Russian Energy Sector At The Crossroad: New Challenges

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The role of oil and gas for the Russian Federal budget is huge.

Source: http://www.roskazna.ru/reports/fb.html
Not only energy sector, but the whole Russian GDP growth is based on the oil prices

Russian economy is facing recession

GDP and industrial value added growth (as % to the corresponding quarter of the previous year)

Source: Rosstat
Global markets transformations are unfavorable for Russia

- **Slowing demand** (crises, structural changes, energy efficiency) and shrinking market niches for the traditional suppliers (shale revolution, new market participants).

- **Growing supply and increasing competition** with Australia, Brazil, East Africa and North America, which will target Russian core markets in Europe and Asia.

- **Stagnant prices** – shale revolution has already decreased prices in North America and Europe, additional shale oil will limit oil prices growth. In all scenarios oil prices do not exceed 100-130 $/bbl, gas prices stay at the current levels.
Directions of the international energy trade are changing considerably.

Source: Global and Russian Energy Outlook up to 2040. ERI RAS-AC. 2013.
1. Changing global gas markets: implications for the Russian gas exports and domestic gas market

2. Changing global oil markets: implications for the Russian oil exports and economic growth

3. How to break the deadlock?
Global gas market development: incremental demand will be concentrated in the non-OECD countries

The balance of gas supply and demand in 2040

Source: Global and Russian Energy Outlook up to 2040. ERI RAS-AC. 2013.
In the long-term average weighted regional gas prices are not expected to increase significantly on the Russian main export markets.

Equilibrium gas prices in the three scenarios

Source: Global and Russian Energy Outlook up to 2040. ERI RAS-AC. 2013.
Russian gas export might be 70 bcm lower if there would be new breakthroughs in the shale technologies

Changes of gas net export and import volumes in 2040 relative to 2010, Baseline and ‘Shale Breakthrough’ Scenarios

Source: Global and Russian Energy Outlook up to 2040. ERI RAS-AC. 2013.
Global LNG supply is expected to boom by the end of this decade with Australia, USA and Canada becoming the largest market players.

Global liquefaction capacities (existing and planed)

Source: ERI RAS
Situation on the European gas market during the last years did 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
...but European gas market is going to be tight until 2015-2016 as LNG is diverted to Asia; post 2016 very limited new supplies will become available and there will be an additional call on the over-take-or-pay volumes: good opportunity for Russia to enhance its position.

Source: WEO2011, IEA; Cedigaz; ERI RAS.
Russian position in Europe will largely depend on gas pricing: traditional “Groningen” model is questioned now, as even renegotiated oil-linked contract prices are higher than spot-based.

European spot and oil-linked gas prices

Source: Bloomberg; ERI RAS.
Gazprom could give further price discounts and increase its market share, but Russia’s strategic choice is in favor of the short-term profit maximization…

We were faced with the choice of whatever was to maintain the supply volumes and the market share, or make the profit our high priority.

As a public and commercially oriented company, Gazprom is interested in increasing profits to provide income to shareholders. Therefore, the choice was made, the correct one, in favor of the revenues, and the year results confirmed that.

Alexander Medvedev,
Gazprom Export
…ensured by the existing portfolio of the long-term contracts, which guarantees stable sales volumes for Russia until at least 2022.

Sources: Cedigaz, Gazprom, ERI RAS.
### Oil indexation vs. gas indexation: "a bird in hand is worth two in the bush" approach

<table>
<thead>
<tr>
<th>Oil indexation</th>
<th>Spot indexation</th>
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<tbody>
<tr>
<td>Disappearing gas glut on the European gas market in the medium term – gap between oil-indexed and spot prices already started to narrow</td>
<td>Strong pressure from the customers side</td>
</tr>
<tr>
<td>Gazprom will face next price reopening only after 2015, and contract expiration – only by 2022</td>
<td>Investigation of the European Commission against Gazprom`s pricing</td>
</tr>
<tr>
<td>With high oil prices even lower volumes are providing high revenue</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>New projects demand high prices (they have negative margins under spot prices, given that they have to pay export duties) and oil indexation is more convenient for the project financing</td>
<td>Gazprom could become a dominant player manipulating the spot market by adjusting its supply volumes</td>
</tr>
<tr>
<td>Russian Government needs the money right now</td>
<td></td>
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</table>

There are strong commercial reasons for Gazprom to protect the oil indexation at least during the next 3-5 years
Everybody is expecting new opportunities on the booming Asian gas markets, but by 2020 there is already no market niche in China...

Sources: IEA, Cedigaz, Enerdata, ERI RAS.
...and OECD Asia is quickly contracting the North American LNG

Japan and South Korea contracts and gas balance

Sources: IEA, Cedigaz, Enerdata, ERI RAS.
Russian “Eastern Gas Program” is moving on, but as there are still no SPAs, the window of opportunities is becoming smaller and price negotiations have now to take into account Henry Hub pricing of the potential US LNG.
There are 7 Russian LNG projects under consideration currently, but all of them face commercial, technical and regulatory challenges. LNG export permissions might be approved only for special cases and only under very strict control of the State. Due to the limited volumes and long lead time these LNG projects will not significantly affect Russian and global balance during this decade. In the longer term Russian LNG export could reach up to 50-70 bcm a.
Independents are improving their positions on the domestic market, though complete market liberalization and Gazprom's ownership unbundling are not currently under discussion.

* Other producers include PSA and APG

Sources: CDU TEK, ERI RAS
But at the same time the industry is consolidating, now there are only three major non-Gazprom players left on the market: NOVATEK, Rosneft and LUKOIL

Natural gas production by the companies with access to the UGSS

Sources: CDU TEK, ERI RAS
Limited demand growth on the domestic market enforces competition between major players for the most attractive market segments.

Russian gas demand by sector until 2020 (optimistic scenario)

<table>
<thead>
<tr>
<th>Sector</th>
<th>2012</th>
<th>2020</th>
<th>Δ</th>
<th>AGR 2012-2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total consumption</td>
<td>428</td>
<td>468</td>
<td>40</td>
<td>1,12%</td>
</tr>
<tr>
<td>Power generation</td>
<td>188</td>
<td>201</td>
<td>14</td>
<td>0,88%</td>
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<tr>
<td>Centralized heating</td>
<td>72</td>
<td>64</td>
<td>-7</td>
<td>-1,36%</td>
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<tr>
<td>Industry and feedstock</td>
<td>79</td>
<td>94</td>
<td>15</td>
<td>2,17%</td>
</tr>
<tr>
<td>Residential</td>
<td>75</td>
<td>86</td>
<td>11</td>
<td>1,78%</td>
</tr>
</tbody>
</table>
At the same time the Government frightened by the industrial output decline is ready to slow gas prices growth down to the rate of inflation, which is justified by lower European prices and weak domestic demand.

Sources: MED, ERI RAS.
1. Changing global gas markets: implications for the Russian gas exports and domestic gas market

2. Changing global oil markets: implications for the Russian oil exports and economic growth

3. How to break the deadlock?
There are tremendous shifts expected on the liquid fuels market, with declining demand in OECD and booming unconventional liquids production.

Liquid fuel supply and demand balance by 2040, Baseline Scenario

Source: Global and Russian Energy Outlook up to 2040. ERI RAS-AC. 2013.
Unconventional oil will reach 16% of total liquids production by 2040

Dynamics of liquid fuels supply structure, Baseline Scenario

Source: Global and Russian Energy Outlook up to 2040. ERI RAS-AC. 2013.
Equilibrium oil prices decrease up to 2020 and afterwards do not exceed 130 $/bbl

Source: Global and Russian Energy Outlook up to 2040. ERI RAS-AC. 2013.
Russian oil export could decrease even stronger than expected – by additional 50 mln. tonnes per annum - if there would be new breakthroughs in the shale technologies.

Changes of oil net export and import volumes in 2040 relative to 2010, Baseline and ‘Shale Breakthrough’ Scenarios

Source: Global and Russian Energy Outlook up to 2040. ERI RAS-AC. 2013.
Taking into account global environment changes dramatically expectations for the Russian energy and economy

### Official MED scenario and Outlook-2013 scenario of Russian economy and energy development, %

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<td>GDP</td>
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<tr>
<td>100</td>
<td>121</td>
<td>119</td>
<td>150</td>
<td>143</td>
<td>185</td>
<td>168</td>
<td>222</td>
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<tr>
<td>Share of the energy sector in GDP</td>
<td>28,5</td>
<td>25,6</td>
<td>25,5</td>
<td>22,9</td>
<td>23,1</td>
<td>20,0</td>
<td>20,4</td>
</tr>
<tr>
<td>28,5</td>
<td>25,6</td>
<td>25,5</td>
<td>22,9</td>
<td>23,1</td>
<td>20,0</td>
<td>20,4</td>
<td>18,4</td>
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<tr>
<td>GDP energy intensity</td>
<td>100</td>
<td>87</td>
<td>88</td>
<td>74</td>
<td>77</td>
<td>64</td>
<td>69</td>
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<tr>
<td>28,5</td>
<td>25,6</td>
<td>25,5</td>
<td>22,9</td>
<td>23,1</td>
<td>20,0</td>
<td>20,4</td>
<td>18,4</td>
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<tr>
<td>Energy consumption</td>
<td>100</td>
<td>106</td>
<td>105</td>
<td>112</td>
<td>110</td>
<td>118</td>
<td>115</td>
</tr>
<tr>
<td>28,5</td>
<td>25,6</td>
<td>25,5</td>
<td>22,9</td>
<td>23,1</td>
<td>20,0</td>
<td>20,4</td>
<td>18,4</td>
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<tr>
<td>Energy export</td>
<td>100</td>
<td>103</td>
<td>95</td>
<td>103</td>
<td>89</td>
<td>105</td>
<td>84</td>
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<tr>
<td>28,5</td>
<td>25,6</td>
<td>25,5</td>
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<td>23,1</td>
<td>20,0</td>
<td>20,4</td>
<td>18,4</td>
</tr>
<tr>
<td>Investments in the energy sector as a share of GDP</td>
<td>100</td>
<td>103</td>
<td>95</td>
<td>103</td>
<td>89</td>
<td>105</td>
<td>84</td>
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<tr>
<td>5,0</td>
<td>5,9</td>
<td>7,2</td>
<td>5,0</td>
<td>4,7</td>
<td>4,5</td>
<td>4,1</td>
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1 – official MED scenario, 2 – Outlook-2013 scenario

Source: ERI RAS.
Decreasing competitiveness of the Russian energy resources due to depletion of the old fields and tax system makes Russia most sensitive to the market changes among all the suppliers.

Source: Global and Russian Energy Outlook up to 2040. ERI RAS-AC. 2013.
Limited export opportunities might reduce Russia`s economic growth by 1% per annum compared to the official scenarios: the economy cannot any longer count on the hydrocarbons-driven growth.

Source: Global and Russian Energy Outlook up to 2040. ERI RAS-AC. 2013.
1. **Changing global gas markets: implications for the Russian gas exports and domestic gas market**

2. **Changing global oil markets: implications for the Russian oil exports and economic growth**

3. **How to break the deadlock?**
Main measures to support competitiveness of the Russian energy resources

- **Cost control together with a thorough evaluation of cost-effectiveness of the new projects and their potential risks.** It is advisable to rank investment projects and reject or postpone the implementation of inefficient ones. This is confirmed by the results of work done by foreign and Russian experts, who analysed the cost of domestic energy projects, showing that they were typically several times more expensive compared to existing analogous projects found elsewhere, while those projects that were completed were underutilized for years.

- **Taxation system reform:** currently an efficient break-even point for the Russian upstream oil projects is fixed at 25 $/bbl due to outdated volume-based taxation.

- **International consortia development** – attracting foreign partners into the consortia engaged in resource development (this refers especially to the eastern part of the country, the coastal shelf, and deposits of unconventional hydrocarbons). If properly managed, it would enable the country to:
  - attract foreign investment and apply advanced technology;
  - develop types of business activities with potential, under new conditions;
  - ensure tight control over costs and other business results;
  - obtain additional assurances for product sales; and
  - facilitate access to logistics and adapt to the rules of international markets.

- **Energy saving.** Russia has a huge potential, but it is limited by inappropriate regulatory framework and lack of access to financing
Main part of the Russian conventional oil is concentrated in the declining Soviet-time fields

Structure of the Russian oil production

- Conventional oil: 59%
- Oil deposits with low recovery factor: 3%
- Heavy oil and bitumen: 4%
- Oil from gas deposits: 4%
- Other: 3%
- Shale and tight oil: 3%

Source: ERI RAS.
In order to sustain production, Russia needs to develop new fields, which, however, are not competitive under the current tax regime. Higher production estimates are justified by the vast resource base, but require completely different taxation system.

Sources: CDU TEK, LUKOIL.

Forecast for the liquid hydrocarbon production in Russia

Sources: CDU TEK, LUKOIL.
Russia has a huge potential for Enhanced Oil Recovery: best practices would provide additional 4 bln t without the need to build new infrastructure, but adjustments of the tax regime are the must.

Potential for increasing ORF in Russia

~4 bln t of recoverable conventional oil reserves

- Russia: target ORF 37%, achieved ORF 20%
- USA: achieved ORF 43%
- Norway: ~50% achieved ORF

Sources: Energy Ministry, LUKOIL.
Unconventional oil and Arctic: huge potential, but high costs and lack of technologies make these projects marginal under the current taxation.

**Unconventional oil reserves**

- Bazhenov rock: Max = 20 Mln. t, Min = 5 Mln. t
- Bakken: Max = 25 Mln. t, Min = 10 Mln. t

**Arctic production volume forecast**

- Exploration
- Dolginskoye (Gazprom Neft)
- Medyn Sea (Arcticshefinftelegaz)
- Prirazlomnoye (Gazprom)

Sources: Energy Ministry, LUKOIL.
The normal Mineral Extraction Tax and export tax require much lower breakeven costs, then all sources of new supply have; the Government is not ready to change the system for profit-based taxation, therefore all the exemptions are currently adjusted in the manual regime.

Source: ERI RAS.
Russia has huge potential to use energy more efficiently: energy consumption could be decreased by 30%.

Raising Russia’s energy efficiency to the levels of comparable OECD countries would save the amount of primary energy used in a year by the UK.
Conclusions

- More competitive external environment and domestic challenges are creating less favorable conditions for the Russian oil and gas industry. It will hardly be able to provide the same high share of the budget incomes in the future. ERI RAS estimates show, that unfavorable situation on the export markets could lead to lower export volumes and slow down Russian GDP growth by 1% p.a.

- Russian gas industry still has a huge potential for export growth, but without strict costs control, cautious evaluation of the export projects and more flexible pricing system these opportunities could be lost.

- Under current conditions, oil production in Russia can be maintained through development of the following areas:
  - enhanced oil recovery at existing fields
  - development of unconventional reserves
  - development of the new frontiers: new provinces in the Eastern Siberia and Arctic offshore

But to develop these areas, the Government has to change the whole taxation system, not just to give few exemptions.
Contacts

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