RUSSIAN PIPE GAS VS. LNG
Russia will have a new market in the East and what impact will it have on LNG and European supply?

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February 10, 2015
1. Analysing Russia’s role as a key market arbitrage point as a supplier to Europe and Asia and evolution of the Russian gas export policy

2. New gas export policy: Will pipe gas become more expensive for the western countries?

3. What will Chinese demand do intertwined with Russian pipeline infrastructure?

4. Russian pipeline gas and LNG: What will this mean for EU and Asian energy future?
Russia is the world’s largest net exporter of gas, by 100 bcm a leaving behind Qatar

Main net exporters of gas (pipeline and LNG) in 2013, bcm

Source: BP Statistical Review of World Energy 2014

Russia provides for nearly one quarter of the global cross-border gas trade. It is dominant supplier both for the European and for the CIS gas markets, and has a huge potential to influence prices on these markets.
Russia’s role as a key market arbitrage point as a supplier to Europe and Asia
“Eurasian Cross” in 2025: three arbitrating suppliers

- Zone of hydrocarbons concentration (60% of world reserves)
- Zone of energy consumption concentration (40% of world consumption and 80% of Eurasian consumption)
The emerging Eurasian gas market and its main principles

- Single pipeline gas pricing mechanism (net-back pricing from the major consumer markets in Europa and in Asia) with the lowest prices in the heart of Eurasia.

- Single gas pricing mechanism is supported by competition with LNG. Alternative fuels – coal, RES and nuclear – will limit any attempts of monopolistic pricing.

- Variety of contract terms (long-term/ spot; bilateral/multilateral)

- Hub development (TTF, NBP, NCG, Saint-Petersburg, Turkey, Shanghai, JKM, Singapore, …)
Increasing pressure on the Russia`s gas export strategy in 2014

**3rd Energy Package**
**EU diversification policy**
**EU “Energy Union”**
**EU and US pressure on the South Stream**
**Falling EU gas demand**
**EU anti-trust investigation**
**US shale gas revolution**
**LNG oversupply**
**Falling oil-indexed and spot prices**

**Politics**
**Financial sanctions and capital unavailability**
**Ukrainian crises and transit risks**

**Global dynamics**

**Russian gas export strategy**
Changing strategy?

**Old strategy**

- Expansion strategy in the “sellers’ market” in Europe (based on the expectations of stable gas demand growth in Europe and low competition), cautious market assessment in Asia.

- Gas supply on the basis of oil-linked LTCs with “take-or-pay” clauses.

- Delivery points on the EU border (trying to move them further into EU territory). The strategy of moving downstream and gaining access to end users in the European countries, developing a large number of joint ventures, as well as involving itself in searching for European storage, transport and distribution assets.

- Irreconcilable conflicts with Ukraine led to the appearance of strategies to bypass the transit countries by building transportation infrastructure in Europe (Nord and South Streams).

- LNG – top priority

**New strategy**

- Strategy of market niche protection in the “buyers’ market” in Europe (where demand dynamics is disappointing, aggravated by the geopolitical tensions, while competition is supposed to increase) and expansion strategy in Asia.

- Increasing share of spot contracts, reduced oil indexation and “take-or-pay” clauses in the LTCs.

- Moving delivery points to the Russian border and Turkey. The strategy of moving downstream and developing joint ventures is abandoned, as well as involving itself in searching for European storage, transport and distribution assets.

- Bypassing Ukraine is the political goal, but no more infrastructure investments on the EU territory.

- Focus on pipeline gas
The role of LNG in the Governmental policy was very high, driven by a long list if considerations, but…

- Increasing export volumes
- Geographic diversification, access to the new markets in (South America, South-West Europe, Asia Pacific, Africa and Middle East)
- No transit risks with strong control over transportation to the final customers
- Arbitrage opportunities
- Regional development (sensitive regions - Artic, Far East)
- New technologies (including shipbuilding)
- Northern Sea Route development
- Securing geopolitical position in Arctic and in Asia Pacific

...Due to the geopolitical tensions the uncertainty is huge
There are 6 Russian LNG projects under consideration currently, all of them face commercial, technical or regulatory challenges, especially under the sanctions.
Huge investment needs and potential risks with the equipment availability seriously threaten the future of the projects

### Major characteristics of the Russian LNG projects

<table>
<thead>
<tr>
<th>Project name</th>
<th>Project participants</th>
<th>Estimated Start-up</th>
<th>Capacity (mt)</th>
<th>CAPEX</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sakhalin-2 expansion (train 3)</td>
<td>Gazprom, Shell, Mitsui and Mitsubishi</td>
<td>2019</td>
<td>5</td>
<td>$5-7 bln. (LNG plant only)</td>
</tr>
<tr>
<td>Pechora LNG</td>
<td>Rosneft</td>
<td>2017</td>
<td>4-10</td>
<td>$5,5-6,6 bln.</td>
</tr>
<tr>
<td>Yamal LNG</td>
<td>Novatek, Total, CNPC</td>
<td>2018</td>
<td>15</td>
<td>$27 bln.</td>
</tr>
<tr>
<td>Sakhalin-1</td>
<td>Rosneft, ExxonMobil</td>
<td>2019</td>
<td>5-15</td>
<td>$15 bln.</td>
</tr>
<tr>
<td>Baltic LNG (2nd version)</td>
<td>Gazprom</td>
<td>2018</td>
<td>10</td>
<td>$5-7 bln. (LNG plant only)</td>
</tr>
<tr>
<td>Vladivostok LNG</td>
<td>Gazprom, KOGAS</td>
<td>2020</td>
<td>10-15</td>
<td>$12,4 bln. (3 train LNG plant only)</td>
</tr>
<tr>
<td>Shtokman</td>
<td>Gazprom</td>
<td>Post 2020</td>
<td>7,5-15</td>
<td>$30-45 bln.</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td></td>
<td><strong>56-85</strong></td>
<td><strong>$100-120 bln.</strong></td>
</tr>
</tbody>
</table>

Source: ERI RAS
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Global gas price collapse, approaching 7$/Mbtu both in Europe and in Asia

Source: Platts
Pipeline gas shows the best economics in this difficult time: 30% export duty reduces with the gas lower prices (to 2.1 $/Mbtu with 7$/Mbtu final gas price)

<table>
<thead>
<tr>
<th>Costs and margins of the major gas suppliers to Europe and Asia</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Europe</strong></td>
</tr>
<tr>
<td>Production (incl. taxes)</td>
</tr>
<tr>
<td>At 7$/MBtu</td>
</tr>
<tr>
<td>At 10$/MBtu</td>
</tr>
<tr>
<td>At 10.5$/MBtu</td>
</tr>
<tr>
<td>At 12$/MBtu</td>
</tr>
</tbody>
</table>

Sources: NEXANT, IEEJ, ERI RAS
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Russia has absorbed all market niche in China up to 2028

Sources: IEA WEO2014, Cedigaz, ERI RAS
Pipeline development in the East Siberia and Far East

The first section of the Power of Siberia GTS—Yakutia-Khabarovsk-Vladivostok gas trunkline – will come onstream in late 2017.
With oil price collapse Chinese mega-deal seems less favorable

- In terms of diversification, Russia is focusing its commercial and diplomatic efforts on China, as shown by the recent landmark gas deal signed in May 2014, which saw Russia agree to supply 38 bcm/y, starting in 2018, from currently undeveloped fields in eastern Siberia to China through “Power of Siberia.”

- The contract is linked to oil prices and has 'take-or-pay' clause.

- Contract price is not officially disclosed (Russian trade representative in China announced, that it is slightly higher than Central Asian gas price for China).

- With total amount of the 30 year long deal of $400 bln., average price was estimated at 370-380 $/mcm under 100 $/bbl oil, but much lower with the lower oil price.

- It seems that there is strong price review clause in the contract.

- $25 bln. were expected as a down payment from the Chinese side, but the deal failed.

- The deal will eventually give Gazprom flexibility in diversifying its customer list, but completion of this pipelines is set for 2019 and it will reach its full capacity only by 2025.

But despite that, the price set by pipeline deal between Russia and China undermines competitiveness of the Australian and US LNG in the Asia Pacific
Post-May 2014 negotiations:
Altai, Korean and Japanese pipeline negotiations

- On August 2014 Gazprom started negotiations with CNPC on the “Western route” (6700 km long “Altai pipeline” with 30 bcma capacity from the Western Siberia, diverting supplies targeted to the European market). Gazprom says that the pipeline could be built very fast and its capacity might be expanded up to 100 bcma. In October 2014 Russia signed framework agreement for the Western route. The Memorandum of Understanding lacks agreement on crucial details such as price, but if the details are worked out and both these deals are implemented, the supply of 68 bcm/year to China would make Beijing Russia’s biggest individual gas customer.

- In October 2014 Gazprom for the first time announced that it is ready to refuse from Vladivostok LNG and to send all the feed-gas to China via pipelines. Sakhalin has the option of increased LNG exports or the S-K-V pipeline to Vladivostok and possibly into NE China.

- The Eastern route between Russia and China has also laid a favorable foundation for extending another subsea gas pipeline from China’s Shandon province to South Korea, linking the three countries.

- Russia-Japanese pipeline project discussion is back, though politically very difficult so far.
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Russian price strategy in Europe is in fact more flexible than declared

- Russia’s policy with regard to contract review has been based on the principal of delaying for as long as possible before providing the minimum discount acceptable to each buyer.

- In 2013 Gazprom started to implement a new price discount model with so-called retroactive payments.

- Despite Gazprom`s strident rhetoric in favor of traditional oil indexation, in actual fact numerous adjustments and contract reviews have already been made in the course of the last 5 years.

- Analysis of Gazprom`s official reports demonstrates a much more flexible negotiating position than has commonly been thought to be the case. During the period 2009 – mid-2014 as many as 58 gas supply contracts were reviewed with 39 clients, providing price discounts, easing of take-or-pay obligations and a certain introduction of a spot component.

- Calculations using Russian Customs Service statistics, Gazprom reports and the Nexant World Gas Model (which allows the assessment of contractual prices based on the prices of oil products), clearly show the increasing differential between these two prices. In fact, by 2013 Gazprom had already provided nearly on average 16% discount to its European customers compared to its pre-crisis traditional oil-linked price formulas.

As a result of all these price discounts, already by the end of 2013 Gazprom managed to restore its market share in Europe to the pre-crisis level of 30%
Existing long-term contracts guarantee stable sales volumes for Russia until at least 2022.

Sources: Cedigaz, NEXANT, Russian Custom Service, ERI RAS.
Conclusions: Russia seems to remain the major European gas supplier at least for the next 10-15 years, while in Asia Russian (and Central Asian) pipeline gas could set a floor price for LNG supplies.

The main increase in Russian gas exports (if LNG is allowed) will be to Asia, LNG export volumes are most uncertain. Russian gas export volume estimations are reviewed significantly downward (from 400 bcm to 250 bcm in the longer-term), but still remain the highest in the world.
Conclusions: Russia will remain the world’s largest net exporter of gas in 2025, again by 100 bcm, leaving behind Qatar.

Main net exporters of gas (pipeline and LNG) in 2025, bcm

Source: ERI RAS 2014
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