
The Upcoming Gas Revolution

Russia's Response and its Implications for Europe

February 2013

Conclusions

- Ⓐ Shale gas from the US is not going to revolutionize the world as US reserves only amount to about 10 percent of estimated global technologically recoverable gas reserves, the US is a large consumer of gas itself and the low prices for natural gas in the country have slowed down investment in new production sites. The US is likely to allow increased exports but with just the cost for handling and shipping LNG adding around \$2-3/MMBtu to the cost in any country importing LNG, quantities will be small and prices will be higher than in the US
- Ⓐ The improvement of the technology for shale gas extraction is more promising in itself, as it will allow for extraction of gas in new regions. More local gas holds the potential of bringing down prices further. The increased availability of natural gas will also have implications for other energy related commodities such as coal, which has already fallen in price due to decrease in demand from the US
- Ⓐ Increasing availability of LNG is creating a bigger market for spot purchases of natural gas and this process will continue as more producers and purchasers invest in liquefaction and regasification plants. While there is little talk of it at the moment, a natural gas equivalent of OPEC could emerge to ensure market discipline and stabilize prices, but this would not change the structure of a more liberalized market with short-term contracts
- Ⓐ These developments are making natural gas available from more sources and is also increasing global supply. For Russia, which has successfully managed to keep the European market fragmented, this is a serious challenge. Assisted by these developments, the European Union is challenging the fragmentation and pushing to liberalize the European gas market
- Ⓐ Russia is responding by hindering the market integration, offering price concessions to delay European investments in alternative infrastructure and tying up its customers in long-term contracts
- Ⓐ At the same time Russia is looking for ways to improve its own flexibility. Gazprom is being pushed to find new customers and is looking at investments in infrastructure where it can (Southern Europe). Rosneft's growing role in the gas sector is a way to increase efficiency in that sector so that Russia can face lower prices
- Ⓐ While Russia has not brought up the question recently, a gas equivalent of OPEC would be a natural response to limit supply when natural gas becoming globally traded

Overview

This report begins by briefly looking at the two main technological changes that are affecting the global gas market – shale gas and the LNG technology. It then goes on to look at the implications these changes are having on Europe and the implications this is having on Russia. Finally the report looks at Russia’s long-term plans for handling the changing market changes. The emphasis of this report lies in the last part.

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Executive Summary

Shale gas is having a strong effect on the US market with production rising 26 percent between 2005 and 2011 and prices falling about 50 percent at the same time. Outside of the country effects have been limited. The current low prices under \$4/MMBtu are beneficial for other industries in the country, but at these levels the extraction companies that have an average breakeven price of around \$7/MMBtu, face a negative return on investment and are pushing for increased exports.

Regardless of whether the US increases exports or not, the extraction technology being perfected in America, will have an even greater impact outside of the country. Extracting shale gas in the European Union faces several legal/environmental as well as technical ones and may not happen, but elsewhere the technology will be useful, especially as 87 percent of shale gas reserves are situated outside of the US.

The steadily improving technology for LNG is doing more at the moment to liberalize the natural gas market. The technology has existed since the 1960s, but prices for liquefaction, transportation and regasification have dropped by more than 20 percent since the 1990s, making LNG a competitive alternative to pipelines, especially for larger distances. Pipeline technology has also improved through the possibility to increase the pressure of the gas being transported. However, gas pipelines need large volumes (rule of thumb: > 10 billion cubic meters per year) and short distances (rule of thumb < 5500 kms) to compete against LNG.

While Europe is still focused on long-term contracts and the use of pipelines, the changing market conditions have led Europe to demand various concessions from its main supplier of natural gas, Russia. Russia's immediate response has been to agree to some of the European demands, including renegotiating gas contracts and attempts to soften criticism against the Gazprom monopoly. Russia is also attempting to strengthen its position in Southern Europe, where it believes it will remain the dominating player. With 40-50 percent of state revenues coming from the energy sector and 76 percent of Gazprom's revenue coming from outside of Russia, Russia is dependent on Europe, but at the same time Europe still receives around 25 percent of its gas from Russia and a transition to other suppliers would not happen overnight. Both regions are still dependent on each other and a compromise is likely to be found.

Igor Sechin, Rosneft Executive Chairman and key ally of Russia's President Vladimir Putin, is leading a large-scale reorganization of Russia's gas and oil sectors. While increased corruption may be the result of these changes, its main purpose is definitely strategic as it is aimed at improving Russia's competitiveness.

Executive Summary

In order to achieve this goal, the Russian energy sector will first be consolidated, before allowing private interests into the companies. The purpose of this is to ensure private investments into the sector, which both Putin and Sechin realize are necessary.

Despite Rosneft strengthening its position in the gas sector, recent statements made by President Vladimir Putin indicate that Gazprom will remain the leading gas company and that it will retain its gas export monopoly. Complete liberalization will not happen, as there are fears it would hurt the sector as a whole (see the low prices in the US), but increased competition between Rosneft and Gazprom could also be what the industry needs in order to root out the extreme inefficiencies it suffers from. Should Gazprom not be able to complete its new strategic priorities, a scenario with a separate company operating the export pipelines and other companies being in charge of production may not be inconceivable.

At the moment, Gazprom is receiving around \$11/MMBtu, which is below estimates of the amount needed to break even. Competition from US LNG would imply a long-term price at around \$4.20 - 8.75 for the gas plus \$2-3/MMBtu for transportation. However, the development of conventional gas fields closer to Europe, for example in the Mediterranean, would set a far lower equilibrium price.

Russia will continue to focus on pipelines, but LNG has become one of Gazprom's strategic targets. As Europe is looking for more flexibility, so is Russia, by looking at other nations to sell to. The country has high hopes for China, but it is more likely that other Asian countries like Japan will be customers. While the potential flexibility stemming from LNG is mostly seen as damaging Russia, it will also increase their flexibility on whom to sell gas to. Being able to sell it to the highest bidder will reduce their dependence on Europe too.

Background - Is there a revolution?

In the US, there have definitely been dramatic changes in the natural gas industry. Shale gas has risen from less than one percent of domestic gas production in 2000 to over 20 percent in 2010. According to the Energy Information Administration (EIA), shale gas will account for 46 percent of US gas supply by 2035.

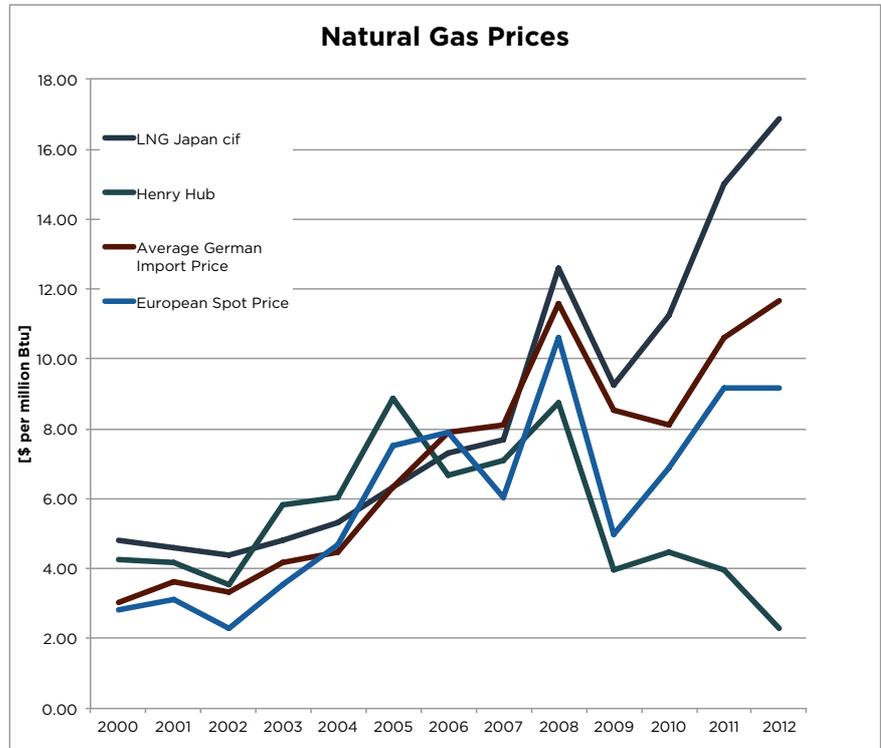


Figure 1: Natural Gas Prices over Time

The American gas prices have been market driven for a long time and the increase in supply has led to a dramatic fall in prices. Between 2003 to 2008, prices were hovering around \$6-\$8 /MMBtu with spikes over \$12. In 2011 and 2012 prices have been hovering around \$3. There are a number of factors that determine the cost of shale and conventional gas: in both cases the biggest part of the costs are incurred before production is up and running and the finding and drilling (F&D) costs are often substantially larger for shale gas due to the need for hydraulic fracturing and horizontal drilling. The amount of gas that is possible to extract from shale gas wells is also often smaller than from conventional bore sites and additional hydraulic fracturing is often needed to maintain production.

Once the well has been developed, the cost of extracting the gas is low, which explains why prices have dropped to levels where the developers are not having a positive return on their investment.

There are various estimates of what price level is needed for gas extraction to be profitable. A special report by IHS concluded that only a third of US' gas resources may be

⚙️ **The breakeven natural gas price for the average US shale gas company is estimated at \$7/MMBtu**

produced profitably below \$4/MMBtu. Other estimates point to a necessary gas price between \$4.20-8.75/MMBtu. If costs associated with handling LNG and transporting it to Europe, estimated at \$2-3/MMBtu, are added we see that US producers would be willing to sell their gas in Europe for \$6-11.75/MMBtu. This can be compared with estimates of Russia needing a gas price of around \$12/MMBtu in order to cover the costs for developing its wells and pipelines.

US gas would never be able to fully replace Russian gas in Europe, but Russia will need to become more efficient in its gas development in order to meet the competition.

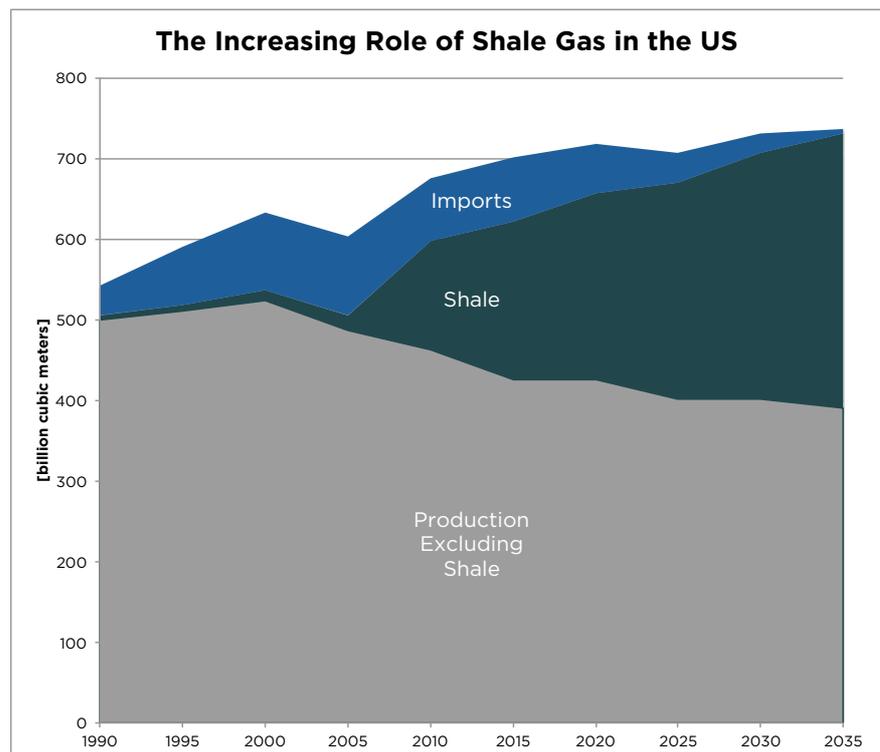


Figure 2: Origin of Natural Gas Consumed in the US

The US is still importing gas, but as Figure 2 shows imports have decreased since the peak in 2007 (130 billion cubic meters in 2007, 99 billion cubic meters in 2011). This reduction of imports has happened while consumption has increased (654 billion cubic meters in 2007, 690 billion cubic meters in 2011).

According to the EIA, in 2007, the estimate of unproven gas reserves in the US increased by 45 percent to 47.4 trillion cubic meters and in 2012 the number stands at 62.4 trillion cubic meters, which would be sufficient to supply the country for 90 years at the current consumption rate. In 2006 marketed production of natural gas in the US was around 530 billion cubic meters and in 2011, it reached 680 billion cubic meters according to the EIA. (Due to losses there are differences in the numbers between marketed and dry production of gas)

While the US has been supporting the development of shale gas for the last decades, it is not until recently that it has had a strong impact on production. It is true that there are also deposits of unconventional gas in Europe, but geological and legal differences between Europe and the US make the likelihood of shale gas production in the EU smaller, at least in the foreseeable future. Globally, supplies are increasing and the EU does not need to overcome environmental challenges and develop its own shale gas in order to gain from the increased supply of gas.

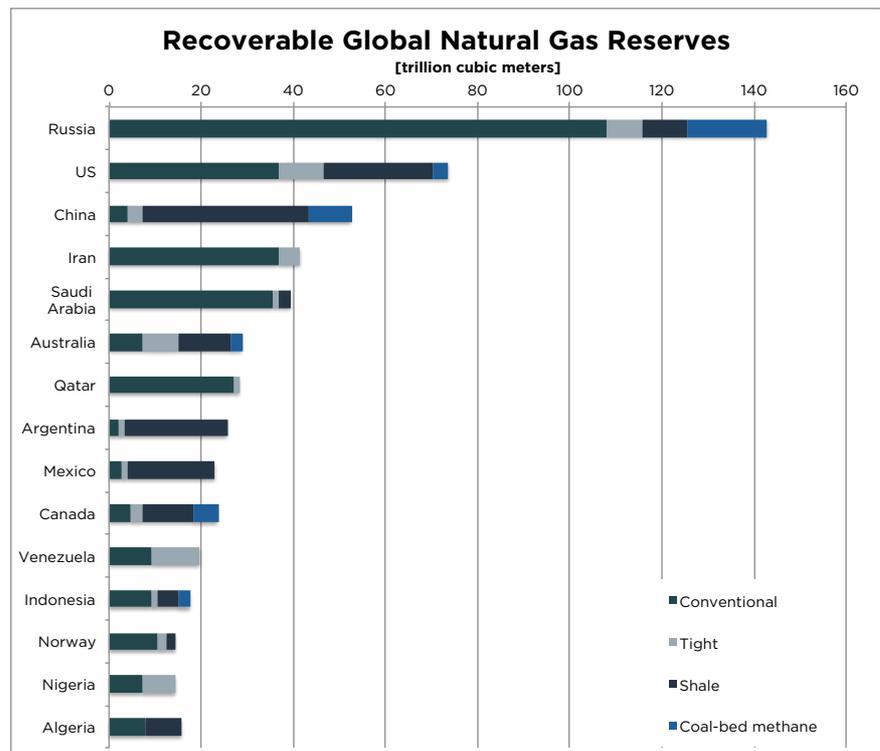


Figure 3: Estimates of Global Natural Gas Reserves

Today, LNG volumes of 300 billion cubic meters stands for 9 percent of global gas demand and 30 percent of global exports - a number expected to reach 40 percent by 2030

LNG on short-term contracts represented 25 percent of total LNG trade in 2011

Globally, around 45 percent of the world's recoverable natural gas reserves are "unconventional", comprised mainly of shale gas, and also tight gas and coal-bed methane. The International Energy Agency (IEA) reckons global gas demand will increase by more than half between 2010 and 2035, and unconventional gas will make up 32 percent of the total supply, up from 14 percent today. There are a number of regions where shale gas basins have been assessed including South Africa, Ukraine, India and Australia. The EIA estimated global technically recoverable natural gas resources to 640 trillion cubic meters. Shale gas is almost 30 percent of the total gas reserves.

According to the International Energy Agency (IEA), LNG stood at 300 billion cubic meters or 9 percent of gas demand in 2010. Global exports of natural gas were close to 1000 billion cubic meters, implying that LNG represented about 30 percent of gas trade. This number is estimated to reach more than 40 percent by 2030.

With more LNG comes more flexibility, and spot trade has increased and reached 25 percent of total LNG trade in

2011 likely to adapt to varying technological and geological challenges. Ukraine, Gazprom's biggest customer outside of Russia, just signed a \$10 billion agreement with Shell for the development of what is Europe's third largest shale gas field and other countries are likely to follow suit. This process is happening right now, but the development of new fields may take time.

The increasing supply and the flexibility of LNG is changing market fundamentals to more short-term contracts and this is where the main effect on global gas markets will be.

Implications for the Energy Market

As we have seen, the abundance of shale gas in the US is not the direct driver of any significant change in the energy market outside of the US, since the gas remains in the country and the increased production is partially offset by increased consumption. As of now, shale gas in the US has resulted in decreased imports to the country and falling coal prices globally as the US switches to natural gas.

In December the Department of Energy (DOE) received a report from NERA Economic Consulting that they had commissioned regarding the impact on the economy of allowing large-scale export of natural gas. The report was positive towards exports, but the government has not yet decided on the 16 applications for export permissions that it has received. Politicians in DC, both supporting and opposing the report's conclusions, are making their voices heard. In general companies producing gas and gas rich states support large-scale exports, whereas a number of industrial companies like Dow Chemical and Alcoa and some politicians fear increased gas prices and are lobbying hard to prevent or limit exports. As already mentioned, current prices in the US are too low to give positive returns on investments for most shale gas production sites and increasing exports could push up prices to levels that would make these investment returns positive. On the other hand, the low prices are a boost to many energy or natural gas intensive companies. The US is likely to allow for an increase in exports, but the volumes are not likely to be as large as the proponents are hoping.

Simultaneously, the LNG technology is getting cheaper. Prices have dropped significantly since the 1960s and are continuing down. The cost for LNG depends on three factors: liquefaction, transportation and regasification – all of which have become significantly cheaper over time. Between the early 1990s and the early 2000s, the cost for liquefaction decreased with more than 30 percent, the cost for transportation with more than 25 percent and the cost for regasification with about 20 percent. Since then, technological advances have made the processes more efficient, but at the same time the cost of raw materials

(notably steel) has pushed prices upwards. A rough estimate made in the beginning of the 2000s of the total cost for LNG is around \$2/MMBtu for gas transported from the Middle East to the Far East.

Pipeline technology has also improved through the possibility to increase the pressure of the gas being transported. However, gas pipelines are competitive for large volumes and shorter distances. As a rule of thumb, volumes need to be larger than 10 billion cubic meters of gas per year and distances shorter than 5500 kms to be competitive. LNG projects are also considered less of a financial risk than pipelines (given that LNG gives the option to export to several regions), making financing cheaper.

- Ⓐ Pipelines are competitive for large volumes (> 10 billion cubic meters) or short distances (< 5500 kms)
- Ⓐ The cost of LNG transport and handling is about \$2/MMBtu between Middle East and Far East

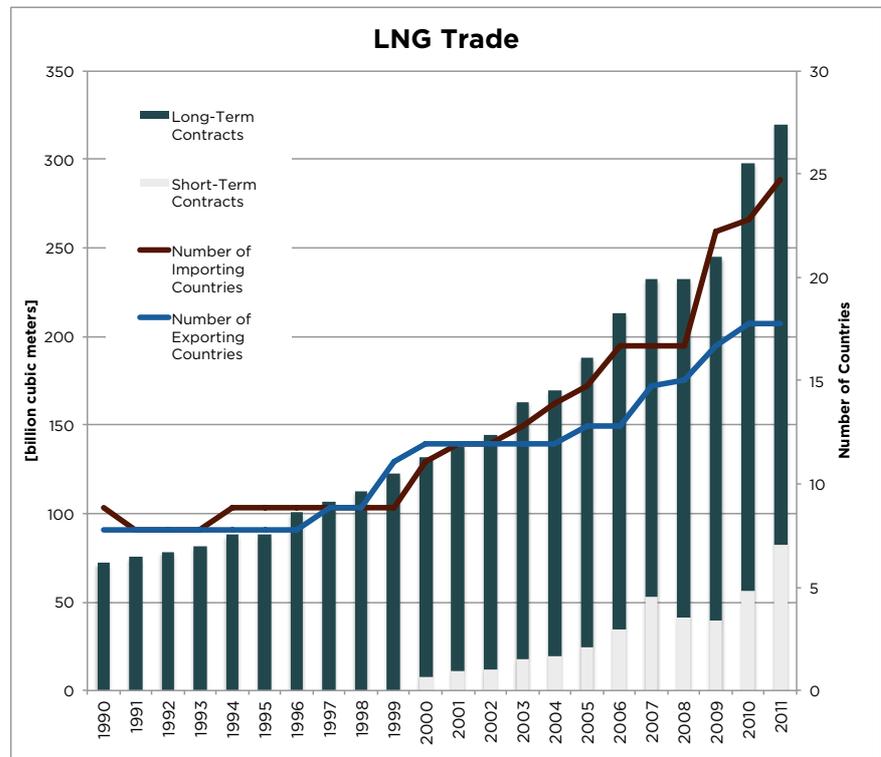


Figure 4: Global LNG Trade¹

In many ways this is a more interesting development than the discovery of shale gas, since it allows for many other producers to supply Europe with gas. While shale gas is a possibility for the future, more LNG is becoming available through new producers of conventional gas such as Peru, Yemen and Equatorial Guinea, but 66 percent of the increased supply is from existing producers like Qatar. Demand for LNG is also increasing, almost exclusively through increases from existing importers such as Japan, UK, China and India. The increased demand for LNG makes investments in liquefaction technology more attractive for producers, which opens up more possibilities for importers

¹ For the years 1990-1999 the value for long-term contracts, includes short-term contracts

like the EU and changing its bargaining position with especially Russia.

A Russian Background

Russia is the world's second-largest oil producer, the second-largest natural gas producer and it has the largest reserves of natural gas. Under Vladimir Putin, the Russian energy sector became more or less nationalized and it was consolidated into Gazprom for gas and Rosneft for oil. Consolidation went furthest in the gas sector with Gazprom making up about 80 percent of domestic production, but both companies became important sources of revenue for the Kremlin. Apart from the direct benefits, the sale of energy resources has been used as a tool in international relations. With high prices for oil and gas, revenues have increased, but also led to increases of corruption and inefficiencies, which has become a big problem in the energy sector. Gazprom in particular is known for its inefficiency (estimates are rough, but there are ample anecdotal evidence of kickbacks of 50-60 percent for Gazprom infrastructure investments). The lack of competition and the strong position it has had outside of the country, has led to mismanagement, reduced the incentive to modernize and caused many natural gas projects to go over budget or fall far behind schedule.

The Russian government receives 40-50 percent of its revenue from the energy sector. With the last decade's high energy prices, the government has been able to increase federal spending between 15 and 30 percent annually, making the country ever more dependent on its revenue streams. This changed during the summer of 2012, as there was a domestic budget shortfall, the EU started complaining on Russian energy policies by launching investigations into Gazprom, and by several countries demanding renegotiations of gas contracts.

Implications for Russia

While other factors than the increased availability of LNG (like the economic slowdown) are affecting the demand for Russian gas in Europe, low gas prices in the US are pushing down global prices on coal, with steel producers in Ukraine and utilities switching from gas to coal and Gazprom is noticing this according to the company:

- The volume of gas sold to Europe in the first nine months of 2012 fell 3 percent from a year earlier
- Net sales of gas to former Soviet-bloc countries fell 16 percent

- Ukraine imported a quarter less gas last year than in 2011
- Consumption in Russia declined 2.2 percent

Gazprom believes that further pressure may be expected in 2013 as European gas importers such as Gaz de France begin price negotiations. Russia anticipates a price decline from \$11.56/MMBtu to \$10.71/MMBtu. These changes may not seem too dramatic, but with Russia exporting about 140 billion cubic meters per year to Europe, the anticipated price decrease will lower Russia's annual export revenues by over \$4.5 billion, or 1.25 percent of Russia's \$360 billion total federal budget. For Russia, this is a clear indication how the situation may change if more natural gas becomes available to Europe.

A price of \$10.71/MMBtu is already below estimates of what Gazprom needs to make a positive return on investment, but is more than enough to cover immediate costs associated with extraction and transportation in existing pipelines. Russia would ideally reduce its dependence on energy and at least reduce its dependence on Europe for its sale of gas. A more efficient energy sector is also needed in order to face the increasing competition.

- ⓐ **Gazprom anticipates a reduction of export revenues during 2013 by over \$4.5 billion**
- ⓐ **The estimated average price during 2013 is \$10.71/MMBtu, below estimates of what Gazprom needs to cover maintenance and development costs**

Russia's Response

Russia's response to these challenges can be divided into the immediate reactions to the current situation, and a number of long-term changes in the energy sector that are being orchestrated by Rosneft Executive Chairman Igor Sechin and President Vladimir Putin.

The immediate response has been a combination of tactical retreats and advances. Russia has given into some of Europe's demands: Germany, Italy and Poland have all renegotiated contracts with Gazprom during 2012. Poland managed to receive significant discounts, but retained its take or pay structure (where it is committed to purchase a predetermined amount of gas). At the same time, Ukraine has been charged \$7 billion for not buying enough gas and Gazprom is increasing its activities in Southern Europe, where it hopes to retain an influential position through its bid on Greek gas utility DEPA, the development of South Stream and with participation in offshore drilling in the Mediterranean. Since the production of gas in the area around Cyprus, Greece and Israel would likely be directed towards Europe, it makes sense for Russia to participate in the project and to make sure that maximum production is not reached too early.

Russia has also proposed an increased mineral extraction tax for oil and gas (set to double by 2015), but this could at best be a temporary fix as it at the same time it diverts

funds from the companies (Gazprom estimates that the tax increase will cost the company an additional \$3 billion per year), impeding their ability to invest and develop new gas fields. Additional taxes may also serve as an additional deterrent to foreign investors.

The EU's investigations into monopolistic practices and unbundling lawsuits from Lithuania are potentially more serious for Russia than the demands for lower prices. This is because the EU may demand that Gazprom must give access to its pipelines to other sellers, which might deteriorate Gazprom's position. The drive for liberalization is also untimely as Russia is trying to consolidate its energy market and if Lithuania manages to force Gazprom out of its part-ownership of Lietuvos Dujos (Lithuanian Gas), it would be a dangerous precedent for Russia potentially hindering its strategy in Southern Europe. The EU investigation will initially look at Gazprom in Bulgaria, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland and Slovakia, but this may be expanded to include additional countries.

With Russia depending so strongly on gas sales for the country's revenue, and Europe seeing more options besides Russia, the EU is in a stronger negotiation position than before. However, it is important to remember that the EU receives 25 percent of its gas from Russia and for many constituent countries the figure is close to 100 percent. With this strong interdependence both parties have strong incentives to find a joint solution to the lawsuits being brought against Gazprom. If forced, the European countries receiving almost all of their gas from Russia will prefer a previously accepted existing contract than face the risk of not receiving any gas. Russia, on the other hand is more interested in a long-term solution than to push its customers into LNG importing capacity. It is clear that for now, both Russia and Europe feel they need the security of long-term contracts, but the pressure is on Russia to remain competitive.

The strategic changes that Russia is making in the energy sector can be divided into a general overhaul of the oil and gas industries and a specific focus on Gazprom. The Russian government understands the challenges and Igor Sechin has, in the role of Executive Chairman of Rosneft, become in charge of reshaping the oil and gas sector. To his help, Putin also created an energy commission: The Commission for Strategic Development of the Fuel and Energy Sector and Environmental Security, which will look at the energy sector's role over the next decade and to consider the sector's critical role in funding the state budget.

Apart from Putin and Sechin (Executive Secretary of the commission) other members include Deputy Prime Minister Arkady Dvorkovich, Economic Development Minister Andrei Belousov, Finance Minister Anton Siluanov, Industry

and Trade Minister Denis Manturov, Energy Minister Alexander Novak, Natural Resources and Environment Minister Sergei Donskoy, LUKoil President Vagit Alekperov and Gazprom CEO Alexei Miller. It is important to stress that it is Sechin who is in control of the energy sector, not Arkady Dvorkovich who nominally supervises it.

While the commission is the big attraction and will have an advisory function, most of the remodeling is already taking place - and this is being led by Sechin and Putin. In essence they are balancing short-term financial needs with strategic goals. The fact that Sechin is operationally in charge of the transformation, which is a more narrow scope than he has previously had, should not be interpreted as him losing influence, but rather the importance of the planned changes. The immediate responses including concessions made towards Europe should be seen as a way of buying time.

General Overhaul of the Oil and Gas Industry

According to our sources, the upcoming changes in the industry that Putin is entrusting Sechin to make are likely to become the biggest realignment of asset value and politico-economic power in Russia since the 1995-96 loans-for-shares scheme. This is not only driven by the tussle with the EU and the fear of increased gas competition, but also to stem the large outflows of capital, with capital outflows for 2012 amounting to about \$70 bn. Increased efficiency and attraction of investments into the energy sector would not only in itself reduce the outflow of capital, but also set the tone for a new investment climate in the country.

The main idea is to oust oligarchs like Mikhail Friedman, Viktor Vekselberg and Leonid Blavatnik from oil and gas. The model to be used is the same as during the potash consolidation of 2010-2011, i.e. buy out oligarch shareholders, renationalize or warehouse the asset, consolidate and then reprivatize. The process started in the oil sector with the buy out of BP and Russian shareholders from TNK-BP and it will continue within gas assets. To what extent this will affect oligarchs like Leonid Mikhelson, Gennady Timchenko, the Rotenberg brothers (in oil and gas pipe trading), or Yury Kovalchuk of Bank Rossiya isn't known at this point, but changes are forthcoming.

Privatization is the policy target with Putin and Sechin accepting that it is necessary to allow for the necessary capital raising and borrowing to secure growth. While the reorganization should mainly be seen as a strategic response to the challenges outlined above, corruption resulting from it cannot be ruled out.

Overall changes will be evolutionary and not revolutionary in nature, mainly because of the necessity to balance different interests in the circles near Putin. The

developments mark evolutionary steps towards increased efficiency on the domestic and export markets for Russian gas; more proceeds for the state, less to the oligarchs; an improved international platform for capital attraction, and attempts to stop the EU lawsuits.

The Russian realization that private and especially foreign investments are necessary is interesting, but foreign companies are hesitant, observing developments in the BP-Rosneft partnership and also aware that many investments in Russia end up making less than anticipated (for example Exxon's investment in Sakhalin-2). At the moment with, among other things, many potential global investment opportunities in shale gas, interest in the Russian energy sector has cooled off.

Consequences for the Gas Sector and Gazprom

Within gas, Sechin's strategy consists of a continuation of the expansion of Rosneft's share of the domestic gas market at the expense of Gazprom and Novatek. Rosneft will expand its gas volumes in part by the development of Arctic Shelf deposits, which are brought into production with foreign major companies such as ExxonMobil, Statoil and Eni.

With the recently formed JV with Itera, Rosneft increased its gas reserves with 33 percent. Rosneft had until recently forecast a fourfold increase in gas production to 55 billion cubic meters a year by 2020, but Sechin has also claimed publicly that the target number by 2020 may be 100 bcm. He is counting not only on growth of Rosneft gas output, but also on growth from TNK-BP. Acquisition of TNK-BP, which produced 35bcm of gas last year, will enable the 100bcm target to be reached. Rosneft has by no means reached its design or strategic capacity with the completion of the TNK-BP takeover and Rosneft will continue expanding into the domestic sale of gas.

Russia's strategy is still focused on developing pipelines. This is partially determined by the geographic location of Russian gas - far from ice-free coastal areas, but also because it is something they have experience of and also because of the large domestic pipeline industry, which has strong ties to the government. Within this the importance of reducing the role of transit countries is also important

Gazprom

While the overall changes for the gas sector are far-reaching, Gazprom will remain an integral part of the sector. Gazprom will be under increased competition from other companies, but neither Gazprom's nor Miller's positions are threatened as they still have Putin's support. To underline this, Putin recently laid out the new strategic directions for the company:

- Gazprom should reevaluate its earlier peremptory dismissal of the impact of US shale gas volumes, cost of production, and price of exports on Gazprom's market strategy
- Gazprom should develop more flexibility in its pricing and marketing strategy, and diversify its product portfolio, to increase LNG shipments (Vladivostok LNG plant 2017)
- Gazprom should accelerate the Eastern Program, including starting the Chayanda (Yakutia) and Kovykta (Irkutsk) gas fields. An agreement with China on overland piped gas from these sources should be concluded. Gazprom also needs to increase output
- Additional European buyers must be found to warrant, not only the second stage of Nord Stream, but also the proposed South Stream pipeline, or the capital required for those projects should be reallocated to the Russian Far East

It is true that Gazprom's fields are in decline, but fears of the company not being able to meet its obligations are exaggerated. 2012's statistical measures indicate a 3-6 percent reduction in gas output by Gazprom during the first three quarters of 2012, but the start-up of the Bovanenkovo gas field is adding so much new gas to the domestic market that the impact may be seriously negative for the independent producers. Unless there is a substantial increase in consumption, Gazprom may reduce its purchases from the independent producers.

With demand for Gazprom gas decreasing domestically as well as abroad, it is not surprising that Gazprom has been instructed to find new customers.

With diminishing demand and recently added capacity, at present, Gazprom is not facing any problems with meeting its obligations. Furthermore, only 44 percent of production is sold outside of Russia, but exports represent 76 percent of revenue, implying that Gazprom would always be able to make more money by exporting more and selling less domestically before failing to meet obligations abroad. The fairly large quantity which is sold domestically at sub market prices, may also explain why estimates of Gazprom's breakeven price end up near \$12/MMBTU.

The Gazprom Monopoly

Russia does not seem to have any intention in removing the monopoly on gas exports. Instead, the favored solution is to allow sales to Gazprom, which then resells it to the end-user in Europe. The deal confirmed in July 2012 by EnBW, the German power distributor, and Novatek, Russia's third largest gas producer, is an example of this. It is worth about \$22 billion over 15 years, and should be seen

as Russia's answer to EU demands for more competition. This deal is not a breach of Gazprom's export monopoly as Novatek sells gas to Gazprom, which then exports it and resells it to one of Novatek's foreign subsidiaries. While these deals are likely to become more common, the volumes will remain small. The deal with EnBW amounts to little more than 1 percent of the total volume of gas traded on the European spot market; and just 1.3 percent of Gazprom's volume supplied to the non-CIS states.

Novatek has been pushing for a removal of the monopoly, but even in their plan to develop the Yamal gas fields and build an LNG refinery for processing this output, the company has announced that it had reached an agency agreement with Gazprom Export, where Gazprom Export receives a 1-2 percent commission for supplying the LNG to Novatek's export buyers.

Both Putin and Sechin have recently made statements supportive of the current system of Gazprom having an export monopoly. Russia is not interested in a more radical change of export, as it would bring complications to a system that is seen by them as perfectly operational. There is consensus at Kremlin and in government that if independent gas producers were allowed to export directly, they might undercut Gazprom, and generate a state of competition in the gas market, which would disadvantage all Russian producers. If additional modifications were made, it would not be a complete liberalization of export rights, but giving additional companies export rights. This may, however, weaken Russia's arguments in negotiations with EU, which would push for full liberalization.

Gazprom's exclusive right is also seen as the flip side of costs tied to its obligations within the country, for example gasification of remote areas, supplies to low-profit sectors, the need to invest in exploration, production and transportation, social projects, etc. The system of gas supply itself and the export pipelines - this is a multibillion-dollar investment, which was made by Gazprom and the monopoly on exports can be seen as a kind of compensation. Only a couple of years ago, the domestic sales began to bring a small profit, but the lion's share of profits that are reinvested by Gazprom in the development of the gas industry, still comes from exports.

From an external perspective, there is nothing that prevents a split of Gazprom in a pipeline owning entity, which charges for exports and a gas producing company that sells gas in Russia as well as abroad. With an adequate price structure on the use of the pipelines, Russia should be able to allow proper export competition and still ensure that it does not harm the Russian economy. This would require more radical change and it is understandable that Sechin and Putin are trying to achieve the same with minimal disruptions. Accordingly, the indirect selling

scheme has been adopted for Novatek in the EnBW contract and no amendment of the export monopoly is currently in contemplation, according to sources at the State Duma, and at the Ministry of Economic Development and Ministry of Energy.

There are of course potential corruption issues with this fairly complex deal structure, with multiple companies buying and selling gas back and forth across borders. However, whether these new ways of exporting will lead to increased corruption or merely a strategic diversification of gas trading to mitigate EU attacks on Gazprom, is less relevant than the outcome: There is a change under way in how Russia exports gas arrangements.

Other Markets

Besides preventing Europe from turning to LNG, Russia has also realized that LNG is also a possibility for them and is also turning its gaze eastward. While Russia is hoping on China, sources close to the negotiations claim that the Chinese find it difficult to do business with Russia and at the moment they do not need 20-25 billion cubic meters of gas, so negotiations are likely to continue.

The LNG plant in Vladivostok seems to be going ahead and this would give more flexibility to sell to many consumers. Russia's problem is that it would need to transport the gas in pipelines before turning it into LNG, which increases the investment and transportation costs. Some sources point to a combination of a pipeline, which also goes to China and a LNG plant opening up the Asian market, where Japan is interesting.

Demand for gas is increasing globally and in the long run new markets will give Russia a greater flexibility within the energy sector, but does little to address the issue of the country's overreliance on sale of oil and gas.

Finally, there is little talk about it at the moment, but Russia has previously tried to create a natural gas equivalent to OPEC. As the natural gas market becomes more flexible and the amount of short-term contracts increases, a natural gas cartel makes more and more sense from the producers' perspective.