Russia’s Natural Gas Production & Export Policy

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Edinburg
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1. Gas production in Russia

2. Where are the markets?

3. So what is the Russian's response?
Russian gas production stagnates, independents share reached 26%
Gazporom`s short term production plans

Gazprom main production regions

Capacities commissioning forecast

<table>
<thead>
<tr>
<th>Year</th>
<th>Comprehensive gas processing units/total designed capacity</th>
<th>Gas pumping units/total designed capacity</th>
<th>Wells</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>2 units/6.0 bcm p.a.</td>
<td>2 GPP/50.0 MWh</td>
<td>73 wells</td>
</tr>
<tr>
<td>2014</td>
<td>2 CGPU/30.0 bcm p.a.</td>
<td>5 GPP/401.0 MWh</td>
<td>168 wells</td>
</tr>
<tr>
<td>2015</td>
<td>2 CGPU/2.3 bcm p.a.</td>
<td>11 GPP/579.8 MWh</td>
<td>136 wells</td>
</tr>
</tbody>
</table>

Gazprom production 2012-2015

Source: Gazprom`s Investor Day Presentation. 2013.
Gazprom’s long term production plans

Eastern Gas Program

Kirinskoye field

Production forecast

Sakhalin gas production center

- C1+C2 Reserves: 746.3 bcm of gas, 93.4 mm tons of condensate
- Peak annual production: 13 bcm of gas, n/a

Yakutsk gas production center - Chayandinskoye field

- C1+C2 Reserves: 1.4 tcm of gas, 21.4 mm tons of condensate
- Peak annual production: 25 bcm of gas, 0.4 mm tons of condensate

Irkutsk gas production center - Kovyktinskoye field

- C1+C2 Reserves: 1.5 tcm of gas, 76.7 mm tons of condensate
- Peak annual production: 35.3 bcm of gas, 2.3 mm tons of condensate

Krasnoyarsk gas production center - Sobinskoye field

- C1+C2 Reserves: 154.9 bcm of gas, 8.4 mm tons of condensate
- Peak annual production: 5.0 bcm of gas, 0.4 mm tons of condensate

Combined CAPEX for Eastern Program development(1)

<table>
<thead>
<tr>
<th></th>
<th>2013 F</th>
<th>2014 F</th>
</tr>
</thead>
<tbody>
<tr>
<td>USD</td>
<td>1.7 bn</td>
<td>0.2 bn</td>
</tr>
</tbody>
</table>

Independents are ready to increase their production, with peak in 2023-2025

Sources: companies plans, ERI RAS
1. Gas production in Russia

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3. So what is the Russian’s response?
No market niche in North America any more

Gas balance in North America

Source: Global and Russian Energy Outlook up to 2040. ERI RAS-AC. 2013.
Market niche in Europe: strong competition in the future

Gas balance in Europe

Source: Global and Russian Energy Outlook up to 2040. ERI RAS-AC. 2013.
Situation on the European gas market does not favor Russian exports

- Growing supplies of LNG
- Diversification of pipeline supply sources

- Spot volumes are increasing very fast (30-40% p.a.)
- Majority of the European stakeholders support transition to the spot pricing

- Lower than contracted volumes
- Recovers very slowly
- In the power sector gas is strongly competing with coal

- Unbundling
- Gas Target Model requires all gas to be supplied at the virtual hubs
Limited demand growth on the domestic market

Russian gas demand by sector until 2020 (optimistic scenario)

Source: ERI RAS
Growing market in Asia, but…

Gas balance in North-East Asia

Source: Global and Russian Energy Outlook up to 2040. ERI RAS-AC. 2013.
By 2020 there is no market niche in China, by 2030 the niche might reach 66 bcm

Source: ERI RAS
OECD Asia is already contracting the North American LNG

Japan and South Korea contracts and gas balance

Source: ERI RAS
Global LNG supply is expected to boom during the next decade

Global liquefaction capacities (existing and planed)

Mln. tonnes

Source: ERI RAS
There is enough gas to expand gas production by 2 tcm by 2040 at the production costs below 4 $/MBtu

Source: Global and Russian Energy Outlook up to 2040. ERI RAS-AC. 2013.
Regional equilibrium gas prices are not expected to grow

Average weighted regional prices* of gas

$2010/mmbtu

Source: Global and Russian Energy Outlook up to 2040. ERI RAS-AC. 2013.

* Weighted average price between the prices of long-term contracts linked to alternative fuels, and spot prices.
1. Gas production in Russia

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**Evolution of the Russian gas export strategy: what will be the Russian response?**

<table>
<thead>
<tr>
<th>Strategy Period</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990-2002</td>
<td><strong>Traditional strategy</strong>&lt;br&gt;Volume maximization, Price damping</td>
</tr>
<tr>
<td>2002-2008</td>
<td><strong>Miller`s team strategy</strong>&lt;br&gt;Price maximization and volume growth</td>
</tr>
<tr>
<td>2009-2013</td>
<td><strong>Anti-crisis strategy</strong>&lt;br&gt;Minimal price adjustments acceptable for the consumers (price maximization in the new conditions), stagnating volumes</td>
</tr>
<tr>
<td>2013-2020</td>
<td><strong>???</strong>&lt;br&gt;Most probably price maximization</td>
</tr>
</tbody>
</table>

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<tr>
<th>Strategy Period</th>
<th>Market Focus</th>
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<tr>
<td>1990-2002</td>
<td><strong>One target market – Europe</strong>&lt;br&gt;Only pipeline gas</td>
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<td>2002-2008</td>
<td><strong>One target market – Europe</strong>&lt;br&gt;Only pipeline gas</td>
</tr>
<tr>
<td>2009-2013</td>
<td><strong>Attempts to diversify markets (Asia)</strong>&lt;br&gt;Strong desire to develop LNG</td>
</tr>
<tr>
<td></td>
<td><strong>Russian role – dominant regional supplier</strong></td>
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<td><strong>Russian role – dominant regional supplier</strong></td>
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<td></td>
<td><strong>Russian role – regional swing producer</strong></td>
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<tr>
<td></td>
<td><strong>Russian role – global swing producer</strong></td>
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</tbody>
</table>
Devil is in the details: new additional gas to Europe - where will it come from?

US and Canadian LNG will be primarily targeted at the Asian markets.

Australian gas is going to be most expensive. It is almost completely contracted for the Asian buyers.

For East Africa Asian markets also seem to be more attractive.

Norway?

Azerbaijan?

Iran?

Qatar?

Chinese shale gas?

Japanese methane hydrates?

Nigeria?

Algeria?
Both for the North American and for East African LNG Asia seems to be much more attractive market.

Cost comparison for the US LNG sales to Europe and Asia

Cost comparison for the East African LNG sales to Europe and Asia

Source: ERI RAS
Existing long-term contracts guarantee stable sales volumes for Russia until at least 2022

**Contract volumes and supply volumes of Russian gas to Europe**

Sources: Cedigaz, Gazprom, ERI RAS.
## Gazprom's contracts renegotiations

<table>
<thead>
<tr>
<th>Company and Country</th>
<th>Contracted Volumes (bcm)</th>
<th>Contract Status</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Italy</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Edison</td>
<td>2,0</td>
<td>The Parties agreed on a discount (70 $/mcm acc. to Morgan Stanley). Total compensation of €200 mln. for FY2011.</td>
</tr>
<tr>
<td>Eni</td>
<td>3,0</td>
<td>15% spot pricing</td>
</tr>
<tr>
<td>ERG</td>
<td>N/A</td>
<td>15% spot pricing</td>
</tr>
<tr>
<td>SinergiItalianiane</td>
<td>N/A</td>
<td>15% spot pricing in 2009. Price discount (lower P0) in 2012.</td>
</tr>
<tr>
<td><strong>Germany</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E.ON</td>
<td>20,0</td>
<td>15% spot pricing in 2009. Price revised down by 10% in 2012.</td>
</tr>
<tr>
<td>RWE</td>
<td>8,0</td>
<td>Lawsuit in arbitration.</td>
</tr>
<tr>
<td>Verbundnetz Gas</td>
<td>6,4</td>
<td>Discount negotiated</td>
</tr>
<tr>
<td>BASF</td>
<td>N/A</td>
<td>In negotiations with Gazprom</td>
</tr>
<tr>
<td>Wingas</td>
<td></td>
<td>Price discount (lower P0) in 2012</td>
</tr>
<tr>
<td><strong>Baltics</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Estonia</td>
<td>0,4</td>
<td>15% discount granted</td>
</tr>
<tr>
<td>Latvia</td>
<td>0,7</td>
<td>15% discount granted</td>
</tr>
<tr>
<td>Lithuania</td>
<td>2,7</td>
<td>Demands a 15% discount</td>
</tr>
<tr>
<td><strong>Others</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PGNiG(Poland)</td>
<td>9,0</td>
<td>Demands a 10% discount, lawsuit filed to Stockholm arbitration Court</td>
</tr>
<tr>
<td>Botas(Turkey)</td>
<td>6,0</td>
<td>6,5% discount granted in 2009. 10% discount granted in 2011. Turkey declined to extend the expiring contract.</td>
</tr>
<tr>
<td>GDF Suez (France)</td>
<td>8,0</td>
<td>15% spot pricing in 2009, price discount (lower P0) in 2012</td>
</tr>
<tr>
<td>Econgas (Austria)</td>
<td>5,6</td>
<td>15% spot pricing in 2009. In 2012 price discount (lower P0)</td>
</tr>
<tr>
<td>SPP (Slovakia)</td>
<td>N/A</td>
<td>Price discount (lower P0) in 2012</td>
</tr>
</tbody>
</table>

*Sources: MorganStanley. press*
Arguments: oil indexation vs. gas indexation

<table>
<thead>
<tr>
<th>Oil indexation</th>
<th>Spot indexation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disappearing gas glut on the European gas market in the medium term – gap between oil-indexed and spot prices will narrow</td>
<td>Strong pressure from the customer side</td>
</tr>
<tr>
<td>Arbitration lasts for several years</td>
<td>Gazprom could demand financial compensation for contract review + 3rd Package exemption for the South Stream and NEL + transitional period for price adjustments + European-level financial support for its mega-projects (like EBRD and other European financial institutions)</td>
</tr>
<tr>
<td>Gazprom will face price reopening and contract expiration only after 2015</td>
<td>Gazprom could become a dominant player dictating prices at the spot market by changing its supply volumes</td>
</tr>
<tr>
<td>With high oil prices even lower sales volumes are providing high revenue</td>
<td></td>
</tr>
<tr>
<td>New projects need high prices</td>
<td></td>
</tr>
<tr>
<td>Oil indexation is needed for the project financing</td>
<td></td>
</tr>
</tbody>
</table>

There are strong commercial reasons for Gazprom to protect the oil indexation at least during the next 3 years
Eastern Gas Program: from discussion to the real investments

Sources: Gazprom
Russian LNG projects: challenges and increasing competition

Source: ERI RAS
Conclusions

» Resources and production possibilities are not a limiting factor
» Growing costs and taxes of the domestic production
» Russia is for the first time facing demand constraints on its export markets
» European policy and market situation create no incentives to invest in additional gas supplies to Europe
» There are strong commercial reasons for Gazprom to protect the oil indexation at least during the next 3 years, and there is strong political will to protect oil linkage
» Russia will have to market more expensive gas from the new projects, revenue maximization seems to be more attractive
» Russian gas export policy response so far includes three pillars:
  • Price reviews with minor adjustments (remaining oil indexation as a basis)
  • Eastern development
  • LNG
Contacts

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