

## Nord and South Stream won't save Gazprom

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The end of 2009 saw a clear intensification of efforts around the two pipeline projects vital for Russian energy strategy, the Nord Stream gas pipeline running from Russia to Germany via the Baltic Sea, and the South Stream gas pipeline running from Russia to Central and Southern Europe via the Black Sea and the Balkans. Nord Stream has now obtained nearly all the necessary permits from the countries involved to construct the submarine section, which makes its implementation practically certain. As for the South Stream, some deals have been completed, such as the intergovernmental agreements between Russia and most of the states that the pipeline is to cross, as well as Gazprom's agreements with the gas operators in these states. This signifies that progress has been made in the formal phase of preparations, although it does not determine the implementation of the project.

Russia's determination to implement these very expensive projects proves that among the benefits Moscow expects to achieve in the short- and mid-term perspective, the key ones are reducing Gazprom's export dependence on the transit states (Ukraine, Belarus and Poland) and increasing the volumes of gas exported to Europe.

However, Russia stands little chance of accomplishing both of these objectives. Firstly, the construction of the pipelines is not likely to increase the volumes of gas exported to Europe, as demand for gas is not expected to rise significantly. The gas sales forecast in Europe is not optimistic for Russia; moreover, the price of Russian gas is not competitive on the European market at the moment. Should these negative trends continue, implementing one or both projects would increase the transportation capacity of Gazprom's pipelines, but would not guarantee their full exploitation. Even if demand increases in the longer perspective, current gas production trends (serious problems with developing new fields) pose a further question of whether Russia would be capable of investing as much capital as will be necessary in developing the new fields.

Secondly, making Nord Stream and South Stream operational would still not eliminate Ukraine as a transit country; Kyiv is likely to remain an important link in the system of Russian gas exports to Europe for years. However, the new routes would enable a large portion of the Russian gas currently sent via Ukraine (up to 75%) or the entire gas volumes sent via Belarus to bypass these states, thus depriving them of a significant part of their transit re-

venue and weakening their bargain position with Moscow. Additional pipelines would allow Russia to manipulate its gas supply and transportation (by limiting gas supplies to certain countries, or cutting them off completely) without harming the remaining recipients.

## 1. Nord Stream and South Stream: similarities and differences

Nord Stream and South Stream, the twin elements in Gazprom's strategy, are intended to be direct routes for Russian gas onto the European markets, along with the existing transportation infrastructure running via Ukraine and Belarus. The projected gas mains are

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to surround Central and Eastern Europe from the north, via the Baltic Sea (Nord Stream) and from the south via the Black Sea (South Stream), thus enabling Russia to send its gas directly to its customers in Europe, circumventing the current transit states or at least reducing their role.

The senior project, Nord Stream, emerged in 1997 as a projected route for the direct transportation of gas from Russia to Northern Germany and Western Europe via the Baltic Sea. The new pipeline was intended not only to diversify the export routes for Russian gas in case of problems with the transit states, but also to pave the way for Gazprom to enter new markets in Europe.

Gas extraction in the North Sea is decreasing, and the current producers and net exporters of this raw material, Denmark, Holland and Great Britain, are gradually turning into importers<sup>1</sup>. The reduced version of the Nord Stream project (an idea to build a branch to Great Britain was abandoned) provides for the construction of a two-branch gas pipeline with

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a total capacity of 55 billion m<sup>3</sup> a year (27.5 billion m<sup>3</sup> each). The launch of the first branch is planned for 2011, while the second is to become operational in 2012. The much less advanced South Stream emerged in 2007, as a reaction to the European Union's Nabucco project, an

alternative route to circumvent Russia. South Stream is supposed to diversify the sources of gas supplies to Europe, and deliver Central Asian and Middle Eastern gas to the European markets. South Stream's projected capacity of 63 billion m<sup>3</sup> a year is intended to link Russia with Central Europe via the Black Sea and Bulgaria (the northern branch would run to Austria via Serbia and Slovenia) and Southern Europe (the southern branch would run to Greece and Italy). The project is not designed to open up new markets for Gazprom, but possibly to increase the volumes of Russian gas delivered to its permanent customers. According to the latest plans, the pipeline should go online in 2015.

<sup>1</sup> In 2006, the Danish gas concern DONG Energy signed a 20-year contract with Gazprom concerning supplies of 1 billion m<sup>3</sup> a year via Nord Stream as of 2011. In 2009 they signed an 18-year deal for supplies of 1 billion m<sup>3</sup> of Russian gas a year to Denmark via the second branch of Nord Stream. Gazprom's subsidiary, Gazprom Marketing & Trading, also signed a deal concerning the supplies of 4 billion m<sup>3</sup> of gas a year to Great Britain via Nord Stream.

## 2. Domestic factors

### a) Resource base for North Stream and South Stream rather uncertain

The resource base is the key problem for both of the new routes. This problem is less acute in the case of Nord Stream: according to the project, the gas for the pipeline in the coming years will come from the Yuzhnorusskoye field (in Western Siberia, with estimated reserves

of 700 billion m<sup>3</sup> of gas), and in the next stage of the project, from the Shtokman field in the Barents Sea, which has estimated reserves of 3.7 trillion m<sup>3</sup> of gas. At the moment, the gas for the first branch of Nord Stream can be provided from Yuzhnorusskoye, which is already under exploitation (the projected level of production at the field is around 25 billion m<sup>3</sup> of gas a year). On the other hand, plans to fill the second branch of the pipeline with gas from the Shtokman field should be considered unrealistic. No decision has been made on whether to invest in the development of Shtokman; its exploitation has been postponed until 2016 and made conditional on the situation on the gas market. It is also unlikely that

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in the short term gas for Nord Stream could come from the Yamal fields<sup>2</sup>. Should the double-branch Nord Stream be made operational as planned, the gas for the second branch would probably be pumped from Western Siberia. No significant increase in gas production in Russia can be expected in the short-term perspective,

and nor is the demand on the European markets likely to grow. Nord Stream could thus take over the gas currently being pumped via Belarus. Redirecting the gas sent via Ukraine to Nord Stream would require some additional transportation infrastructure on Russian territory.

The resource base for South Stream is an even greater uncertainty. For the same reasons as in the case of Nord Stream, it can be assumed that this would be the gas currently sent via Ukrainian pipelines. It could also be Central Asian gas – the same gas that the shareholders of Nabucco (or those who adhere to the concept of the Southern Energy Corridor more generally) have been considering. According to the Russian strategy, South Stream was meant to be an instrument to block this alternative gas export route to Europe. However, China's growing involvement in Central Asia (including the launch of a gas pipeline from Turkmenistan to China via Uzbekistan and Kazakhstan) and Turkmenistan's thriving gas cooperation with Iran, have seriously limited Gazprom's ability to have Central Asian gas at its disposal.

#### **b) Domestic market may grow under certain conditions**

There has long been little optimism in the assessment of the long-term export potential of the Russian gas sector. First of all, this is due to the stagnation in production and rapidly growing domestic consumption in the Russian Federation. Gazprom's production has in effect

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not increased at all since 1999. In 2009, the global gas market was affected by the economic crisis. Gas consumption has decreased by 12% on Russia's domestic market (compared to 2008) and by 10% on the European market. As a result, the gas monopoly has built up an export surplus.

The decline in consumption has even forced Gazprom to limit its production by 14–15%. The forecasts for the Russian gas sector for the coming years indicate that the consequences of a crisis on the domestic market, such as a decline or stagnation of production and decreasing consumption, may linger for the next few years (even until 2015, experts say). On the other hand, once demand starts growing, the Russian gas monopoly may have difficulties meeting it.

<sup>2</sup> The exploitation of Bovanenkovskoye, the first Yamal field, has been postponed until the third quarter of 2012 (by 2015, up to 15 billion m<sup>3</sup> of gas are to be produced there). By 2030, the projected production is to increase to 140 billion m<sup>3</sup> of gas a year m<sup>3</sup>.

## - Production

For years, Gazprom has faced difficulties with keeping production on a level that would (provided economic conditions are favorable) allow it to fulfill its obligations towards domestic and foreign markets. The main reason is the decline in production in the three main gas fields in Western Siberia that provide about 75% of the company's total production; the annual decline is estimated at 25–30 billion m<sup>3</sup> of gas. Problems with production also result from the long-standing lack of investments in developing new fields<sup>3</sup>. Within the next 20 years, the costs of increasing production and export of gas to the level declared in the Energy Strategy-2030 (see Appendix, Table 1) would reach US\$560–590 billion and exceed

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Gazprom's financial possibilities. Similarly unrealistic is the assumption included in the strategy that 90% of this sum would be covered by private companies, mainly because the current legislation is rather hostile towards foreign investors. Still, the Russian gas sector has considerable backup, namely independent gas producers (including oil companies) whose activity is currently restrained by Gazprom's monopolistic practices. At present, production by independent gas producers in Russia stands at 110–120 billion m<sup>3</sup> of gas a year, while their producing potential is estimated at 450–470 billion m<sup>3</sup> a year<sup>4</sup>. An improvement of the investment climate could also stimulate the gas sector to undergo positive changes and attract investments. This, however, raises the question of whether the government has any real political will to reform and de-monopolise the gas sector.

## - Domestic consumption

According to Russian forecasts (such as the Energy Strategy-2030), demand on the domestic market until 2030 will only grow insignificantly, from 440 billion m<sup>3</sup> of gas in 2008 to 454 billion m<sup>3</sup> in 2015 (see Appendix, Table 1). Still, domestic consumption holds the dominant

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position in Russia's gas balance (more than 50%), which restrains Gazprom's export potential when economic conditions are favourable. However, there are many ways to reduce the domestic consumption of gas, such as by introducing energy-saving technologies in Russia's energy-consuming economy. Once the economy booms and demand in Russia exceeds the forecasts, export will remain Moscow's priority, even at the expense of the domestic market's demands. To satisfy this domestic demand, Russia may stimulate the production activity of independent producers, or replace gas with other fuels such as coal. In summary, the high level of gas consumption in Russia does not necessarily have to impede Gazprom's export activity. It is the situation on the European gas market that is crucial; falling demand for gas and the low competitiveness of Russian gas pose serious challenges to Gazprom's export plans, and may call the construction of the new gas pipelines into question.

<sup>3</sup> The old fields are close to being depleted: Urengoy-skoye has been depleted by almost 70%, Yamburgskoye by 54%, and Medvezhye by 80%. In the last 15 years, Gazprom has developed only two new fields, Zapolarnoye and Yuzhnorusskoye, but their combined production (100 and 25 billion m<sup>3</sup> of gas a year respectively) cannot compensate for this depletion.

<sup>4</sup> In 1999–2007 independent gas producers doubled their production (from 47 to 105 billion m<sup>3</sup> of gas a year). Combined with the extraction by oil companies, this amount could increase to 150–170 billion m<sup>3</sup> a year. If they could start working on fields that Gazprom does not intend to exploit (provided that the monopoly sells the unused licenses it owns), this could provide an additional 300 billion m<sup>3</sup> of gas a year.

### 3. External conditions

#### - Decline in gas consumption in Europe

Ever since 2006, the dynamics of gas demand growth in the European Union has slowed down due to high fuel prices, and totalled 1% a year (instead of 2%, as had initially been assumed). In 2009, demand for gas in Europe decreased due to the recession, which affected gas sales. All in all, gas consumption in 2009 fell by 8–9% compared to 2008. According to the International Energy Agency, in the coming years the demand for gas in Europe (affected by dropping inner production) will grow by a maximum of 0.7% a year. In 2012–2015 gas consumption in Europe is likely to grow only insignificantly, and imports will grow likewise (in direct proportion to the reduction of gas production in the North Sea). Russian forecasts indicate a significant improvement of the situation on the gas market for 2020–2030, but the forecasts of the International Energy Agency (World Energy Outlook 2009) do not share this optimism<sup>5</sup>. The Agency envisages a continual worsening of the economic conditions for traditional gas producers and exporters that will call the purposefulness of implementing any new pipeline projects into question.

#### - Excessive gas supplies to the European market

The decline in gas consumption and dropping gas prices in Europe affected by the crisis have overlapped with technological breakthroughs in gas shale exploitation in the United States<sup>6</sup>, which in turn resulted in the reduction of liquefied natural gas (LNG) imports to

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the USA. At the same time, the production of LNG peaked in 2009, and its share in the international gas trade rose to 29% (as the crisis effectively reduced its price). A rapid fall in American imports of LNG caused an unexpected increase in its offer in Europe, along with a drop in gas prices on other markets. According to the International Energy Agency, supplies to the European gas market exceed demand, and suppliers are starting to compete. Excessi-

ve supplies may become permanent in the future, since regardless of the scenario, Europe (the destination of Gazprom's pipelines) will remain the most attractive market for LNG. The demand for gas may drop even more if EU members comply at least partially with European directives on energy efficiency and the development of renewable sources of energy, or reduce their carbon dioxide emissions, which could significantly reduce gas consumption.

#### - Low competitiveness of Russian gas in Europe

The Russian gas imported by the European Union under long-term contracts is currently the most expensive on the European market, twice as expensive as the gas sold in spot transactions<sup>7</sup>. There are no indications that Gazprom is willing to adjust its price policy, as it considers the negative trends to be simply a transient effect of the recession. In all likelihood, Russian gas will remain relatively expensive, considering both the ever-increasing costs of its production and the extent of investments in the pipeline projects (estimated at US\$12 billion in the case of Nord Stream and US\$25 billion for South Stream). The cost of transporting gas via new routes would also be very high<sup>8</sup>, as would be the price of the gas delivered. In this case, it does not seem feasible that a significant increase in Russian gas exports onto European markets would justify the plans to construct new transportation routes.

<sup>5</sup> According to the forecasts of the International Energy Agency, gas imports to the EU in 2020–2030 will grow by 40 to 90 billion m<sup>3</sup>.

<sup>6</sup> In 2000–2008 the production of shale gas in the United States almost doubled, and currently amounts to 45% of total gas production in the USA (data for 2009).

<sup>7</sup> In the first quarter of 2009, when prices peaked due to the culmination of the Russian-Ukrainian gas conflict, spot transactions offered gas for a maximum of US\$310 for 1,000 m<sup>3</sup>, whereas Gazprom offered it for US\$430–450. In July–September 2009, the prices of gas in the spot market dropped to US\$90 for 1,000 m<sup>3</sup>, LNG from Qatar cost US\$75, while the Russian gas under long-term contracts cost US\$220–240.

<sup>8</sup> According to Germany's RWE concern calculations, the cost of gas transportation via South Stream would be twice as expensive as its transportation via Ukraine: the cost of pumping 1000 m<sup>3</sup> of gas for 100 km would be US\$2.50 and US\$5.70 respectively.

### - Surplus capacity of the transportation infrastructure

Gas market analyses indicate that free transportation capacities will increase, including interregional pipelines and LNG installations in Europe. Gazprom's export mains also have excessive transportation capacities. The current capacity of export pipelines exceeds the needs of the Russian gas

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monopoly. According to the latest forecasts from the International Energy Agency (World Energy Outlook 2009), the current capacity of Gazprom's pipelines should suffice for its export needs up to 2030.

The construction of new transportation routes such as the Nord Stream and South Stream pipelines would only increase the extent of the Russian export mains' free transport capacity (see Appendix, Table 2). In this case, Russia's determination to construct new routes would

only prove that in the short- and mid-term perspectives, the new gas pipelines are mainly meant to limit the role of transit and to enable Gazprom to make political and economic manipulations by means of gas transportation.

## 4. Consequences of reducing the transit states' significance

### a) Economic consequences – reducing the transit significance of Ukraine, Belarus and Poland

One of Moscow's reasons for constructing new routes is that in the current system of gas transportation to Europe, transit via Ukraine, Belarus and Poland is perceived as a risk factor. However, the projected new routes cannot solve the problem of Gazprom's transit dependence, as they cannot fully replace the Ukrainian route. The second branch of Nord Stream, with its capacity of 27.5 billion m<sup>3</sup> a year (the gas for the first branch has now almost fully entered into contracts) could transport the gas now sent by the Yamal – Europe pipeline via Belarus and Poland (about 31 billion m<sup>3</sup>).

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Theoretically, some portion of the gas now sent via Ukraine could be redirected to Nord Stream's second branch, but this would require constructing new branches and connectives between the gas mains on Russian territory.

On the other hand, the launch of South Stream could allow for the partial draining of pipelines that run via Ukraine to Europe. However, even the combined capacity of South Stream and one branch of Nord Stream, of around 90.5 billion m<sup>3</sup>, would not allow for the full replacement of Ukrainian transit (about 120 billion m<sup>3</sup> in 2008). Moreover, the estimated cost of gas transportation via two new routes will be much higher than the current transit fee via Ukraine and Belarus.

The launch of new routes would mostly affect the current transit states (Ukraine, Belarus, Poland, Slovakia and Czech Republic). If the gas that is now pumped through their territories is redirected to Nord Stream or South Stream, they will lose a great deal of their transit revenue. It cannot be ruled out that decisions by Gazprom (who controls Nord and South Stream) concerning the choice of alternative routes and the volumes of gas transferred will depend on Moscow's current state of relations with the above-mentioned states<sup>9</sup>.

<sup>9</sup> If Moscow had a disagreement with Warsaw, it could reduce the volumes of gas sent via the Yamal pipeline to the amount consumed by Belarus, and redirect the remaining gas (meant for Germany) to Nord Stream. South Stream would give Russia even greater opportunities to use gas transportation to manipulate political and economic affairs.

## b) Political consequences – increasing mutual dependence

- **For Russia**, diversifying the routes of its gas supplies to Europe is a matter of the utmost importance. The very material possibility of an at least partial exclusion of the transit states, who benefit from gas transit to Europe, would be Moscow's trump card in its relations with Kyiv and Minsk. These states could be pressured by Russia manipulating the volumes of gas supplies and the amount of transit.
- **For the current transit states (Ukraine and Belarus)**, the most negative consequence of constructing new pipelines would be a serious weakening of their position towards Moscow. While they are heavily dependent on Russia in political and economic terms, one of their few advantages has been Moscow's dependence on its oil and gas transit to Europe via their territories.
- **As for Gazprom**, it is not going to benefit from constructing new routes. On the one hand, implementing these two projects would constitute serious infrastructural support for Gazprom in Europe, and would allow the concern to significantly increase its gas exports in the long-term. On the other hand, additional routes to Europe would make Russia and its gas monopoly even more dependent on the European market, which is the only recipient of Russian gas so far. At the same time, even if both the Nord Stream and South Stream pipelines are launched, Russia would not be fully liberated from its transit dependence on Ukraine.

## ANEKS

**Table 1. Production, consumption and exports of Russian gas in 2008–2030 (in billion m<sup>3</sup>)**

	2008	2009	2015	2020	2030
<b>Gas production in Russia*</b>	664.0	582.4	^^685–745	^^803–837	^^885–940
<b>Gas production in Russia (WEO/2009)</b>	664.9	582.4	634–655	649–688	580–760
<b>Including production by Gazprom**</b>	549.7	461.0	530	580–590	610–630
<b>Gas consumption in Russia***</b>	440.4	426.5	454	460–523	500–530
<b>Gas exports*</b>	241.0	140.2	158–160	270–294	^349–368
<b>Gas exports (WEO/2009)</b>	241.0	140.2	No data	180–240	240–260

\* Production and export forecast quoted from 'The Energy Strategy up to 2030'

(<http://minenergo.gov.ru/documents/zakon/>);

\*\* Data and forecast by Gazprom;

\*\*\* Data and forecast by Gazprom; World Energy Outlook (WEO/2009);

^ including 20% exported to Asian markets (most probably to China);

^^ Russia plans to achieve the projected production growth in 2015–2030 by launching extraction in Yamal, Eastern Siberia and the Far Eastern fields. Production in Western Siberia is to decrease gradually (to 300 billion m<sup>3</sup> by 2030).

**Table 2. Capacity of Russian export gas pipelines versus the volumes of exports**

Gazprom's export gas pipelines	Capacity (billion m <sup>3</sup> a year)
Finland	5
Yamal – Europe (via Belarus and Poland)	31
Brotherhood (via Ukraine)	120
South-western branch to the Balkans (via Ukraine)	25
Blue Stream (to Turkey via the Black Sea)	16
<b>Total capacity of existing export routes</b>	<b>197</b>
<b>Volumes of gas exported via the mentioned routes (data for 2008)</b>	<b>179</b>
<b>Free transportation capacity (2008)</b>	<b>18</b>
Nord Stream	55
South Stream	63
<b>Total capacity of existing and projected pipelines</b> (planned to launch: Nord Stream in 2013, South Stream – in 2015)	<b>314</b>
<b>Projected volumes of exports of Russian gas to Europe in 2020 and 2030</b> (according to WEO/2009)	<b>180–240; 240–260</b>
<b>Free capacity</b> in 2020 and 2030	<b>195; c. 55</b>

Sources: *RusEnergy, Gazprom, WEO/2009, author's own calculations.*



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