The Energy Sector in Russia: At The Crossroad

Dr. Tatiana Mitrova
Head of Oil and Gas Department
Energy Research Institute of the Russian Academy of Sciences
From 1956 to 1991 was characterized by high rates of construction of infrastructure, as well as the beginning of mass gasification of the USSR.

In 1967, Russia's year of Russian gas began to flow into Czechoslovakia in 1968 in the rest of Western Europe.
Soviet and Russian oil and petroleum products exports growth
Soviet and Russian gas export growth

Germany

Italy

Graph showing the growth of Soviet and Russian gas exports to various countries from 1970 to 2008.
Energy resources are now providing the major part of the Russian export

Russian exports by commodity in 2012

- Crude oil: 34%
- Oil products: 20%
- Natural gas: 12%
- Other energy products: 2%
- Coal, peat: 2%
- Fossil fuels, electricity: 70%
- Chemicals: 9%
- Base metals: 5%

Source: Russian Customs Service
The role of oil and gas for the Russian Federal budget is huge

Source: http://www.roskazna.ru/reports/fb.html
Main part of the Russian conventional oil is concentrated in the depleting Soviet-time fields

Structure of the Russian oil production

- Conventional oil
- Oil deposits with low recovery factor
- Heavy oil and bitumen
- Oil from gas deposits
- Other
- Shale and tight oil

Source: ERI RAS.

* According to the Energy Strategy-2030 and Social-Economical Development Forecast Up To 2030
...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.
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.
Unconventional oil and Artic: huge potential, but high costs and of technological challenges make these projects marginal under the current taxation; they will become visible only post 2020.

**Unconventional oil reserves**

**Arctic production volume forecast**

**Sources:** Energy Ministry, LUKOIL.
Russia has a huge potential for Enhanced Oil Recovery: best practices could provide additional 4 bln t without the need to build new infrastructure, but adjustments of the tax regime are necessary.

Potential for increasing ORF in Russia:

- ~4 bln t of recoverable conventional oil reserves

Comparison:

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

Sources: Energy Ministry, LUKOIL.
Anyway Russian oil exports will decrease, with fast decline in the western-oriented supplies and increasing focus on the East.

**Structure of the Russian crude exports**

![Bar chart showing the structure of Russian crude exports from 2005 to 2025, with a decrease in western-oriented supplies and an increase in focus on the East.](chart)

Source: ERI RAS
Gas is dominating Russian primary energy demand

Structure of the Russian primary energy demand

- Gas
- Oil
- Coal
- Nuclear
- Hydro
- Other renewables
- GDP (right axis, 1990=100)

Source: IEA
Though during the last years due to the weak economic performance demand is stagnating enforcing competition between major players.

Russian gas demand by sector until 2020 (optimistic scenario)

Sources: Rosstat, ERI RAS.
Independents are improving their positions on the domestic market, though complete market liberalization and Gazprom`s ownership unbundling are not currently under discussion.

**Russian gas production structure**

*Other producers include PSA and APG*

Sources: CDU TEK, ERI RAS
The main increase in gas exports will be to the East

Source: ERI RAS.
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 bcma.
In the long term the role of oil will reduce, while the role of gas will increase considerably.

**Russian oil and gas production and export outlook**

- **Oil net exports**
- **Domestic consumption**

**Gas net exports**
**Domestic consumption**

*Source: IEA*
Russian coal consumption and export

Source: IEA
Gas remains the backbone of Russia’s power sector, but nuclear power & renewables expand more rapidly.

Electricity generation by fuel in Russia

Source: IEA
The contribution of nuclear power and renewables is projected to increase steadily, with their share in Russia’s primary energy supply rising from 10% in 2009 to 15% in 2035.
A modestly greener energy future

The contribution of non-hydro renewables increases as support mechanisms are put in place and technology costs fall, but remains small relative to other fuels and to the large potential

Source: IEA
An expanded role for nuclear power

Russia’s nuclear capacity increases to 37 GW in 2035, but growth is held back by high capital costs, financial resource constraints and lengthy commissioning periods.
Russia has huge potential to use energy more efficiently: energy consumption could be decreased by 30%; There is much real concern for improving efficiency in government plans, but…

Source: WEO 2011. IEA.
...it is not working, moreover even higher prices do not lead to stronger energy saving due to administrative barriers, high cost of the capital and overall investment climate.

Gas and electricity prices growth rates and rates of energy and electricity intensity reduction

Sources: Rosstat, ERI RAS
Investment needs of the Russian energy sector

Bln. $ (2007 US Dollars)

- Energy saving
- Distributed energy
- Centralized heating
- Renewables
- Power sector
- Coal industry
- Gas industry
- Oil industry

Source: ERI RAS
Contacts

Energy Research Institute of the Russian Academy of Sciences

"Global and Russian Energy Outlook up to 2040"


Nagornaya st., 31, k.2, 117186, Moscow,
Russian Federation

phone: +7 985 368 39 75
fax: +7 499 135 88 70

web: www.eriras.ru
e-mail: mitrovat@rambler.ru