify its pipeline construction program.
By about 2022, the combined European export capacity is to reach 318 bcma or twice the guaranteed contracted volume.

- Gazprom needs to fill up North Stream and South Stream pipelines.
- Ukrainian transit is to disappear in 2019.
- From about 2020, transit of Russian gas through Belarus and Poland is likely to decline steadily.
  - The Yamal-Europe pipeline flow is already lower than in Q1-2011.
Gas Sales Revenue of Gazprom

• European sales are likely to go down.
  – Gazprom gave price discount to several European clients.
  – Low or no growth of sales volumes.

• FSU price (net of customs duties) is 15% below the European price.
  – No cost of international transit.

• Russian sales revenue growth is limited.
  – Wholesale price of gas for industrial consumers in Russia is to achieve netback parity with European export sales by 2015 (according to the law).
  – This is unrealistic.
End-Use Price of Gas for Power Generation

High space heating demand and low energy efficiency limit the growth of industrial price of gas in Russia.

This is the price for major Russian power plants that consume over 50 mmcf/day.

Effect of the USD / RUR rate

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May 22, 2012
Does Gazprom need conflicts to justify its pipeline construction plans?

For investment maximization, Ukraine suits better than Poland.

The existing pipelines can evacuate all gas produced in W-Siberia, incl. Yamal.

Bovanenkovo – Russkaya link costs about € 30 billion (excluding South Stream).
• Without a signed contract, Gazprom and Naftogaz disagreed about the origin of the fuel gas for compressor stations.

• **Vladimir Putin ordered** to turn off the tap after Gazprom’s alleged loss of 65.3 mmcm of fuel gas valued at €20 Million.

• This action has caused Gazprom a direct loss of €1.5 Bn.

• Cost of new pipelines (inside Russia only) to feed South Stream exceeds €30 Bn.

• **Contractors and intermediaries needed this conflict.**
## Pipeline Cost Comparison

### The Alaska Pipeline Project - € 7.7 M/km

<table>
<thead>
<tr>
<th>Name</th>
<th>L, km</th>
<th>D, mm</th>
<th>C, bcm/yr</th>
<th>Cost, € M/km</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gryazovets-Vyborg-1 (Nord Stream Russia)</td>
<td>917</td>
<td>1400</td>
<td>~34.0</td>
<td>4.9</td>
</tr>
<tr>
<td>Gryazovets-Vyborg-2 (Nord Stream Russia)</td>
<td>703</td>
<td>1400</td>
<td>~21.0</td>
<td>3.5</td>
</tr>
<tr>
<td>OPAL (Nord Stream Germany)</td>
<td>470</td>
<td>1400</td>
<td>35.0</td>
<td>2.1</td>
</tr>
<tr>
<td>Nord Stream (Baltic Sea)</td>
<td>1224</td>
<td>1153</td>
<td>27.5</td>
<td>3.4</td>
</tr>
<tr>
<td>Dzhubga-Sochi (Black Sea)</td>
<td>177</td>
<td>530</td>
<td>3.8</td>
<td>&gt;5.0</td>
</tr>
</tbody>
</table>

1400 mm, 58 bcm/yr, € 12.4 M/km
Sales Down? – Let’s Build Another Pipeline! (before we run out of money)

- Gazprom announces a new pipeline expansion project after nearly every drop of export sales.
  - Responding to the crisis of 2008, Gazprom has increased the design capacity of the South Stream pipeline.
  - The decline of European sales in Q1-2012 was followed by the announcement of possible increase of the Nord Stream capacity.

- To fill up additional export capacity, Gazprom would need to build new feeding pipelines inside Russia.
  - Apparently, Gazprom executives are concerned about the future profits of contractors.
Pipeline Construction Has Just Started

**Gazprom Investment Plan, € Bn**

- The real full-scale pipeline construction starts in 2013.
  - In 2013, the investment is to reach about 50% of the annual revenue.
- Most of the investment will go to the construction of new pipelines delivering gas from the Yamal Peninsula to the Black Sea.
- Gazprom evaluates the chances for high gas demand in Russia at 2% and in Europe at 19%.
  - It would be difficult to prolong the expiring European contracts on the old terms (oil indexation, high take-or-pay share).
- Gazprom always chooses the most expensive option.
  - New pipelines instead of storage facilities.
  - Maximization of profits of contractors and intermediaries instead of shareholders’ profits.
Investment Program Can Kill Gazprom

• Export of gas produced in Russia is the most profitable operation of Gazprom.
  – Gazprom reduces shareholders’ profits by adding foreign gas to its export portfolio.
• Current profit margin allows a substantial price reduction.
• A sharp growth of transportation costs is expected.
  – Gazprom builds an extremely expensive new pipeline system to evacuate the Yamal gas.
  – The new expensive lines will be fully loaded while the existing ones will have a lot of spare capacity.
• Gazprom needs a high price in 2020.
• At $13-14/MMBtu, shale gas can beat Russian gas in Europe.

www.eegas.com  May 22, 2012
Other Factors – Caspian Gas

- Gas reserves of the Caspian region are of the same size as the Yamal reserves.
- Gas production cost in Azerbaijan and Turkmenistan is much lower than in Yamal.
- Gas fields of Turkmenistan and Azerbaijan are closer to Europe than Yamal.
  - Pipeline construction cost in Russia is much higher than in the Caucasus and Turkey.
- Caspian gas will inevitably come to Europe by the shortest route.
- An agreement between Azerbaijan, Turkmenistan and the EU would be a major breakthrough.
Yamal - South Stream - Europe
- Proven reserves – 16 tcm
- High production cost
- Extremely high pipeline construction cost in Russia
- Cost of South Stream - € 15.5 bn

Turkmenistan gas field can get a higher netback and a better return on investment
- Assuming Southern Gas Corridor doesn’t hire Gazprom’s contractor

Galkynys – Shah Deniz - Europe
- Proven reserves – 17+ tcm
- Closer to Europe
- Production and transmission costs:
  - Much lower than in Russia

Turkmenistan gas field can get a higher netback and a better return on investment
- Assuming Southern Gas Corridor doesn’t hire Gazprom’s contractor
Competitive Capacity of Gazprom

- Gazprom is doing a great job supplying gas from West Siberia to consumers in Russia, FSU and Europe.
  - Gazprom is capable to supply over 2 bcm per day.
- In the past decade, Gazprom succeeded in reducing the number of pipeline failures by 50% (adequate rehabilitation).
- Gazprom has a huge cost reduction potential.
- Unfortunately, this potential is ignored by the current executive board of the company.
THANK YOU DANKE