

## Analysis

### Russian Gas: Will There Be Enough Investment?

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#### Abstract

In the following piece we outline some of the major challenges facing the gas sector in Russia and focus on where some of the potential upsides are to be found. While we remain concerned about the overall level of investment in Russian upstream and transportation, the potential of the independent gas producers to rise to the challenge seems strong given the right supporting policy measures. The Russian government seems to be moving in the right direction with regard to domestic pricing policy and third party access to the pipeline system, yet reliance on imported gas from Central Asia is likely to increase the risks to security over the medium term. Our concerns on investment need to be seen within the context of our overall concern about global levels of investment, in upstream gas, pipelines and other infrastructure and even in the burgeoning liquefied natural gas (LNG) industry (see the IEA's *Natural Gas Market Review 2007*)

#### Importance of Russia for Global Gas

Russia holds the largest share of proven gas reserves worldwide, it produces and exports more gas than any other country and is the second largest gas market in the world after North America. Russia also has a very strong export market in Europe where it accounts for almost a quarter of OECD Europe gas needs. It is in Western Europe that pipeline gas from Russia meets competition from Atlantic LNG. Through this interaction, Russian gas production and demand has the potential to affect other markets, such as the US or Japan, indirectly through the global LNG market. Therefore, an appreciation of supply and demand fundamentals in Russia is critical to gaining an understanding of the future of gas markets worldwide.

One state-controlled company, OAO Gazprom, dominates the Russian gas and hydrocarbon sector, accounting for over 60% of Russian reserves and almost 85% of Russian production. Gazprom owns the Russian gas pipeline system, a key part of any country's gas industry, and also has a legal monopoly on gas exports. There are a series of "independent" gas producing companies operating in Russia, which by dint of the above arrangements can only sell in Russian domestic markets where prices are some 15–20% of those in Europe. These companies, along with Russia's oil companies (which produce gas from their own fields as well as associated gas) account for another 20% of Russian gas reserves and produce between 15 and 20% of total production.

#### Demand for Russian Gas

The calls on Russian gas are many: Russian domestic gas demand, currently accounting for 65% of Russian production (430bcm in 2005) is growing at an

annual rate of 4–6%. This growth is driven by demand for electricity generation (gas provides almost half of Russian power) to support the strong economy, as well as a successful regional gasification program by Gazprom. Meanwhile, existing export customers in Europe are increasingly looking to Russia to replace falling domestic gas supplies while they too see rising gas demand, again from the power sector. Russia is also looking to new markets, such as China, India and North America.

However, before Russian producers can increase supply to customers, be they internal or external, new or old, it must offset declines of between 10 and 20bcm/yr each year in existing fields. In particular, three super-giant fields, responsible for about half of Russian production, are declining fast. So far, Gazprom has managed the situation by a combination of infill drilling – bringing on a series of satellite fields surrounding existing sites – and by exploiting new geological structures in existing fields. The Nadym-Pur-Taz region has been the focus of this activity, and it is hoped that production will continue to at least 2011. Beyond this date Gazprom aims to produce first gas from greenfield regions – the Yamal peninsula, Barents Sea and East Siberia – requiring the resolution of a series of complex technical and practical challenges which are likely to translate into high capital expenditure and potentially long lead times. Gazprom itself has declared that the era of cheap gas is over for the state company.

#### Russian Gas Reserves, Investment and Production Plans

Russia clearly has sufficient reserves to back up ambitious supply plans; some 26% of global gas reserves

(48tcm) are located in the country, and there are undoubtedly more to be discovered. Gazprom posted an increase in reserves from 29.13tcm to 29.85tcm in 2006, a reserves replacement ratio of 1.06. The sufficiency of reserves in Russia is therefore not an issue although it must be mentioned that many of these reserves are in challenging areas, either on or offshore in the arctic. While the gas is undoubtedly in place, it will be difficult, and hence expensive, to extract.

We are generally concerned about the level of upstream gas investment in resource-holding countries around the world, and see a tight global market for gas into the medium term. In Russia however, the level of concern is amplified because of its crucial importance as the largest player in the world's gas markets.

In meeting the demand for Russian gas, approximately USD 18Bn per year of investment will be needed to ensure that sufficient gas is produced between now and 2030, the majority of which is needed in production assets. As the owner of the Russian pipeline system and developer of the Yamal region, Gazprom will need to spend the vast majority of upstream and almost all pipeline investment. At the most recent board meeting, the directors of Gazprom agreed that the investment budget for 2007 would be USD 29.8 billion, broken down into capital investments of USD 12.8 billion, down USD 1.2 billion from the budget agreed at the beginning of 2007. Meanwhile, the financial part of the 2007 investment budget agreed to in August increased almost 3-fold in comparison to the budget agreed to in January, to USD 17 billion – in order to cover all of Gazprom's acquisitions over the year. While Gazprom increases the financial part of its investment budget to buy up assets of existing production, its capital expenditures fall far short of what seems necessary to ensure sufficient new production. Over the past five years, the growth in Russian gas production has been mostly due to the independent gas producers and Russian oil companies, while Gazprom gas production has grown by less than 1% per year. Furthermore, it is unclear to what extent this growth is a result of Gazprom's acquisition of stakes in other gas producing companies which are then aggregated into its production numbers.

However, the problem may not be one of adequate investment, but inadequate transparency in communicating Gazprom's plans to consumers. While communication issues are a less serious problem than are those of adequacy, such problems may adversely affect the growth of Russian gas export markets as customers start to question future plans. We have been urging Gazprom to publish a greater level of detail with regard to its investments to increase trust between both importer and producer, leading to greater security for

all, both suppliers and consumers. As in the case of investment, we see this against a background of needing improved transparency in many regions of the world.

### Import and Export Security

Recent commercial disputes with its neighbors that have cascaded into Western markets have caused many observers to question Russia's ongoing commitment to reliable supply. However, Russia's long history as a reliable supplier of gas to Europe suggests that it is Russia's intention to honor contractual commitments to trade partners in IEA and the EU. Nevertheless, it is clear that more robust commercial terms are needed for many of these contracts if indeed third party security is to be ensured.

The Russian pipeline system as it now stands was conceived in the Soviet era, built on the basis of two sources of natural gas reserves – major fields in West Siberia and the Central Asian states (Turkmenistan, Uzbekistan and Kazakhstan), which then made up part of the Soviet Union. While these Central Asian states are now politically independent of Moscow, the pipeline system ensures that they are still physically linked with regard to gas trade. Annually some 50 bcm of Central Asian gas has been transported through the Gazprom system. Traditionally, Ukraine has been supplied by gas from Turkmenistan. Long term contractual agreements for Russian imports of Turkmen gas (of up to 80 bcm/year from 2009–2029) affect this arrangement – in terms of control and ownership of the gas – and increase Russia's dependence on Central Asian gas to meet its export obligations to the near and far abroad. Furthermore, because they travel through a unified system, domestic and export demand is exposed to some degree of risk from Central Asian states. If Central Asian gas production increases as expected in the Russian energy strategy, then these risks may increase.

### Independent Gas Producers

Independent gas producers and major Russian oil companies control about a third of Russian natural gas reserves – on the order of 11 tcm. In 2006, non-Gazprom natural gas production reached 106 bcm, accounting for 16% of the total. The Russian Energy Strategy assumes that the share of such "independent" production out of the total transported by the Gazprom system will increase to 20% (140–150 bcm) by 2020. A review of various projections from the key non-Gazprom gas producing company websites reflects a much more bullish outlook with potential production volumes of over 300 bcm per year possible in the period 2015–2020 if the investment climate is favorable. Key factors which can help to mobilize this

high-potential source of gas production are focused on providing security of off-take at reasonable prices. Currently vast quantities of gas (more than 20 bcm/year) are flared in Russia as the only alternative to the poor economics of sale and hence production.

Russia is seeking a solution to ending gas flaring through ruling it unlawful (i.e., enforcing license terms of 95% use of associated gas by 2011) – but this risks resulting in a dramatic decline in accompanying oil production as seen in other countries which have enforced an outright ban. On the other hand, policy measures, such as improved economic incentives to remunerate gas production, will have the double benefit of reduced flaring and increasing non-associated gas production. There are two areas which would seem to need attention: access to transportation capacity and price.

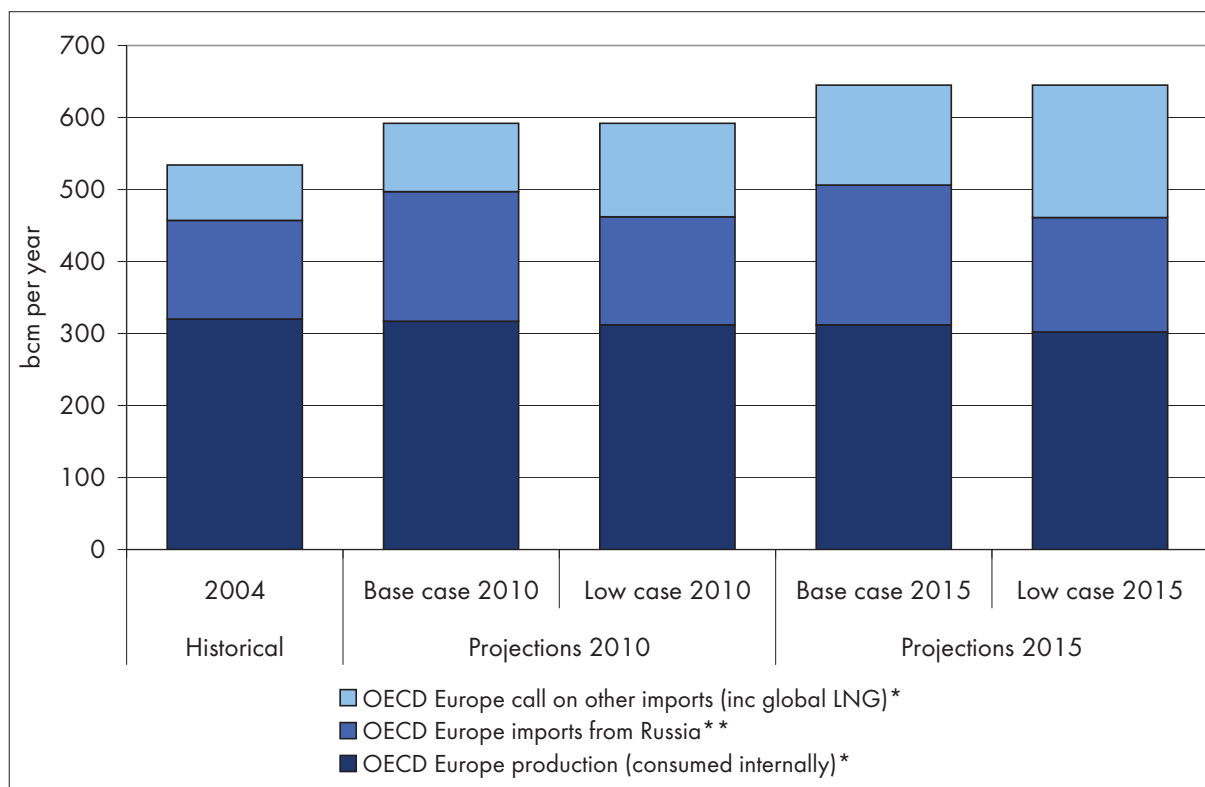
Transportation conditions which may lead to increased independent production include improving the terms of access for independents and specifically,

continuing to improve pipeline regulation to ensure that it is cost reflective. Progress has been made recently in this effort following the formation of a “Gas Market Coordinator” partnership in 2004 between producers and consumers. More work remains to be done, but this seems to be a positive development for independent gas production in the Russian upstream.

Regarding pricing, wellhead prices for independent gas production in Russia will depend heavily on domestic market prices as the “premium” export market seems likely to be controlled by Gazprom. Reform of domestic gas pricing will therefore have a large effect on gas production from independents. It is essential that prices rise to levels where producers can earn revenues in excess of cost after transportation and essential gas processing.

However, even after issues of access to transportation capacity and price are addressed, there will remain myriad challenges facing independent gas producers in Russia. The key seems to be in ensuring that the

### Russian Investment Risk Leads to Global LNG Tightness



Source: IEA.

\* Information from Supply/Demand section.

\*\* Base case Russian Government Energy Strategy (2003) total projected exports to IEA Europe.

\*\* Low case IEA scenario based on restrained investment.

Note: We have assumed total Russian exports per Russian Government Energy Strategy (2003) less 77 bcm of Russian gas flows to countries other than OECD Europe for all future periods (Russia supplied 77 bcm to these countries in 2005). We assume that Chinese export plans made in 2006 do not form part of this 2003 Energy Strategy.

power of Gazprom as a monopoly buyer/transportation provider is balanced so that independents have confidence that they can sell gas profitably over an extended period.

### Domestic Price Reform

Gazprom sells gas in the domestic market at wholesale prices regulated by the Federal Tariff Service. In 2005, Gazprom sold 307 bcm on the domestic market for about USD 13 billion, an average price of USD 1.11/MBtu – roughly a fifth of that paid by OECD countries for gas in the same year. Russian *per capita* consumption of gas is similar to that in Canada, but consumption per unit of GDP is roughly five times higher than IEA countries. Gazprom has argued for years that regulated prices are below replacement cost levels and contract prices to Europe. Despite low prices, Gazprom has ongoing problems in collecting payment from Russian customers – in 2005 it reported a total of USD 2 billion in total unpaid bills.

Annual gas price increases on the order of 25% or more are planned – although elections in early 2008 could slow the pace of these plans. The outlook is for domestic gas prices to about double from current levels to just over USD 2.64/MBtu (USD 100/1,000 m<sup>3</sup>) in 2010, still only 40% of current European export prices (which may change in the interim). President Putin has stated that he expects Russian domestic gas prices to level off at a rate of 60–70% of European prices given the transportation netback. Domestic prices still have a long way to go after 2010 to match this intended ratio given the differential of nearly USD 5.28/MBtu (USD 200/1,000 m<sup>3</sup>) based on current prices. Despite the intention to raise prices to “European levels”, it is worth noting that most gas producing countries with which Russia must compete in a number of sectors have very low levels of gas “feedstock” prices. This factor may act to limit the scope for price rises in those sectors.

#### *About the authors:*

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The establishment of a gas exchange in Russia, where up to 10 bcm is being sold at unregulated prices, 50% by Gazprom and 50% by independent producers, is an important step towards more market-based pricing in Russia’s domestic gas market. Prices on the gas exchange have been as high as USD 2.48/MBtu (USD 94/1,000 m<sup>3</sup>) compared to regulated gas prices of about USD 1.06/MBtu (USD 40/1,000 m<sup>3</sup>). As in IEA Europe, we believe that there are considerable benefits to gas exchanges, which allow price transparency according to economic factors. Russia is making progress in improving gas sector regulation for market participants and working on installing a more effective balancing regime. Improvement of modified entry/exit schemes and balancing regimes is an ongoing challenge in many IEA European gas markets.

### Conclusion

Russia is the world’s largest gas producer and exporter and the biggest reserve holder. In the current tight market circumstances, it has never been more important to create the correct economic conditions within the Russian gas market. If conditions for independents can be improved, then Russian gas production will surely rise. If policymakers continue to gradually reform gas pricing, then efficiency will improve as companies start to see the positive economics of investing in new plant and equipment.

Nevertheless we remain worried about the overall level of investment in Russia which seems insufficient to guarantee security of supply and hence will affect security of demand. We therefore repeat our call for greater transparency in the sector, particularly with regard to investment in future production. It is clear that there has to be a steep change in Russian gas investment, given the costs and technical challenges for the next big gas provinces.