Russian coal sector

Draft findings of ENERPO’s project on energy transition in Russia
March 2021
Agenda

- The main stages of the Russian coal industry transformation
- The significance of coal for the Russian economy
- Coal industry risks review
- Coal competitiveness analysis
- Possible scenarios of the Russian coal industry further development
- Technological progress opportunities
The level of coal domestic consumption began to decline gradually from 54% in 1960 to 25.2% by 1980.

In 1983, the «Energy Program of the USSR for the Long Term» was adopted, an intensive increase in coal production began. High production indicators were achieved due to opencast coal mining.

In 1989, the crisis began in the coal industry. It provoked a massive strike movement of miners.

The collapse of the USSR

The final stage of the industry privatization. The Russian coal industry emerged from crisis.

The World Bank allocated more than US $ 1.1 billion to liquidate unprofitable mines.

A general decline in industrial production. The Russian economy begun restructuring to a market system.

Russia ratified the Paris Climate Agreement.
2. The significance of coal for the Russian economy

- Coal 17.44% (+1.45% to 2010)
- Nuclear 20.02% (+3.57% to 2010)
- Natural gas 49.82% (-0.42% to 2010)
- Oil 0.6% (-0.23% to 2010)
- Hydro 18.62% (+2.55% to 2010)

- Total coal production (Mt) 439.2 (+117.2 Mt or +36.39% to 2010)
- Total coal consumption (Mt) 254.7* (+33.6 Mt or +15.24% to 2010)
- Total coal export (Mt) 205.4 (+89.7 Mt or +77.5% to 2010)
2. The significance of coal for the Russian economy

Table 1. Russia’s energy production and consumption, 2019

<table>
<thead>
<tr>
<th>Energy Source</th>
<th>Production, con. units</th>
<th>Consumption, con. units</th>
<th>Share of GDP*, %</th>
<th>World share, %</th>
<th>World share 2019/2018, %</th>
<th>$CO_2$ ** mln tons</th>
<th>Share of Total World $CO_2$ emissions, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oil, min tons</td>
<td>568.1</td>
<td>165.1</td>
<td>15.58%</td>
<td>12.70%</td>
<td>+0.63%</td>
<td>1704.3 / 495.3</td>
<td>4.99%</td>
</tr>
<tr>
<td>Natural gas, bin m³</td>
<td>679.0</td>
<td>444.3</td>
<td>8.18%</td>
<td>17.00%</td>
<td>-0.30%</td>
<td>1265.1 / 821.9</td>
<td>3.68%</td>
</tr>
<tr>
<td>Coal, min tons</td>
<td>441.4</td>
<td>202.4</td>
<td>1.29%</td>
<td>5.50%</td>
<td>static</td>
<td>1235.92 / 566.72</td>
<td>3.61%</td>
</tr>
</tbody>
</table>

*calculated as the total volume of the type of fuel produced at average market prices on the international market

**estimated price on coal is taken for $50

**calculation of $CO_2$ emissions from combustion of various types of fossil fuels (production / consumption)

As of 2019 coal exports amounted to:

- **205.4 million** tons of coal
- it provided the Russian economy with about **$16 billion** in foreign exchange earnings
- Russian coal companies transferred **100 billion rubles** in tax payments to the state budget (or approx. **$1.5 billion**).

Transition to low-carbon economy is considered in Russia as real threats to the loss of a significant part of the country's income (about 25% of GDP) from the export of hydrocarbons (the previous slide);

CBAM is the serious challenge for the Russian coal industry.

From the moment the CBAM is introduced, which according to plan is to happen in 2022, the Russian economy may lose over EUR 50 billion by 2030. According to those calculations, the costs Russian companies will have to incur are somewhere between EUR 3 and 4.8 billion a year.
4. Coal competitiveness analysis

**FINDINGS:**

**Positive**
- Lower price among energy sources
- Lower price volatility
- Steady demand
- Export diversification
- Infrastructural constraints

**Negative**
- Low investors attractiveness
- High carbon risks for the industry

Source: Thomson Reuters
5. Possible scenarios of the Russian coal industry further development

Table 2. The 3 scenarios and their assumptions

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Description</th>
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<tbody>
<tr>
<td><strong>Business as usual (BAU)</strong></td>
<td>If the level of demand and the world price for coal enables the industry to remain profitable, the capacity of transport infrastructure will be the main bottleneck for increases in coal production. In this scenario, tariff and non-tariff barriers for coal transportation and exports are the only factors crucial for industry development.</td>
</tr>
<tr>
<td><strong>Demand decreases due to the global low-carbon energy transition.</strong></td>
<td>If the pace of global energy transition to low-carbon energy sources accelerates, there will be a drop in demand for coal from the main coal importers. Industrial production of coal products will begin to decline, and the coal industry will be at risk. The crisis will lead to the closure of enterprises with the highest cost of production, specialized in the exclusive extraction and processing of coal. Companies will need to adapt and implement clean coal technologies.</td>
</tr>
<tr>
<td><strong>Demand in the Asia-Pacific compensates for low-demand from the main importers.</strong></td>
<td>Demand for coal in the Asia-Pacific region will allow coal companies to fully compensate for decline in sales of coal to the Western exporters. New markets in developing countries in Asia and North Africa will be the main driver of growth. Under this scenario, a sharp increase in demand for Russian coal imports from India is expected.</td>
</tr>
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</table>
6. Technological progress opportunities

- **Ultra-Supercritical & Advanced Ultra-Supercritical Technology** raises the bar on coal plant efficiency
- Carbon capture, utilisation, and storage (CCUS)
- Power plant filtration technologies
- Coal liquefaction and gasification
- Closed coal handling and transhipment
- Coal mines automatization and mining digitalization
- Methane production from coal beds

Source: General electric web site
(https://www.ge.com/power/steam/steam-power-plants/advanced-ultra-supercritical-usc-ausc)
Key findings

- Private and competitive sector that went through many crises and reforms
- Independent companies with no unified strategy for further development
- The future of the industry depends on transport infrastructure for export
- Domestic clean coal technologies are not available
- There is no alternative to traditional use of coal in Russia
Thank you

Maxim Titov, Executive Director, Energy Policy Research Center

mtitov@eu.spb.ru
facebook.com/enerpo/
https://eusp.org/energy-politics/news

This project is a collaboration between Climate Strategies, European University at St.Petersburg (EUSP), Fridjtof Nanses Institute (FNI) & Higher School of Economics (HSE)

https://climatestrategies.org/projects/russian-coal-sector-transition/