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Foreword

At the onset of 2016, the global energy landscape is undergoing another major series of shifts. The global economy is struggling to find its footing following the 2008 economic crisis and has begun bracing for a potentially rocky Chinese economic transition and slowdown. An oversupplied oil market, generated by previously high prices and led by the combination of an unprecedented surge in U.S. tight oil production and slowing global demand, is well over a year and a half into a deep price decline that has led to large capital expenditure cuts throughout the industry. Some oil-producing countries are shifting from near-term tactics to manage temporary fiscal shortfalls to considering longer-term strategies for weathering a possibly prolonged low-price environment. Meanwhile, policies designed to bring about the decarbonization of the global economy—the stated goal of the global Paris Climate Agreement signed at the end of 2015—continue to advance in ways that are increasingly relevant to all future energy sector investments, but renewable energy sources are being challenged by many of the same market headwinds facing more conventional fuels like oil, natural gas, and coal. Add to this a tumultuous geopolitical environment, with insurgencies and proxy wars throughout the Middle East, as well as tension among global powers in key regions of the world, including the standoff between United States and its allies against Russia over Ukraine and Syria, and the delicate struggle for primacy between the United States and China in the South China Sea.

This confluence of economic, environmental, and economic factors may lead to changes in many countries' strategies and political economies. In an effort to better understand the changing energy landscape, the CSIS Energy and National Security Program is launching a new series of special reports to investigate the evolving political economy of energy in certain key countries around the world. The first paper, "The Shifting Political Economy of Russian Oil and Gas," written by Tatiana Mitrova from the Energy Research Institute at Russian Academies of Sciences, is a timely and thoughtful exploration of the difficult position facing the Russian oil and gas sector. Dr. Mitrova concludes that while no new strategy has yet emerged for dealing with the potential consequences of today's economic and market realities, Russian oil and gas production levels can be maintained for the foreseeable future. This outlook does not preclude, however, the possibility of a more abrupt downturn in production and an increasingly difficult economic and political outlook going forward.

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Sarah O. Ladislaw
Director, Energy and National Security Program
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Executive Summary

Russia is one of the world's largest hydrocarbon resource holders, producers, and exporters, with nearly 6 percent of global proved oil reserves, 13 percent of the world's oil production, 12 percent of global oil exports, 17 percent the global gas reserves, 19 percent of global gas production, and 24 percent of global cross-border gas trade in 2013.[1] It is a dominant oil and gas supplier both for the European Union (EU) and the Commonwealth of Independent States (CIS), and holds great influence over both markets.

Russia is now going through an uncertain and difficult economic and energy transition. The economic slowdown, ongoing since 2012, was exacerbated in 2014 by dual external shocks from the sharp decline in oil prices and the imposition of financial and technology-oriented sanctions. Together with shifting markets for Russia's exports and its own domestic economic and political dynamics, these factors are spurring dramatic and impactful changes in the Russian domestic oil and gas strategy, as well as its view toward future energy markets and energy-based geopolitical alliances. These changes, while not yet complete or predetermined, will impact geopolitics, energy security, oil and gas investment, and global hydrocarbon market dynamics in the short to medium term. Given the sheer scale of Russia's oil and gas production, the importance of oil and gas revenue to the health of the Russian economy, and Russia's role as a hydrocarbon exporter and provider of oil and gas infrastructure, it is critical for analysts and policymakers to understand the evolution of Russia's oil and gas sector and its anticipated realignment.

This study is focused on how the Russian oil and gas sector is evolving and might continue to change under current circumstances. It includes a summary of the changes that have taken place to date, an examination of future potential changes under a range of oil price scenarios, and the potential means Russia might use to overcome those challenges. A few key takeaways from the report include the following:

- *Russian authorities have been slow in recognizing new market conditions and they do not have a coherent strategy either to tackle the new environment of low prices and weak export market demand or to find new drivers for domestic economic growth other than the oil and gas sector, which is no longer able to perform this function. Instead,*

1. International Energy Agency (IEA), *Key World Energy Statistics 2014*, September 22, 2014, http://www.iea.org/publications/freepublications/publication/key-world-energy-statistics-2014.html; BP, *BP Statistical Review of World Energy 2015*, June 2015, https://www.bp.com/content/dam/bp/pdf/energy-economics/statistical-review-2015/bp-statistical-review-of-world-energy-2015-full-report.pdf.

Russian authorities are improvising. After a period of denial, it has now become evident to the Russian government that current market conditions are not temporary and superficial phenomena, but rather are significant and perhaps longer-lasting shifts in the global oil and gas picture. Rates of economic and energy demand growth have slowed in both traditional markets in the member-countries of the Organization for Economic and Co-operation and Development (OECD) and the developing economies of Asia. The supply balance is in a fundamentally different place than it was just five years ago, with the advent of unconventional oil production in North America and the competition for market share among existing and reemerging Middle Eastern producers. The competitive landscape for shrinking capital investment in the face of low oil prices means that large-scale megaprojects have been put on hold, and the industry is putting a premium on cost-cutting and capital efficiency. The economic sanctions resulting from Russia's conflict with Ukraine, while currently having a somewhat muted impact on oil and gas production and investment, seem likely to persist absent a change of course toward the resolution of that conflict. What once seemed like a passing string of economic headwinds to be waited out now looks like a gathering perfect storm of economic distress that require strategic solutions. Nevertheless, Russian leadership prefers to respond tactically while continuing to stall deeper systemic reforms.

- *Real market reform in the domestic oil and gas sectors appears unlikely, despite clear flaws in the current system*. State-directed financing and support are increasingly important in current market conditions, giving specific companies an upper hand in the domestic market. Such tactics favor the politically-connected and delay previously-announced reforms.Though increasing concentration and state involvement in Russia's oil industry is making it slower to adapt, innovate, and compete, this appears unlikely to change despite announced plans for the partial privatization of Rosneft. Gas sector reform is likely to be marginal as well. In Russia's domestic gas market, there is a huge and fundamental obstacle to any serious transformation, as the Russian state itself is the major stakeholder in the national gas industry and has an extensive agenda to use gas as an important domestic and international political tool. As long as this remains the case, the authorities will need a state-controlled company to guarantee supplies to economically depressed regions and nonpaying customers, provide low gas prices that are affordable to industry and the population, and cross-subsidize these social functions as well as geopolitical, export-oriented projects with the help of exclusive export revenues. Gazprom could face some regulatory changes and further unbundling through partial privatization, but the gas market is unlikely to see real liberalization.

- *Long-awaited efforts to reform hydrocarbon taxation have stalled as the government leans on the oil and gas industry for additional revenue*. The current overwhelming government need for more revenue means that the long-term strategy to reform will give way to the short-term interest of revenue maximization. As the oil and gas sector is now the only remaining "cash cow" in the Russian economy, it is very likely

that fiscal pressure on the sector will increase, undermining future investments and further postponing tax reform.

- *Though Western sanctions on Russia's oil and gas sector have not had an appreciable aggregate impact thus far, over time both technology and financial sanctions will contribute to the decline of Russian oil production and to only partial utilization of gas production potential*. The immediate impact of Western sanctions has been less intense than expected, and Western economic sanctions are likely to have little aggregate impact on the Russian oil and gas sector in the short to medium term, while hurting independents more than state-owned enterprises because of their weaker links to the government and their lack of access to capital. But sanctions will do more damage in the longer term should they remain in place, since they restrict access to capital and technology for investment in more difficult greenfield projects. Even though technology sanctions are less painful than financial sanctions in the short term, in the longer term they could also lead to very serious consequences. Prolonged financial and technology sanctions could significantly constrain GDP, as lower capital accumulation and technological transfers weaken already-falling productivity growth and prevent the replacement of natural oil production decline.

- *Weak oil and gas demand in Russia's traditional European export market, together with increasing price competition, limits export revenues*. In the European market, Russia faces stagnant or even declining gas and liquids demand. Growing competition with Middle Eastern and African suppliers for market share, a push toward spot indexation in gas pricing formulas, looming "price wars," increased buyers' pressure to review long-term contracts, antitrust investigations against Gazprom, third-party access requirements for pipelines such as OPAL,[2] huge opposition against Russian pipeline projects, as well as Europe's desire to lessen its dependence on Russian energy supplies all make the European market less profitable and much more challenging for Russia. This has intensified as a result of geopolitical tensions between Russia and the West from the conflict over Ukraine, which affects views on the security of Russian supplies.

- *Alternative strategic partnerships are being pursued, but are not yet delivering on their potential and cannot replace old relationships for the foreseeable future*. Russian energy companies and the government are looking to strategic partnerships with China, India, Iran, and, until recently, Turkey to solidify new market share and attract investment and expertise. The results thus far have been mixed. However, there is little hope for any significant export growth in the European market, which justifies Russia's main strategic priority to reorient its exports toward the East. Still,

2. OPAL (Ostsee-Pipeline-Anbindungsleitung) is a 470-kilometer-long natural gas pipeline in Germany, jointly owned by Gazprom and German Wintershall, that is connecting Greifswald (where Nord Stream lands onshore) to the Czech border. The main problem with this pipeline is that despite the fact it has a capacity of 36 billion cubic meters per annum (bcma), only half of the capacity can solely be used by Gazprom for 22 years, due to European regulation. A 2009 European Commission stipulated that the pipeline does improve supply security but not competition, so if Gazprom wanted to use more than half the Czech border capacity it would have to carry out a gas release program of 3 bcma. Gazprom did not implement this program.

the Asian exports are unlikely to have enough potential for growth to replace the European market. Until the mid-2020s, eastward oil and gas exports will not be able even to replace lost exports to Europe. Even in the long term, with supply volumes to Asia growing steadily, neither absolute export volumes nor Russian market share in Asia are likely to come close to levels already reached in the European markets.

- *Still, low-cost production and near-term resiliency will enable Russia to keep oil and gas production and exports at high levels for a long time. Under most scenarios, Russian oil and gas production is likely to remain fairly steady across the medium to long term, with oil production likely to stagnate and gas production likely to grow somewhat*. The common expectation, both domestically and abroad, was that such a scenario of international sanctions and low oil prices was not sustainable, and that it would lead to the complete collapse of the Russian economy. Nevertheless, reality shows that indeed the Russian oil and gas industry, as well as the whole economy, are going through difficult times, but are showing much greater resilience to these challenges than expected. The trajectory of future Russian oil production is expected to be declining, but the speed of this decline is the main uncertainty. For its part, the Russian gas sector undoubtedly has capacities for sustainable production growth—the resource base is huge and is sufficient to meet domestic and export demands. As Russia has no gas resource constraints, its future gas production will depend solely on the availability of markets and investments. Despite all its challenges, the oil and gas industry will most likely remain quite sustainable, though its input in the budget revenues and GDP growth will diminish.

- *The Russian economy has proved resilient thus far, though previously high oil prices can no longer mask its structural weaknesses. Additional economic vulnerabilities exist, and muddling through will become more difficult the longer current market conditions persist*. Economic stagnation began in 2012, even before the oil price collapse and the Western sanctions, which intensified Russia's economic troubles. Although the Russian economy has not collapsed as a result of sanctions or the oil price decline, it has become obvious that the oil and gas sector will not be able to drive formerly high GDP and budget revenues growth rates. This challenges the entire economic model of the country`s development, which has evolved over the last decade of rapidly growing oil prices. Until recently, high prices were creating illusions of sustainable growth and hiding structural problems. The Russian oil and gas sector had proven to be extremely sustainable and resilient, but it is not sufficient to overcome the Russian economy's current challenges, which extend far beyond the sector.

1 The Russian Oil and Gas Sector in the New Reality

Over the last two years, the Russian oil and gas sector has suddenly found itself in a completely new environment—a perfect storm of economic, market, domestic political, and foreign policy-related upheavals. These changes occurred in such an unpredictable manner due to the coincidence of several external factors:

- global economic weakness and hydrocarbon demand stagnation in Russia's main export markets;
- increased global supply of hydrocarbons (including the U.S. shale revolution) with aggressive competition from other traditional and new suppliers entering the market (e.g., the United States, Iran, Iraq, Australia, East Africa, and Brazil);
- the resulting low hydrocarbon price environment, with oil and gas prices dropping to less than half of 2010–2013 heights;
- geopolitical tensions with the West, including U.S. and EU sanctions introduced against Russia as a reaction to the annexation of Crimea and hostilities in eastern Ukraine;

and internal factors, including:

- structural economic crises driven by inefficiency in the regulatory framework, high resource dependency, and a lack of stimulus for entrepreneurship and industrial diversification;
- stagnant domestic energy demand, driven by the economic slowdown;
- frozen domestic regulated prices for natural gas;
- natural depletion of cheap-to-produce Soviet legacy fields and the growing need to explore new hard-to-reach and expensive-to-develop oil and gas provinces;
- increasing problems with the access to financing, since the domestic financial market is weak and underdeveloped and foreign capital flows are limited by economic sanctions and a poor investment climate;

- cuts to investment programs in the oil and gas sector leading to slowdowns in maintenance and upgrades;
- the institutional framework in the energy sector, which has reached a critical level of inefficiency: high corporate concentration and a lack of market mechanisms are destroying its value, as will be explained.

Altogether, these factors probably represent one of the most catastrophic scenarios that Russia's leadership could imagine. The common expectation (both domestically and abroad) was that such a scenario is not sustainable and that it would lead to the complete collapse of the Russian economy. Nevertheless, reality shows that indeed the Russian oil and gas industry, as well as the whole economy, are experiencing difficult times, but are showing much greater resilience to these challenges than expected. In this chapter, we will take a closer look at these new challenges and how Russia is addressing them.

Implications of Stagnating Global Hydrocarbon Demand: Increasing Competition and Low Prices

The dramatic changes to the global energy market over the last several years came as a big surprise to many market participants, including Russia. It was understandably tempting for Russian officials to deny the shale revolution, to ignore the energy demand slowdown in Europe, and to underestimate regional market competitors given the country's reliance on hydrocarbon revenue, which provides 70 percent of Russia's export revenues and 50 percent of the federal budget income. But reality has set in, and the Russian authorities are now taking steps to review their vision of the future of oil and gas market development in favor of much more modest assessments both in terms of future export prices and volumes. The Russian Economy Ministry now regards an oil price of $40 per barrel as a baseline scenario for the next few years,[1] while forecasts of oil and gas export volumes envisage very limited growth even in the long-term perspective up to 2035 (mainly to Asia, with nearly stagnant or declining supplies to Europe).[2] Expectations of high export growth rates, similar to those observed in 2000–2008, are gone. It has become obvious that the oil and gas sector will not be able to generate its formerly high GDP and budget revenue growth rates, challenging the whole economic model of the country's development, which has evolved over the last decade of growing oil prices.

Russia's current economic model, enabled by high oil prices, has obscured the growing inefficiency of state governance, creating illusions of sustainable growth and hiding structural problems—such as low levels of industrial output, a declining share of

1. Dmitriy Butrin and Denis Skorobogatko, "Разведанные запасы прочности," *Kommersant*, February 8, 2016, http://www.kommersant.ru/doc/2911191.

2. "Минэнерго России: Энергетическая стратегия России на период до 2035 года (проект)," Национальная Ассоциация нефтегазового сервиса, September 17, 2015, http://nangs.org/news/industry/minenergo-rossii-energeticheskaya-strategiya-rossii-na-period-do-2035-goda-proekt.

high-technology industries in Russia's GDP, weak institutions, high levels of corruption, etc. As oil prices fell, these problems started to become much more visible and obvious. Assessments of international rankings show that Russia is perceived as being prone to serious problems relating to corruption and bureaucratic interference, which contribute to the costs and risks of doing business.[3] Investment is further discouraged by persistent doubts about respect for contracts and private-sector property rights. In fact, the current economic slowdown cannot be viewed as just a result of low oil prices—the trend of declining GDP started in early 2012, long before the drop of the oil prices in 2014. This came as a result of accumulated structural problems, but of course, lower oil prices further aggravated this tendency. Rather than stemming the tide of corruption, shrinking revenue has intensified internal control over the limited patronage that remains.

The consequences of these changes are enormous. First, they *lower Russian GDP expectations*. The growth slowdown in 2014 occurred amid record-low unemployment and above-target inflation. At this time Russian banks' capital and income positions were already deteriorating due to the economic slowdown. The ruble came under severe pressure at the end of 2014, reflecting balance of payments shocks from lower oil prices, limited access to international capital markets, increased capital flight, and concerns about large external debt payments in December. These led to large net capital outflows (USD 154 billion or about 8 percent of GDP, the highest level since 1999–2000) and a significant decline in foreign exchange reserves. Additionally, in November 2014 inflation accelerated sharply following the exchange rate depreciation and Russia's countersanctions against the West (primarily a ban on the import of certain food products from Europe, the United States, Canada, Australia, and Norway, introduced in August 2014, as well as against Ukraine and later, in 2015, Turkey).[4]

In 2015, low oil prices ravaged all of Russia's key economic indicators. Demand for durable goods shrank by almost half, imports plummeted 35 percent, trade turnover in rubles fell almost 12 percent, and foreign investment—which had fallen to almost zero in 2014—was nonexistent in 2015. Inflation increased to at least 15 percent.[5] So, after the 6 percent to 8 percent GDP growth rates observed in 2004–2008, according to the official statements of the Russian Ministry of Economic Development, in 2015 annual GDP contracted by 3.9 percent,[6] driven by a contraction in domestic demand weighed down by falling real wages, higher cost of capital, and weakened consumer and investor confidence. According to the forecasts of the Ministry of Economic Development and Ministry of

3. "2015 Where to Invest in Mining," Behre Dolbear, 2015, http://www.dolbear.com/latest-happenings/2015-where-to-invest; "The Corruption Perceptions Index 2015," Transparency International, 2015, http://www.transparency.org/cpi2015/; World Bank, *Doing Business 2015: Going Beyond Efficiency* (Washington, DC: World Bank Group, 2014), http://russian.doingbusiness.org/~/media/GIAWB/Doing%20Business/Documents/Annual-Reports/English/DB15-Full-Report; "Sovereigns Ratings List," CountryEconomy.com, 2015, http://countryeconomy.com/ratings.

4. IMF, *Country Report No. 15/211 Russian Federation*, August 2015, http://www.imf.org/external/pubs/ft/scr/2015/cr15211.pdf.

5. Andrey Movchan, "What's in Store for the Russian Economy in 2016?," Carnegie Moscow Center, January 4, 2016, http://carnegie.ru/commentary/2016/01/04/what-s-in-store-for-russian-economy-in-2016/ioik.

6. "Улюкаев: спад ВВП РФ в 2015 году, по предварительной оценке, составил 3.9%," Tass, January 16, 2016, http://tass.ru/ekonomika/2592244.

Finance, growth is expected to resume. However, the recovery is unlikely to be strong, as the limiting factors behind decelerating potential growth will take time to be addressed, leading to –0.8 percent GDP growth in 2016 and 1 to 1.3 percent per year to 2030.[7] According to the International Monetary Fund (IMF), the economic recovery in 2016 will be muted and medium-term prospects are weak. An increase in geopolitical tensions is the main risk to the outlook. Oil price will also be a crucial variable: according to Citi, every $10 of oil price decline reduces Russian GDP by 1 percent.[8]

Despite the prevailing panic and criticism, the authorities have managed to take some effective steps to stabilize the financial system and the economy. The CBR allowed the exchange rate to float, tightened monetary policy significantly, and expanded its foreign exchange liquidity facilities. The government introduced an anticrisis plan, including a bank capital support program on the scale of 2 percent of GDP, and revised its 2015 budget to reallocate spending to priority sectors. It should also be noted that against all the risks and uncertainties mentioned, Russia still has large buffers against economic headwinds including a large net international investment position (IIP) equivalent to 18 percent of GDP, a current account surplus of 4.5 percent of GDP in 2015, low public debt,[9] and no need to access international markets for government financing in the short term due to the Reserve Fund buffer (of which 68 percent remained by the end of 2015, compared to January 1, 2014).[10] One might assume that there could be a long period of low or even negative economic growth, but the country's economy is quite resilient and is not going to collapse. Moreover, compared to the early 1990s, when Russian GDP contracted by 40 percent, or even 2009, when the drop was 8 percent, the current reduction of 4 percent is not as dramatic. As Andrey Movchan notes, "Russia certainly has enough reserves and economic inertia to make it through 2016, so there is no reason to expect serious changes immediately."[11]

A second consequence naturally results from the economic slowdown in Russia: *domestic demand for liquid fuels and natural gas in all consuming sectors will stagnate*. Hydrocarbon demand, which demonstrated steady growth outpacing that of GDP before the crisis, has almost ceased to grow in recent years. As a result, the domestic market cannot be regarded as a reasonable alternative to exports. Moreover, ruble devaluation significantly undermined the profitability and attractiveness of the domestic fuels market while the poor economic situation is leading to increasing nonpayments. Besides, despite the decision made in 2006 in favor of accelerating growth of the domestic natural gas prices to reach European netback levels (i.e., equal profitability of supplying gas to the domestic market and for exports), in 2013 the Russian government decided to freeze domestic gas prices, just indexing them with the rate of inflation (and even below that in 2015–2016), in order to

7. Olga Kuvshinnikova, Alexandra Prokopenko, and Filipp Sterkin, "Россию ждут 15 лет застоя, если не будет реформ и не подорожает нефть," *Vedomosti*, February 15, 2016, http://www.vedomosti.ru/economics/articles/2016/02/15/629411-15-let-zastoya#/galleries/140737492631129/normal/1.

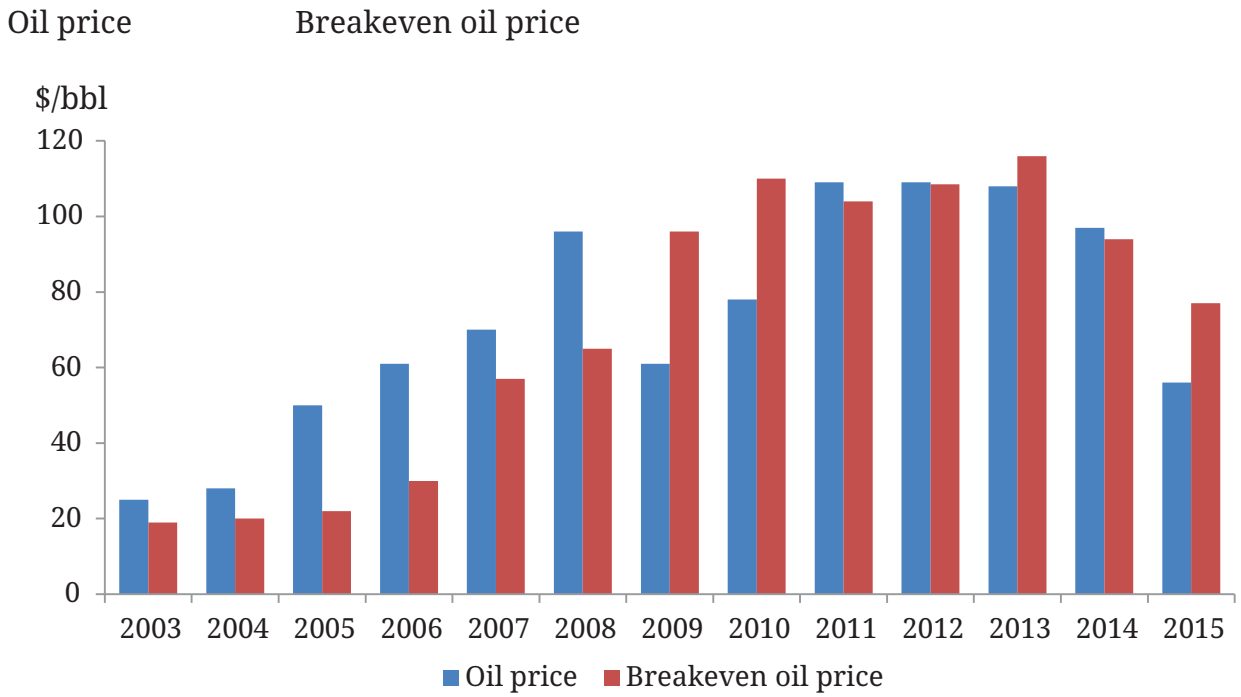
8. Nadia Petrova, "Баррель, ножницы, бумага," *Kommersant*, January 18, 2016, http://www.kommersant.ru/Doc/2887853.

9. IMF, *Country Report No. 15/211 Russian Federation*.

10. Finance Ministry of Russia, "Информационное сообщение от 01.01.2016," January 1, 2016, http://www.minfin.ru/ru/perfomance/reservefund/statistics/volume/index.php.

11. Movchan, "What's in Store for the Russian Economy in 2016?"

Figure 1. Breakeven oil prices for Russia's federal budget, USD per barrel



Source: Alex Fak, Valeriy Nesterov, "Russian Oil and Gas—Trimming the Belly Fat," Sberbank CIB Investment Research, February 2016.

ensure social stability and industry survival amidst economic turmoil. Essentially, this means that Russia will keep low, state-regulated domestic gas prices. As a result, according to Gazprom's officials, in 2016—for the first time since 2008—the company will have negative profitability on the domestic market.[12] The domestic market therefore is no longer attractive for gas producers. Their only hope is to gain access to export markets.

The third consequence is a *state budget deficit and the resulting desire of the authorities to increase taxation of the oil and gas sector*. The Russian government found itself in a deep deficit last year, and it will remain in debt for the coming year. The problem, however, is not with oil prices, but with the runaway spending. Since 2009, federal spending has outpaced growth in nominal (not even real) GDP. The breakeven oil price for the budget has kept pace with the actual oil price even at the heights of the cycle (Figure 1). According to the Finance Ministry, by the end of 2015 the overall budget deficit amounted to 2.6 percent of GDP,[13] while for 2016, the budget deficit will be 5.2 percent at $40 per barrel, and 6 to 7 percent at $30 per barrel.[14]

12. Evgeniy Kalukov, "«Газпром» получит убыток от продажи газа в России впервые с 2008 года," RBC, August 12, 2015, http://www.rbc.ru/business/08/12/2015/5666cd799a7947621b6ed6b2.

13. "Дефицит бюджетной системы России в 2015 году составит 4,6% ВВП," Interfax, February 16, 2015, http://www.interfax.ru/business/424451.

14. Alexander Prokopenko and Olga Kuvshinova, "Правительство готовится сократить расходы бюджета 2016 года на 10%," *Vedomosti*, January 11, 2016, http://www.vedomosti.ru/economics/articles/2016/01/11/623574-pravitelstvo.

As Sberbank CIB Investment research points out,

> the deal between the Russian government and the oil companies is well known: the state skims off the bulk of the marginal profits when the oil price is rising but assumes most of the risk should the oil price drop. This deal was never going to survive major shocks, because it is based on a win-lose proposition—and under the unspoken rules, the Russian state is not allowed to lose. Indeed, the scheme buckled in the wake of the financial crisis, when the government prematurely ended export duty preferences for the giant Vankor, Verkhnechonsk, and Talakan greenfields. But neither did it work consistently at high prices: Russian energy taxation has been revamped (always toward a net increase) in each of the past four years, helping to boost receipts from the sector.[15]

Therefore, since a decline of state hydrocarbon revenues is anticipated, financial bodies within the government are now looking for any opportunity to compensate for this decline through increased taxes. If the government started to use the National Welfare Fund (NWF), which was worth $71.72 billion as of January 1, 2016, to cover this deficit, it would be exhausted by the end of 2016.[16] In January 2015, a budget sequester was announced, requiring all governmental bodies to reduce their expenditures by 10 percent. But this is certainly insufficient, so other sources of budget revenues are required.[17] The most obvious step is to further increase the tax burden on the traditional sources of revenue. As the oil and gas sector is now the only remaining "cash cow" in the Russian economy, it is very likely that financial pressure on the sector will increase, undermining future investments and further postponing tax reform.

Discussions about altering the Russian oil taxation system have been ongoing for more than a decade, and long-awaited tax reform has been postponed many times. The current and overwhelming government need for more revenue means the long-term strategy to reform will give way to the short-term interest of revenue maximization. This is happening already: in October 2015, the government froze oil export duty, which was anticipated to decline in 2016, according to the Tax Maneuver,[18] and there are discussions on whether this freeze can be prolonged to 2017.[19] The Ministry of Finance has put forth a bill to increase the excise duty on gasoline and diesel,[20] and it is also proposing modifications of the existing Mineral Extraction Tax (MET) formula, which could bring additional revenues to the

15. Alex Fak and Valeriy Nesterov, "Russian Oil and Gas—Trimming the Belly Fat," Sberbank CIB Investment Research, February 2016.

16. Petrova, "Баррель, ножницы, бумага."

17. Prokopenko and Kuvshinova, "Правительство готовится сократить расходы бюджета 2016 года на 10%."

18. The "Tax Maneuver" is a complex change in oil sector taxation, which was designed to shift the focus from export duty to production in general. These changes included gradual reduction in the rate of export duty coupled with an increase in the basic rate of the Mineral Extraction Tax in line with the whole Eurasian Economic Union (EEU) synchronization process.

19. "Временные сборы с нефтяников рискуют стать постоянными," *OIL.Эксперт*, December 9, 2015, http://www.oilexp.ru/news/russian_rinok/vremennye-sbory-s-neftyanikov-riskuyut-stat-postoyannymi/101028/.

20. Dmitriy Kozlov, "Акциз пошел на повышение," *Kommersant*, February 17, 2016, http://www.kommersant.ru/doc/2917992.

budget.[21] The gas industry is now also regarded as a potential source of additional taxes—simultaneously, the government announced an increase to the Mineral Extraction Tax starting from 2016 "for the companies with the right to export natural gas in a gaseous state" (i.e., for Gazprom).

Another opportunity to obtain revenue is the partial privatization of the state giants in the sector—Rosneft and Gazprom. In January 2016, the Ministry of Finance proposed to increase revenues by at least 500 billion rubles as a result privatization of 19.5 percent of Rosneft.[22] Yet it is doubtful that this privatization would be able to compensate for all missing revenues at this phase in the commodity cycle.

The fourth consequence is related to the fact that *low oil prices reduce financial sustainability of the Russian oil and gas companies and result in reductions of their investment plans and challenge implementation of large upstream and midstream projects*, such as Arctic offshore oil and gas development and liquefied natural gas (LNG) and large gas pipeline projects. In fact, without any official termination or freeze, many of these projects are already being implicitly postponed. In several of the most critical cases, the government is directly subsidizing "strategically important projects" out of the National Welfare Fund, though it is very difficult to understand the criteria for these decisions. For example, the Yamal-LNG project run by Novatek has received 150 billion rubles from NWF.[23] The largest application for state support came from Rosneft's request for 1.5 trillion rubles (or 30 percent of the NWF reserves), but the government ultimately rejected it. Nevertheless, Rosneft is receiving state support through other financial mechanisms, which are very nontransparent. Lobbying and access to Russia's top leadership is becoming more important for the companies' performance than ever.

The first victim of these investment cuts is exploration drilling, while operational drilling is suffering far less. As Sergei Donskoi, Minister of Natural Resources and Environmental Protection, pointed out, as of the end of 2015 the large oil companies reduced investments in exploration by 12 percent, and financing from the federal budget was also reduced by 20 percent. If oil prices remain low, expenses on geological exploration will be cut down first of all. Now the oil companies carry out stress tests, defining the price at which they will also start reducing upstream investments. Preliminary estimates show that the companies' plans are heterogeneous, but at $30 per barrel, many of them plan to reduce investments in exploration and production.[24] But in 2015, Russian companies did not demonstrate any serious upstream investment reductions; instead, they had been cutting exploration and downstream investments and asking that the planned tax hike on

21. "Повышение налога на добычу нефти принесет бюджету до 1 трлн рублей," *Vedomosti*, February 8, 2016, http://www.vedomosti.ru/economics/news/2016/02/08/627763-povishenie-naloga-dobichu-nefti.

22. "Силуанов предложил начать приватизацию с «Роснефти»," *Vedomosti*, January 16, 2016, https://www.vedomosti.ru/business/news/2016/01/16/624250-siluanov.

23. "Дворкович: Лимиты ФНБ близки к исчерпанию," Rosbalt, April 3, 2015, http://www.rosbalt.ru/main/2015/04/03/1385012.html.

24. Analytical Center of the Government of the Russian Federation, *Нефтедобыча: на грани снижения?*, Energy Bulletin 32, January 2016, http://ac.gov.ru/files/publication/a/7623.pdf.

fuel oil be postponed. In the upstream, however, there are no significant volume cuts, though the ruble depreciation is making investments look smaller in dollar terms.

Ruble devaluation (as the majority of costs is nominated in rubles) as well as peculiarities of the Russian taxation system (e.g., a progressive export duty scale, which means that the state is the main beneficiary of high oil prices and loses a significant part of its revenues at lower oil prices, while oil companies have nearly the same revenues)[25] help oil companies to partially soften the pressure, though it is insufficient to compensate for the revenue decline. In any case, they are already cutting down their investment programs (with more of these cuts expected in 2016): according to the Energy Ministry, major Russian oil companies have already postponed development of the new oil fields with total production capacity of 26 million tons per annum[26] (approximately 5 percent of the current oil output). These cuts will, in the long term, lead to a reduction in oil and gas production and processing and a slowdown in the renovation of the sector's capital assets, implementation of new technologies, and efficiency improvements through the whole supply chain. The Russian oil and gas sector will be frozen at its current technological level, while production figures will be lower than previously expected.

The fifth consequence of this unfavorable global market condition is the *accelerated reorientation of the Russian oil and gas export policy toward the East and increasing dependence on China*. Several factors make it quite clear that there is little hope for any significant export growth in the European market and justify Russia's main strategic priority to reorient its exports toward the East: stagnant or even declining gas and liquids demand in Europe; competition with Middle Eastern and African suppliers for share of the European market; the push toward spot indexation in gas pricing formulas and increased buyers' pressure to review long-term contracts; antitrust investigations against Gazprom; third-party access requirements for pipelines such as OPAL[27] and huge opposition against Russian pipeline projects; and Europe's desire to lessen its dependence on Russian energy supplies (which became even stronger as a result of geopolitical tensions between Russia and the West and the conflict over Ukraine, which affects the views on the security of Russian gas transit).

Cooperation with Asian partners, the most important of which is China, involves not just the issue of export supplies but also the problem of lacking investments, which Russia plans to partially resolve with the financial support of Asian companies. This strategy has not been very successful thus far. Nevertheless, it is strongly promoted by the authorities, demonstrating Russia's growing eagerness to harness Chinese funding to get energy projects off the ground. "Overall, we take a cautious approach to letting in our foreign

25. The Russian oil taxation system is designed in such a way that at an oil price above $25 per barrel, the state's take is over 80 percent. For example in 2016 at $30/bbl oil, the MET on most greenfields is just $2.3/bbl (against $6.1/bbl for conventional output), and the export duty is zero.

26. Ludmila Podobedova, "«Роснефть», «Газпром» и НОВАТЭК отложили ввод новых месторождений," RBC, November 8, 2015, http://www.rbc.ru/business/08/11/2015/563ccff59a7947d914eb3a14.

27. See "Минэнерго России: Энергетическая стратегия России на период до 2035 года (проект)."

partners, but we, of course, set no restrictions for our Chinese friends," President Vladimir Putin said in September 2014 as he announced an invitation by state-controlled Rosneft for China National Petroleum Corporation (CNPC) to invest in Vankor, one of its most prized oil fields located in east Siberia.[28] The government even gave consideration to allowing Chinese companies the opportunity to freely own controlling stakes in private and state-owned companies developing strategic fields. However, to do so required significant adjustments to existing Russian law. Moreover, Chinese companies did not respond to this appeal and until now are not demonstrating any strong enthusiasm. Several proposed deals have run into difficulty, including disagreement over the asking price and other terms, as well as complications from Western sanctions that prohibit long-term lending to Rosneft.[29] Indeed, Russia's bargaining position is not very strong in the current situation, and the Chinese are not in a hurry to develop additional near-term projects, so progress could be very slow.

Sanctions: Restricted Access to Investment and New Technologies

The impact of falling global oil prices and unfavorable global market conditions on the Russian economy is aggravated (and according to some conspiracy theories—which are very popular in Russia—even inspired) by the worsening geopolitical situation and the introduction of sanctions on Russia in 2014. The United States, European Union, Japan, Switzerland, and some other countries imposed sanctions against Russian individuals and entities in response to Russia's actions in Crimea and hostilities in eastern Ukraine. In particular, U.S. and EU sanctions companies in the United States and the European Union from providing (and transactions involving) financing for or otherwise dealing in new debt by major state-owned Russian banks and energy companies with maturity of more than 30 days. Sanctions also include a ban on exports of certain high-technology goods for use in the oil sector. According to IMF estimates, sanctions and countersanctions could initially reduce real Russian GDP by 1 percent to 1.5 percent,[30] while prolonged sanctions could lead to a cumulative output loss over the medium term of up to 9 percent of GDP, as lower capital accumulation and technological transfers weaken already-declining productivity growth.

In the short run, it is mainly *financial sanctions* that negatively impact Russia's economic growth via weaker investment and consumption. Russia is now facing unprecedented challenges related to financing availability and access to international loans, while its domestic financial market remain very weak. Sanctions have also introduced additional

28. "Путин: Участие китайцев в Ванкоре—на стадии проработки," *Vedomosti*, May 8, 2015, https://www.vedomosti.ru/business/news/2015/05/08/putin-uchastie-kitaitsev-v-vankore---na-stadii-prorabotki.

29. Jack Farchy and Kathrin Hille, "Moscow offers bigger stakes in energy projects to lure Chinese," *Financial Times*, May 5, 2015, http://www.ft.com/cms/s/0/4e712254-f1a1-11e4-88b0-00144feab7de.html#ixzz3qFzjtSTZ.

30. IMF, *Country Report No. 15/211 Russian Federation*.

pressure on industry and the population, thus reducing their demand and purchasing ability (alongside the recession).

In the oil and gas sector, Rosneft, Novatek, Transneft, Lukoil, and Gazprom Neft were very seriously hit. They now face very limited access to external capital. They have lost the ability to attract borrowed and shareholders' capital with repayment term over 30 days. This is especially painful, given the high corporate debt of Russian oil and gas companies and the need to repay loans regularly. These sanctions affect not only the companies on the sanctions list, but all Russian energy companies whose credit ratings have been lowered because of the sanctions. This has increased the cost of borrowing from the United States and European and Asian markets, since the financial institutions in these regions are also very cautious toward dealing with Russia and they are ready to take a risk only at a high price. If previously the companies were able to attract financing at an interest rate of 4 percent to 5 percent, now they can borrow only at rates closer to 12 percent to 13 percent.

Technology sanctions are less painful than financial sanctions in the short term, but in the longer term they could also lead to very serious consequences. These sanctions ban U.S. companies and their partners from other countries from supplying high-tech oil equipment to Russia without prior authorization. This applies to equipment used for deep water and Arctic oil exploration and production (in the Pechora Sea, Kara Sea, and Okhotsk Sea), as well as shale oil projects (e.g., the so-called Bazhenov rock development, which is a huge Russian shale oil formation). The following equipment is on the banned list: drilling units, horizontal drilling equipment, offshore drilling rigs to be used in the Arctic, software for hydraulic fracturing, remotely operated underwater vehicles, high pressure pumps, drill pipes and casing, equipment for industrial purification of natural gas, and a number of other units. As a result, many of these projects, which were under development in cooperation with the Western majors, are frozen (Table 1). The main reason is the lack of expertise, as well as special technologies and equipment that Russian partners do not have. However, any visible incremental production volumes from these fields were not expected before 2025—if not later—assuming the current oil price environment. The only example of a shorter-term affected project is the Yujno-Kirinskoe offshore oil and gas field at Sakhalin, which was expected to become a source of feed-gas for Sakhalin-2 LNG plant expansion targeted for 2017–2019 and which was added to the sanction list by a special decision of the U.S. Treasury Department in the summer of 2015.[31] The project is still under development, but its prospects are unclear.

Other current operational activities and drilling have not been seriously affected—the impact is mainly on long-term investment. Russian oil and gas output has not suffered; rather, oil production has increased slightly. But in the longer term, it is expected that without Western involvement (both investment and, even more important, technology), Russia will not reach its production potential.

31. "США распространили секторальные санкции на Южно-Киринское месторождение 'Газпрома,'" Interfax, August 7, 2015, http://www.interfax.ru/business/458865.

Table 1. Joint ventures (JVs) with participation of the Western companies in Russia, which were suspended or frozen due to sanctions

Project	*Participants*	*Description*	*Current state*
Prinovozemelskie blocks (the "Universitetskaya-1" well) in Kara Sea and Tuapse field in Black Sea	JV between Rosneft 51 percent and Exxon 49 percent	Exxon and Rosneft formed an alliance in 2011 to develop potentially huge but largely untapped reserves on Russia's Arctic shelf and in the Black Sea. The companies' joint oil drilling project was worth $3.2 billion. In September 2014, ExxonMobil and Rosneft made a major discovery of huge oil and natural-gas reserves after completing drilling on a well in the Kara Sea. However, in complying with the second round of sanctions enacted a few days before the discovery, Exxon put the $700 million project on hold and—for the time being—pulled out of the Russian Arctic.	Suspended
Two big blocks in the Barents Sea and the Val Shatsky field in Black Sea	JV between Rosneft 67 percent and ENI 33 percent	In 2012 Rosneft and ENI have signed a pact to jointly develop vast offshore reserves in Russia's Barents and Black Seas.	Suspended
Shale oil in western Siberia	JV between Rosneft 51 percent and Exxon 49 percent	This joint venture was supposed to drill for selected Rosneft license blocks in western Siberia in the RN-Yuganskneftegas activity area, including the Bazhenov and Achimov reservoirs. The project's pilot phase provided for the drilling of 30 wells at a total cost of $300 million. The partners chose horizontal drilling with multistage hydrofracturing as the primary testing technology.	Suspended
Domanik shale formation in the Samara region	JV between Rosneft 51 percent and Statoil 49 percent	The joint venture was supposed to conduct a three-year pilot program to assess the potential for commercial success held by the Domanik shale. Statoil was also planning to perform a pilot survey for 12 license blocks, set to include data acquisition and drilling and fracking of pilot wells. JV has agreed to drill at least six exploratory wells in the region through 2021.	Suspended

(*continued*)

Table 1. (cont.)

Project	*Participants*	*Description*	*Current state*
Domanik shale formations in Central Russia's Volga-Urals region	JV between Rosneft 51 percent and BP 49 percent	The plan was to jointly explore for Domanik shale oil in the Volga-Urals region of central Russia. BP was supposed to compensate part of the historical costs to Rosneft for exploration of the Domanik formation and to provide carry financing of up to $300 million for the pilot program in the Orenburg region.	Frozen
Bazhenov rock development in Khanty-Manssiisk district	JV between Total and Lukoil	The companies were planning joint exploration activities at three shale oil blocks in the area: Vostochno-Kovensky, Tashinsky, and Lyaminsky in Khanty-Manssiisk district, spending $120 million to $150 million.	Total transferred its share in the project to Lukoil
Salym project (Bazhenov): pilot production at Bazhenov, Abalak, and Tyumen formations	JV between Shell 50 percent and Gazprom Neft 50 percent	The companies planned to drill five exploratory wells in the Bazhenov, Abalak, and Tyumen formations in 2015. Large-scale drilling was scheduled for 2017–2018.	Shell has suspended work on the project

Sources: Companies' announcements.

After 2025–2030, these offshore and unconventional resources were supposed to compensate for declining production from existing fields. If new sanctions are introduced, they could lead to much more severe consequences. This very fact is itself increasing nervousness and uncertainty,. Russian oil and gas companies seem to be rather pessimistic concerning the duration of the sanctions. They are preparing to survive in this new environment and looking for other opportunities to acquire the technologies and financing necessary for their operations.

Of course, as a reaction to technological sanctions, the government immediately started to promote and support a massive program of import substitution. But development of these technologies and, even more important, their implementation, may take 5 to 10 years, leaving Russia exposed to very high risks during this period. The most difficult situations are with offshore technologies, where the share of some imported equipment is up to 90 percent, and with enhanced oil recovery, where it reaches up to 95 percent (Table 2). While the first trend pertains mainly to long-term incremental production, the second is supposed to slow down oil production decline in the existing fields in western Siberia and the Volga-Ural region in the short to medium term.

Table 2. Main direction of the import replacement in the oil and gas industry

Technology	*Share of import in 2014*	*Maximum planned share of import in 2020*
Oil and gas machine building and services		
Technology, equipment, and services for the operational wells, enhanced oil recovery	67–95 percent	50–80 percent
Technology and equipment for slant hole directional drilling, horizontal drilling, and drilling of the multilateral wells	60–83 percent	45–60 percent
Technology and equipment for offshore projects	80–90 percent	60–70 percent
Technology and equipment for geological exploration	40–85 percent	30–70 percent
Services in oil and gas sector	40–92 percent	30–75 percent
Liquefaction of natural gas		
Technologies for natural gas liquefaction	50–67 percent	40–55 percent
Oil refining		
Catalysts for the refining basic processes	60–100 percent	20–45 percent

Source: Analytical Center of the Russian Federation, Energy Bulletin 27, August 2015.

The oil and gas services sector seems to be another problematic area. Western companies—the likes of Schlumberger, Halliburton, and Baker Hughes—provide the vast majority of oil field services at Russia's most technically challenging projects. While techniques such as hydraulic fracturing and horizontal drilling are associated with shale, they are also widely used to maximize production from more conventional oil fields with pockets of oil held in harder-to-access rock formations. A broader retreat by Western service companies is deeply concerning for Russia's oil executives who are now responsible for all horizontal drilling and hydraulic fracturing. The drilling itself can be accomplished by Russian companies (such as EDC) and access to the right rigs is not very problematic. The main difficulty is in obtaining the right kind of real-time data interpretation and drill-bit steering technology to optimize drilling and production. These technologies are largely cornered by Western service companies.

Russian firms also cannot provide the necessary proprietary equipment for hydraulic fracturing. Fracking involves the pressure-pumping of water into a well to crack the hydrocarbon formation, and the injection of a "slurry" (fluid with a proppant, such as sand or ceramics, as well as guar gum and acid) to propagate and develop the fracture. Domestic companies lack the technology for the multistage hydraulic fracturing that allows several such injections through the length of the horizontal well bore using a single drill string, cutting the time required several-fold and saving materially on costs. The most important of these technologies is the complete integrated computer and database systems to optimize fracking operations systems that determine how many fractures to make, and where

Box 1. Technologies and Services for Russian Oil and Gas

Two technologies that have become more difficult to access are used to make drilling more effective: measurement-while-drilling (MWD) essentially steers the drill bit through the formation to capture the better part of the pay zone, while logging-while-drilling (LWD) measures the formation in order to give some idea of the well's performance. Crucially, both of these relatively new tools allow measurement and adjustment to take place during drilling without stopping the process itself. That makes them especially useful when drilling expensive horizontal wells. In fact, both technologies have grown in popularity with the increase in horizontal drilling in Russia. Both kinds of procedures, especially logging, need specialized equipment that can send data via the drill string while withstanding high temperature and pressure. As for LWD, the top-four Western players seem to have cornered the market for this equipment. MWD appears to be a more accessible technology. Western providers' involvement in the higher-end part of the MWD/LWD business is clearly seen from the fact that they have captured 80 percent of open market's revenues in Russia.

Russian companies could learn these techniques and perhaps even acquire some of the equipment. Integra and Burintex are two Russian firms already offering both services. So why are Russian competitors not winning greater market share, given that they seem to offer their services at a significantly reduced price relative to their Western counterparts? The answer lies not just in technology. The biggest difference between the Western majors and the Russian providers (or indeed the Russian oil companies themselves) is that the Western majors collect, preserve, and analyze all of the information that they receive over the course of a job, going back for decades—something that Russian companies have never been careful to do. This allows Western majors to tailor the services they provide for maximum efficiency, based on an evaluation of how similar formations have behaved.

Alex Fak and Valeriy Nesterov, "Russian Oil and Gas—Brave New World," Sberbank CIB Investment Research, November 2014.

exactly along the horizontal stretch. While CAT Oil, for instance, can do the job itself, it needs that type of system, which is offered in Russia exclusively by U.S. or Canadian companies. A more mundane consideration is that there are not even producers of strong enough pumps for multistage hydraulic fracturing in Russia. The Russian Fracturing Company (RFK), the only domestic producer of such equipment, offers aggregates whose gas-fired pumps appear to be just one-tenth the strength required for multistage fracking.[32] This is why Lukoil's CEO Vagit Alekperov has identified hydraulic fracturing as the weakest

32. Fak and Nesterov, "Russian Oil and Gas—Brave New World."

link for Russian oil production and one sphere where the U.S. sanctions could hit the hardest.[33]

One of the attempts to bypass the sanctions is the declared "pivot to the East": Russian companies are looking to Asia (primarily China and India) for equipment supplies and financing. So far, their technological involvement is very limited, as these companies for the most part do not possess these technologies themselves. The only exception is the announcement made by Rosneft that China Oilfield Services Limited (COSL) will drill two offshore exploration wells for its joint project with Norway's Statoil in the Far Eastern Sea of Okhotsk in 2016.[34]

On the financial side, Asian countries are also quite cautious, preferring not to risk their relationship with the United States: no one wants to experience $20 million fines for each violation and up to 30 years in prison for executives who made the decision to violate sanctions (not to mention U.S. lawyers' fees). So far, Asian counterparts were slow to deliver agreed-on financing to Russian oil and gas companies in exchange for equity shares in certain key projects: Novatek's Yamal-LNG, where two Chinese companies—China National Petroleum Corporation (CNPC) and Silk Road Fund (SRF)—now control nearly 30 percent,[35] and the deal between Indian Oil and Natural Gas Corporation Limited (ONGC) and Rosneft in 2015, where ONGC would pay $1.27 billion for a 15 percent stake in Vankor oil field.[36] Rosneft has also received a reported $16 billion from an unknown source (most likely China's CNPC), which helped the company to stabilize its finances.[37] This is understood to be a down payment on oil supplies under the existing 25-year contract between the Russian and Chinese parties. To be fair, it is worth noting that all of this funding came with a huge delay relative to Russian expectations.

There are several other projects under discussion with the Chinese (Table 3), but as the *Financial Times* has reported, "despite the inevitable smiles and handshakes, Chinese oil companies show no rush to invest in Russia, and energy deals between the two countries—the world's largest energy exporter and its top consumer—have been slow to materialize."[38]

In the short term, sanctions are not likely to have a strong impact on oil or gas development, but over time they may exacerbate the existing problems associated with declining production from inexpensive-to-produce Soviet-legacy resources and depleting financial resources. In the long term, if sanctions stay in place, Russia will most likely not be able to

33. Alexander Panin, "Western Sanctions Could Damage One-Fifth of Russia's Oil Production," *Moscow Times*, September 21, 2014, http://www.themoscowtimes.com/article.php?id=507474.

34. Reuters, "Russia's Rosneft Says China's COSL to Drill Offshore Oil Wells," *Rigzone News*, September 2, 2015, http://www.rigzone.com/news/oil_gas/a/140411/Russias_Rosneft_Says_Chinas_COSL_to_Drill_Offshore_Oil_Wells#sthash.nFnyw2U9.dpuf.

35. "Путин одобрил покупку 9,9% «Ямал СПГ» китайским Фондом шелкового пути," *Forbes*, January 29, 2016, http://www.forbes.ru/news/311589-putin-odobril-pokupku-99-yamal-spg-kitaiskim-fondom-shelkovogo-puti.

36. Anatoliy Djumailo, "Индия идет на Ванкор," *Kommersant*, November 2, 2015, http://www.kommersant.ru/doc/2845836.

37. Alina Fadeeva, "«Роснефть» получила 1 трлн рублей авансов," *Vedomosti*, November 15, 2015, http://www.vedomosti.ru/business/articles/2015/11/16/616923-rosneft-1-trln.

38. Farchy and Hille, "Moscow offers bigger stakes in energy projects to lure Chinese."

Table 3. Russian-Chinese cooperation in oil and gas sector

Company	*Project*	*Expectations*	*Current status*
Rosneft	Vankor oil field in eastern Siberia	In 2014, CNPC signed framework agreement to buy 10 percent stake.	Talks stalled over the estimated price of $1.2 billion to $1.4 billion.
Rosneft	Taas Yuriakh oil project in eastern Siberia	In 2013, CNPC signed memorandum to get a 49 percent stake.	BP holds 20 percent; Skyland Petroleum may buy up to 29 percent stake. The stake could be valued at up to $1.9 billion So far, the deal has gone nowhere.
Rosneft	Oil supplies to Sinopec	Under memorandum, Sinopec was expected to get 10 million tons per year from 2014 under prepayment.	Supplies did not start. Yearly sales were seen at $8.5 billion.
Rosneft	East Siberia–Pacific Ocean spur pipeline expansion	Capacity was expected to reach 20 million tons by 2015 from 15 million tons.	Spur expected to pump 16 million tons in 2015 as China failed to expand its part of pipeline. Rosneft supplies some additional volumes via Pacific port of Kozmino.
Rosneft	Tianjin refinery in China, annual capacity 16 million tons	Rosneft holds a 49 percent stake, CNPC has 51 percent. First expected in 2015 with capacity of 13 million tons per year.	In May 2014, Rosneft and CNPC agreed to launch refinery in late 2019. Joint investments were planned at $5 billion.
Rosneft	Offshore deposits in the Pechora and Barents Seas; onshore deposits in Irkutsk, Krasnoyarsk, and Nenetsk regions	Rosneft, CNPC discussed cooperation in 2013.	No update.
Gazprom	Gas supplies to China of 68 billion cubic meters (bcm) per year, via two routes: Eastern (38 bcm) and Western (30 bcm)	First supplies were expected in 2011.	Eastern route, Power of Siberia, expected to start supplies at the end of 2018, start of 2019. Western route, Altai (Power of Siberia-2), still pending firm contract. Eastern route project costs estimated at $55 billion. Analysts estimate Altai costs at up to $20 billion.
Novatek	Yamal LNG, full capacity 16.5 million tons per annum (mtpa), total investments $27 billion	Chinese banks were expected to provide up to $20 billion by year-end 2014.	Novatek-led Yamal LNG expected to clinch deal to get over $13 billion from Chinese investors by mid-2015, but Chinese-led financing package has been delayed several months.

Source: "TABLE-Energy cooperation between Russia and China," Reuters, August 27, 2015, http://in.reuters.com/article/2015/08/27/russia-china-results-idINL5N10Z2JF20150827.

develop its offshore and unconventional resources, implement enhanced oil recovery, or develop an LNG industry. Generally speaking, any large-scale projects requiring international financing and expertise will be off the table.

Perhaps more profoundly, the introduction of sanctions is changing the underlying trends in energy sector organizations in Russia. In 2012–2013, there were many expectations concerning increasing cooperation with the foreign majors (led first of all by Rosneft and its deals with ExxonMobil, ENI, Statoil, etc.). But in 2014, with a changing geopolitical environment, partnerships with international oil companies (IOCs)—which had good chances before—became unfeasible. This was true for the IOCs because of the sanctions risk, but then, increasingly, for the Russian authorities as well. Even partial privatization of some large state-controlled companies (like Rosneft), which was under discussion for several years and assumed initially large-scale participation of the Western majors, now seems to be directed more toward new foreign players (like Chinese and Indian companies).

Implications of Expanding Regional Ambitions: Eurasian Economic Union

One additional external factor that is frequently underestimated, but which has already started to play an important role in shaping Russia's policy in the oil and gas sector, is a new regional cooperation organization called the Eurasian Economic Union (EEU), which was created on January 1, 2015. The Russian government places high hopes on integration within the framework of the EEU.[39] Russia, Kazakhstan, Belarus, Kyrgyzstan, and Armenia have become members, and not just neighboring countries have shown interest in an economic union: Vietnam, Iran, India, and Egypt are among potential partners. The EEU is aiming for synchronization of the taxation and market regulatory systems in order to remove barriers to trade.

One of the main goals of the EEU in the oil market is to create a single market for crude and petroleum products by 2025.[40] The agreement on an oil market envisions a single pricing mechanism for petroleum products for all members of the union and agreed export routes, though at the moment the relevant countries have not reached consensus on the long-term vision of this single market. Creating a single market for petroleum products will have both positive and negative consequences for Russia. An increase in the export of petroleum products to EEU member countries is one of the positive effects, as it would partially offset declining exports to Europe. However, a potential oversupply of petroleum products in the market could drive down prices. In turn, this would negatively affect the profits of oil companies and budget revenues from exports. Moreover, several quite

39. Eurasian Economic Union, http://eaeunion.org/?lang=en.

40. "Коллегия ЕЭК одобрила проект Концепции формирования общих рынков нефти и нефтепродуктов ЕАЭС," Eurasian Economic Commission, November 25, 2015, http://www.eurasiancommission.org/ru/nae/news/Pages/25-11-2015.aspx.

painful changes in Russian oil industry taxation occurred recently as a result of these EEU agreements, such as the Tax Maneuver (in order to synchronize taxation procedures with the other EEU member countries), and even more changes could be seen in the future. For Russia, however, this is such a politically important project that many significant interests in the oil and gas industry could be sacrificed in ensure its implementation.

The concept of a single gas market was approved in February 2016, and envisaged the creation of a single gas market, opening access to national transportation networks to all EEU member states and spot trade development over the whole Eurasian space by 2024.[41] Therefore EEU dynamics could significantly affect Russia's oil and gas market regulatory framework in the future.

Shifting Domestic Institutional and Regulatory Framework

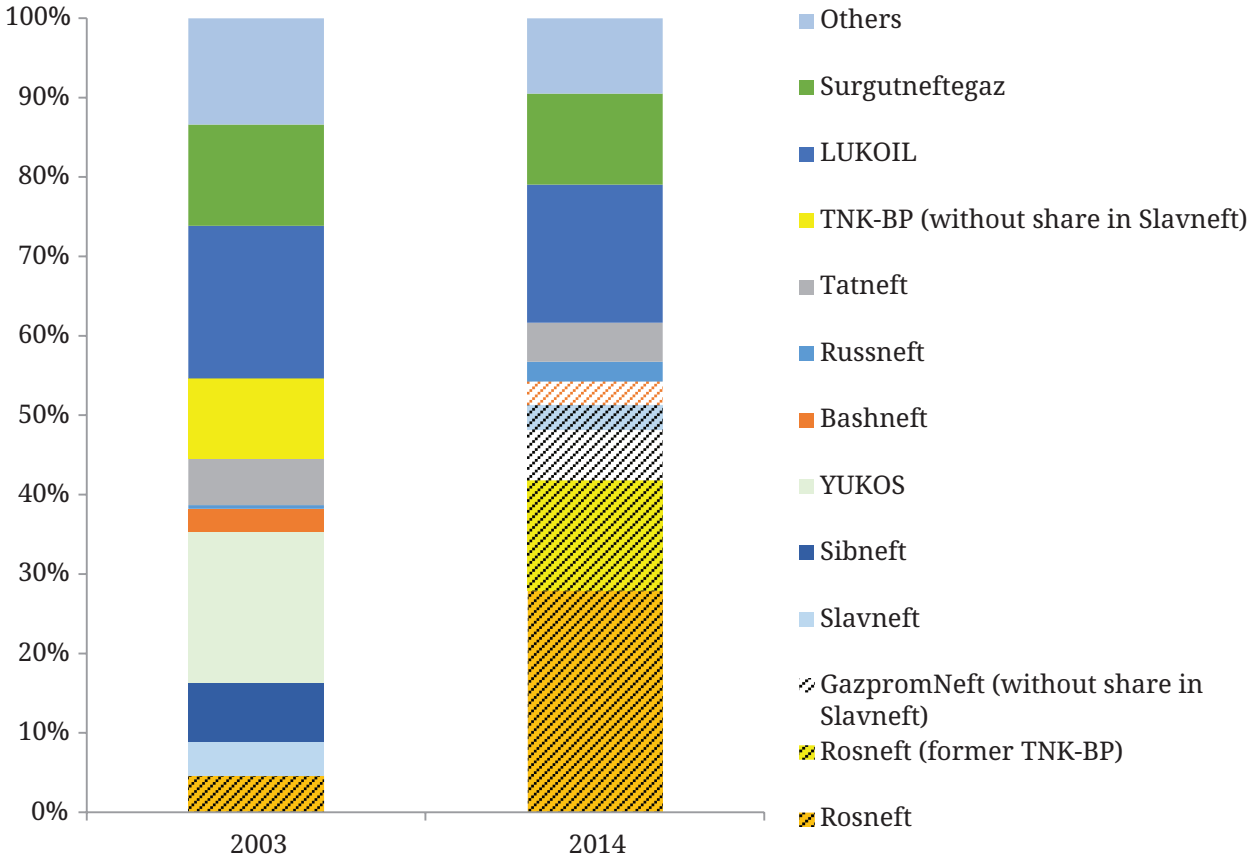
INDUSTRIAL STRUCTURE AND COMPETITION

Even beyond the current unfavorable market conditions and the sanctions regime, the Russian oil and gas sector has been strongly undermined by its own distorted institutional framework, which has reached critical levels of inefficiency. This sector has experienced a dramatic transformation in its corporate structure during the last two decades with, rather surprisingly, the oil and gas industries undergoing changes that differ markedly from one another.

In the 1990s, the Russian oil sector was privatized and deregulated, and following a very controversial transitional period, all of Russia's key oil production assets found themselves concentrated in the hands of private corporations such as Yukos, Sibneft, Lukoil, and Surgutneftegaz. These became world-class vertically integrated oil companies (VIOCs), while state-controlled Rosneft accounted for less than 5 percent of the country's oil production. In the last decade, however, new trends have begun to emerge, with the oil sector gradually becoming increasingly dominated by state-controlled companies (above all Rosneft). This process started in 2003 with the Yukos case, when the government for the first time showed its increasing interest in controlling oil revenues. Introduction of the "strategic fields" concept in 2008 marked a new era in the Russian oil sector, by giving state-controlled companies priority access to the most attractive hydrocarbon resources. This strategy was strengthened by the personal ambitions of Rosneft's CEO Igor Sechin, who has been consolidating assets in Rosneft since 2004, turning it into Russia's national champion. After a series of acquisitions (initially assets from Yukos, then from TNK–BP), Rosneft's share of total Russian production reached 40 percent in 2014. Gazprom's oil assets were consolidated in Gazprom Neft, while following Rosneft's acquisition of TNK–BP, Slavneft effectively become a completely state-controlled asset, as it is now half owned by

41. "Совет ЕЭК одобрил Концепцию формирования общего рынка газа ЕАЭС," Eurasian Economic Commission, February 12, 2016, http://www.eurasiancommission.org/ru/nae/news/Pages/12-02-2016-2.aspx.

Figure 2. Oil production in Russia by company, 2003 and 2014



Sources: Companies' data, Rosnedra, the Energy Research Institute of the Russian Academy of Sciences (ERI RAS).
Note: Cross-hatching denotes state control.

state-controlled Rosneft and half by state-controlled Gazprom Neft. Moreover, in the end of 2014 the stake of Bashneft, held by Russia's multi-industry holding AFK Sistema, was nationalized. As a result, *the proportion of state-controlled oil production has increased more than 14-fold to 57 percent over the past ten years* (Figure 2). At the same time, the share of the smaller independent oil companies, which are normally the main drivers of innovation, agility, and entrepreneurship in the oil industry, is just 4 percent. The increasing level of Russia's oil industry concentration and state involvement is making it slower to adapt, innovate, and compete.

In the medium term, the share of the private companies will probably further decrease, as state-controlled giants are likely to remain the main engines of oil production, bolstered by special state support. This is especially true of Rosneft, despite its rather risky financial strategy.[42] The Russian government has been pushing toward further centralization of the

42. Rosneft has accumulated huge debts as a result of its risky strategy of mergers and acquisitions, merging too many assets and engaging in extremely expensive investment projects. Chinese down payments are then used for the new acquisitions. See Boris Grozovsky and Irina Malkov, "Чем стратегия «Роснефти» похожа на финансовую пирамиду," *Forbes*, June 28, 2015, http://m.forbes.ru/article.php?id=241387.

economy, with an increasing role for the state "in the face of external enemies" (i.e., Western sanctions). The Russian oil sector might therefore see a further increase of state involvement together with further consolidation. Private companies, like Lukoil, have already experienced harsh competition and conflicts with Rosneft, fighting for attractive assets in a very aggressive way (e.g., the Vostochno-Taimirskiy block and the Trebs and Titov fields). Generally speaking, there is less money and opportunity available for private companies. Moreover, after receiving money from CNPC, Rosneft has announced that it plans to undertake ambitious investment projects and new acquisitions.[43]

Though the decision to sell shares of Rosneft was announced in February 2016 to cover the budget deficit,[44] the company would still remain under strong state supervision. Currently the state controls 69.5 percent and BP owns 19.75 percent of Rosneft shares. The plan is to privatize 19.5 percent of the company, bringing state ownership to 50 percent plus one share. According to President Vladimir Putin, "New owners of privatized assets must have Russian jurisdiction." Buyers of privatized assets won't be able to finance deals with loans from state-run banks" and any sales "must take account of market conditions."[45]

In contrast to the oil industry, the infrastructure-dependent gas industry (regarded as a "natural monopoly" and as critical for the energy security of the country) was consolidated in the 1990s into a huge state-controlled holding company, Gazprom—which includes gas exploration and production, pipeline transportation, and gas sales in domestic and external markets—in order to concentrate resources in the painful period of nonpayments and investment deficit. The gas industry for a long period remained an island of regulated Soviet-type monopolistic structure and has demonstrated all the disadvantages and inefficiencies of state monopolistic power. Gazprom was announced as the "guaranteeing supplier," responsible for gas supplies to domestic consumers. Although the law stipulated that the gas transmission and distribution network owner is obligated to grant access to its systems if "there is free capacity available,"[46] the access of non-Gazprom producers to the pipeline system was a huge problem in the 1990s and early 2000s, as Gazprom could refuse transportation services for technical reasons and prioritize its own supplies. By that time, Gazprom controlled 94 percent to 95 percent of total Russian gas output (Figure 3). There were several independent gas producers (Itera, Novatek), but their role in the market was insignificant. Yet during the last decade, in contrast to trends in the oil industry, the gas sector started to see increasing competition, which is mainly driven by Rosneft.

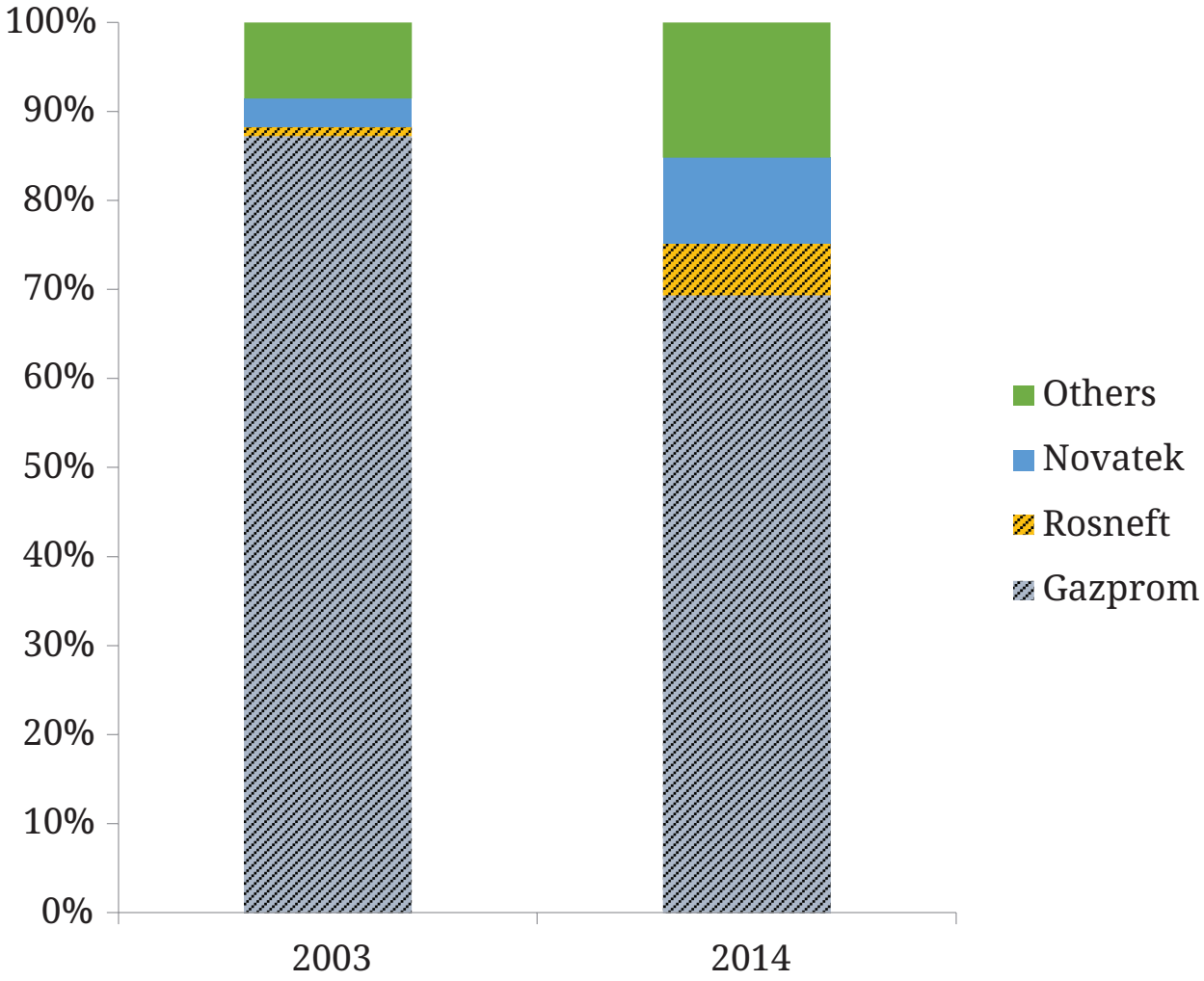
43. "Российские нефтяники меньше зарубежных компаний пострадали от дешевой нефти," *OIL. Эксперт*, December 28, 2015, http://www.oilexp.ru/news/russian_rinok/rossijskie-neftyaniki-menshe-zarubezhnykh-kompanij-postradali-ot-deshevoj-nefti/101630/.

44. "Decision on Russia's Rosneft privatization taken—minister," Tass, February 20, 2016, http://tass.ru/en/economy/858002.

45. Ilya Arkhipov and Andrey Biryukov, "Putin Opens Asset Sales to Foreigners as Budget Gap Widens," *Bloomberg*, February 2, 2016, http://www.bloomberg.com/news/articles/2016-02-02/russia-says-state-asset-sales-will-be-open-to-foreign-investors.

46. Regulation No. 858, "On the Provisions for Access of Independent Enterprises to the Gas Transportation System of JSC Gazprom," approved by the Russian Federation Government, July 14, 1997.

Figure 3. Gas production in Russia by company, 2003 and 2014



Sources: Rosstat, ERI RAS.
Note: Cross-hatching denotes state control.

The situation began to change when the expansion of the domestic gas network removed transportation capacity constraints, with Gazprom limiting production volumes due to lower domestic and external demand after the global financial crisis of 2008–2009. Gazprom has had to fundamentally reduce its activities and has gradually started to lose ground to Novatek, Rosneft, and other independent gas producers, which increased their share in Russian gas production from 15 percent in 2008 to 33 percent in 2014. There has been huge growth in the number of contracts awarded to non-Gazprom producers by major industrial gas consumers, assisted by their right to sell gas at nonregulated prices. In recent years, these companies have been offering a 3 percent to 10 percent discount on the regulated prices set by the Federal Tariff Service (FTS), while Gazprom is obliged to sell gas at regulated prices without any discounts. As a result, by 2015 non-Gazprom producers already control nearly half of the domestic gas market supplies. They are no longer complaining about the pipeline access, but mainly about nontransparency of transportation

tariffs and access to underground storage and, most importantly for them, to export markets.

Currently, demand constraint and a less profitable domestic market with frozen gas prices are further distorted by gas oversupply. Ambitious upstream plans of non-Gazprom producers and the development of new production by Gazprom (first of all, the start of the giant Bovanenkovo field in Yamal) resulted in a huge gas bubble of approximately 150–170 billion cubic meters (bcm) on the domestic market, thus increasing tensions between producers. Nevertheless, it should be mentioned that this does not necessarily imply the formation of a competitive market—these companies are, in fact, creating regional monopolies. For example, Novatek accounts for nearly 100 percent of gas supplies to Russia's largest industrial area, the Chelyabinsk region. Rosneft, through its acquisition of Itera, has also secured the position of 100 percent gas supplier for the Sverdlovsk region.

However, despite the rise of non-Gazprom producers, the regulatory framework is still designed predominantly for Gazprom, and there is a huge legal "gray zone" that creates numerous conflicts between the stakeholders. Both Gazprom and independent companies are dissatisfied and claim that their interests are ignored. Gazprom is trying to obtain the right to provide price discounts and expand gas sales at nonregulated prices at the Saint Petersburg International Commodity Exchange, while Rosneft and Novatek have initiated a massive campaign calling for gas market reform. Rosneft has even prepared its own "Concept of Gas Market," envisaging Gazprom`s unbundling, transition to spot pricing, and pipeline exports liberalization at a final stage by 2025.[47]

Right now, all gas market reform seems to be too risky, especially in the current geopolitical environment, so the government is clearly postponing any profound changes. Moreover, there is a huge and fundamental obstacle to any serious transformation as the Russian state itself is the major stakeholder in the national gas industry and has an extensive agenda regarding gas as an important domestic and international political tool. As long as this remains the case, the authorities will need a state-controlled company to perform the functions of guaranteeing supplies to depressed regions and nonpaying customers, providing low gas prices that are affordable to industry and the population, and cross-subsidizing these social functions and geopolitical, export-oriented projects with the help of exclusive export revenues. In the longer term, Gazprom could face some regulatory changes and further unbundling with partial privatization, but the gas market is unlikely to see profound reform.

Thus real gas market reform is not advancing, but Rosneft is not giving up. It has already managed, together with Novatek, to put a crack in Gazprom's LNG export monopoly, allowing Rosneft and Novatek in. In December 2013, the "Gas Export Law" was amended

47. Michail Serov and Margerita Papchenkova, "«Роснефть» хочет разделить «Газпром» и полностью лишить его экспортной монополии," *Vedomosti*, July 23, 2015, http://www.vedomosti.ru/business/articles/2015/07/23/601845-rosneft-hochet-razdelit-gazprom-i-polnostyu-lishit-ego-eksportnoi-monopolii.

such that the right to export LNG was extended to companies that "operate on subsoil plots situated within inland seawaters, territorial sea, or continental shelf, having directly or indirectly at least 50 percent of state participation in their charter capital or having a license providing for the construction of an LNG facility," meaning that only Novatek and Rosneft have this right. However, the introduction of Western sanctions made this victory useless to Rosneft, as prospects of its joint project in Sakhalin with ExxonMobil are very questionable. Therefore Rosneft recently began to raise the prospect of liberalizing Eastern pipeline gas exports, demanding third-party access to Gazprom's "Power of Siberia" pipeline and even targeting West-oriented pipeline exports. Actually, assuming the price levels domestically and abroad, it makes much more sense for Rosneft and for Novatek to try to focus on the export markets, publicly demanding for complete export liberalization, but at the end of the day being quite happy even if they obtain just a part of export netback profit through the single export channel. The main problem with this plan is that both Rosneft and Novatek are under direct Western sanctions, which creates huge risks for them. Moreover, the government is not interested at all in creating gas-on-gas competition and the resulting fall in prices in Europe and Asia. Thus, the decision on export liberalization has also been postponed, though Rosneft and Novatek will certainly try to keep this discussion ongoing.

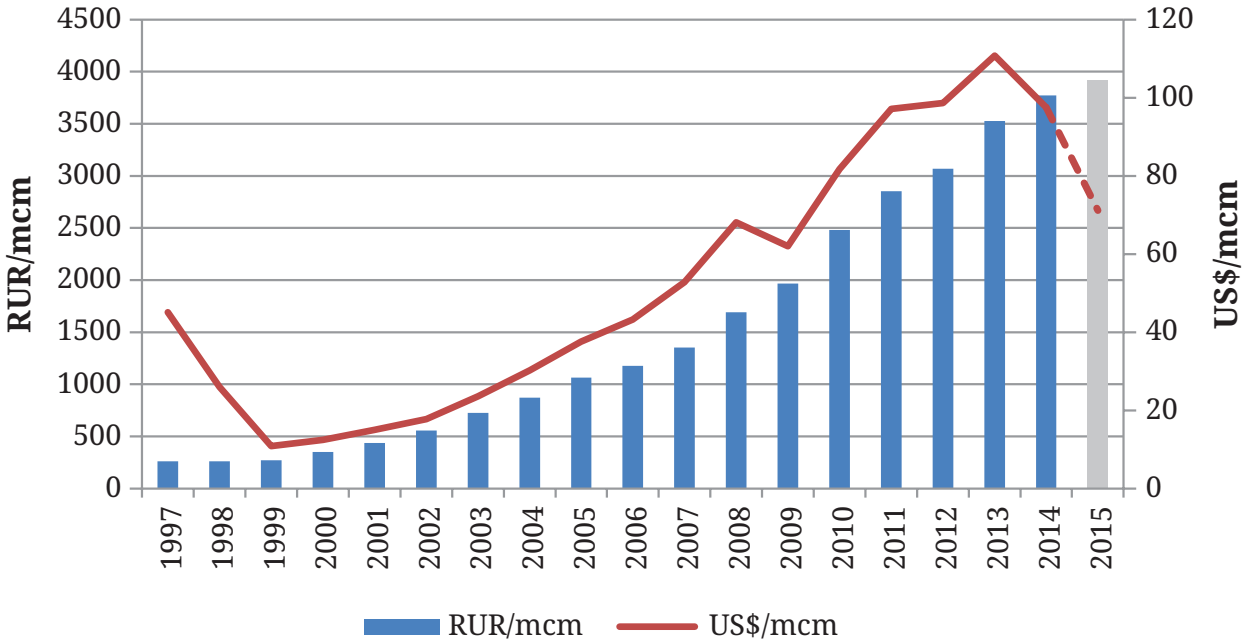
GAS PRICING AND MARKET REFORM

One of the most painful regulatory issues of the Russian oil and gas sector has always been the problem of gas pricing. As gas represents 53 percent of total Russian primary energy consumption, this question plays an enormous role not only for gas industry performance, but also for the power sector and for the whole economy, which is very much dependent on low gas prices.

From the very beginning of the Russian gas industry, it was established by Russian laws and government regulations that natural gas produced by Gazprom and its affiliates should be sold to domestic consumers at government-regulated prices. As a result, there were always artificially low prices in the domestic gas market. Such pricing policy stimulated consumers into maximum use of gas and made gas conservation unattractive. In 2002, with high demand and a looming gas deficit, the government decided to cancel the price freeze and started applying the "cap price" approach in combination with rapid indexation of prices (permitting increases of 20 percent to 25 percent per annum) in order to stimulate investment and energy saving. Moreover, under the agreements reached with the European Union on Russia's accession to the World Trade Organization (WTO), gas prices on the domestic market were to be brought up to a level where they fully cover all costs of the gas-producing companies, including the investment component needed for the industry's development.

In late 2006, a strategic decision was made in favor of accelerating the growth of domestic gas prices to ensure a phased transition to export netback levels—that is, equal

Figure 4. Russian domestic gas price dynamics in rubles and dollars since 1997



Source: Tatiana Mitrova and James Henderson, "The Political and Commercial Dynamics of Russia's Gas Export Strategy," Oxford Institute for Energy Studies, September 14, 2015, http://www.oxfordenergy.org/2015/09/the-political-and-commercial-dynamics-of-russias-gas-export-strategy/.

profitability of supplying gas to the domestic market and for exports,[48] ensuring gas price growth on the annual level of 15 percent to 25 percent until it reaches the netback level by 2011 (per a 2006 estimate). With the rise of the oil price this date was further postponed until 2015–2018. But in 2013, as negative processes such as deceleration of GDP growth, industrial production, and fixed investments became very strong, the Russian government finally decided to freeze gas prices, simply indexing them with the rate of inflation. As a result, the initial 2011 target date to reach netback parity was postponed to 2030–2035 (especially following ruble depreciation in December 2014, when prices expressed in dollars were halved back to the level observed in 2008; see Figure 4). Basically, Russia became locked in the framework of low state-regulated domestic gas prices. Such indexation, of course, will eliminate a significant share of gas producers' revenues from the domestic market and will force them in the longer term to reduce their investment program.

The Federal Antimonopoly Service started recently to promote an alternative idea to move from regulated to spot prices, referring to the prices of the Saint Petersburg International Commodity Exchange (see Box 2).

Currently, despite all the efforts from Novatek and Rosneft's side, the government is not developing any regulatory framework to unbundle Gazprom, which means—bearing in

48. Export price minus duty, transportation, and other costs relating to storage and sale is equal to Russia's netback price.

Box 2. The Russian Natural Gas Exchange

The first gas trades started in Russia in 2006–2008: there was a government-sponsored experiment that envisioned the sale of natural gas at free market prices at the electronic trading facility (ETF) of the Gazprom's sales division, PLC Gazprom Mezhregiongaz. Gazprom was permitted to sell up to 5 bcm of natural gas, as were all independent gas producers put together. With the expiration of the term of the experiment, ETF trade was terminated. Since then Gazprom and the government have been discussing new principles of exchange trade in natural gas. It took nearly six years to restart trading.

After nearly six years of hiatus, in October 2014 trades resumed at Saint Petersburg International Commodity Exchange. Planned volumes of gas trade were 35 billion cubic meters per annum (bcma), to be provided on equal basis by Gazprom and other producers. In reality, during the first year they hardly exceeded 5 bcm. Initially gas companies have taken this idea without much enthusiasm. After all, they understood that in the situation of a superfluous supply of natural gas, spot trading was likely to push the price down (which will serve as an additional argument for the government to freeze the price for a longer period). Indeed, gas prices at the Gas Exchange are 4 percent to 5 percent lower than the FTS-regulated gas price. But, on the other hand, during the summer 2015, when domestic demand dropped even further, gas producers (especially Gazprom) realized that the Gas Exchange could be the last hope for them to sell gas at least at any price (the alternative being to leave it in the ground). As a result, sales volumes have increased dramatically—up to 1.3 bcm in September (25 percent of the total sales during the first year of the trades). In October 2015, 1.6 bcm were sold, mainly by Gazprom, which is markedly changing its attitude toward the trades. For the company, which is not allowed to provide any price discounts, it seems to be the only way to protect its sales volumes and to provide competitive price to the customers. Thus, paradoxically, Gazprom has started to promote a more competitive pricing mechanism. There are many uncertainties concerning its future development, but spot pricing is becoming a more important component in the Russian gas market framework, and in the longer term it could be used not only for domestic pricing but also for gas exports—at least this is what some of Gazprom's public statements are suggesting.[1]

1. "'Газпром' создаст собственную биржу," Interfax, December 9, 2014, http://www.interfax.ru/business/411973.

mind the long period of time that would be needed to implement such a regulation—that this question is not on the agenda at least for the next few years. The government`s reaction is very cautious: it is frightened by the prospect of a transitional period when something might go wrong. These fears are understandable, taking into account the huge economic and political role of gas and its unique role as an internal and external policy tool.

Rosneft and Novatek continue their lobbying activity in order to have better access to underground storage and more transparent gas tariff setting, and Rosneft might even acquire the right to export gas via the Power of Siberia pipeline to China. Yet it seems that the gas market reform process would remain tactical, not strategic, driven by the desire to preserve balance of power between the major market participants, not for the purpose of building an efficient market system.

OIL TAXATION

Taxation is the key regulatory problem in the Russian oil sector. Tax reform has been under discussion for at least a decade, as the current system of volume-based taxation creates no incentives at all for modernization and for the development of smaller fields or hard-to-recover or unconventional oil. This did not matter much for several decades, when Soviet-legacy fields were providing sufficient production volumes and did not require any significant investments to maintain recovery rates. But now Russian oil production has reached its peak and its decline is increasingly plausible.

In 2013–2014, a number of tax incentives were introduced for new fields and difficult-to-extract oil reserves. These tax incentives include special reducing coefficients used in the MET formula, which reflect the degree of exhaustion of reserves, specific geological location conditions, and targeted tax benefits applied directly to specific projects—such as MET "tax holidays" for the fields in eastern Siberia, fields located north of the Polar Circle, the Azov Sea, the Black Sea, the Okhotsk Sea, the Caspian Sea shelf zones, and the Nenets Autonomous District. MET will be zero for oil produced in the Sakha Republic (Yakutia), in the Krasnoyarsk region, and in the Irkutsk region. This zero rate will also apply to ultra-heavy oil. Because of these measures, production decline has slowed in western Siberia. However, it applies only to a quite limited group of producing assets, failing to solve the overall problem. Tax preferences and numerous specific exemptions have become a typically Russian administrative way to deal with this problem, but at a certain point, they may not be sufficient. In 2016, according to Sberbank CIB Investment Research, 20 percent of Russian liquids output will enjoy one or more major operating tax preferences, rising to almost 30 percent by 2021 as new fields come online while legacy production declines.[49]

During the last decade, oil companies have promoted oil tax reform, arguing that taxing their revenues should be replaced with taxation of profits, which would create many more incentives for new investments and allow the removal of numerous exemptions. However, the Finance Ministry is strongly opposing this approach. In October 2015 at the Presidential Commission, it managed to postpone the reform until 2017.[50] The Energy Ministry and oil producers were promoting the notion of carrying out at least an experiment at a number of projects by taxing their financial returns, but now even this step is being questioned, as there is a huge conflict of interest between the Finance Ministry

49. Fak and Nesterov, "Russian Oil and Gas—Trimming the Belly Fat."
50. "Налоговой реформы три года ждут," *Kommersant*, September 29, 2015, http://www.kommersant.ru/doc/2842349.

trying to sustain tax revenues and the Energy Ministry trying to protect production targets and investment levels. The main argument used by the supporters of a profit-based tax is that the current system is aimed at taking away massive profits that no longer exist given the current oil price. They argue that maintaining the current regime could lead to a reduction in investment in the oil industry, which would negatively affect production. Those arguing against the profit-based tax point to potentially large budget revenue losses and the difficulty of tax administration in this case.[51] This discussion takes place in an environment of low oil prices and a large budget deficit—therefore it concerns not only the Finance Ministry, which holds a very conservative position, but the entirety of the country's leadership. The supreme arbiter in this discussion is President Putin himself, so without his political will, it is difficult to expect any decision. So far, he has been quite skeptical concerning profit-based taxes, and he says that this proposal requires further analysis. At the moment, therefore, the Finance Ministry is winning this battle.

Rather than facing changes to the government's fiscal approach, the sector faced a Tax Maneuver, adopted on November 14, 2014, that somewhat altered the rules of the game but absolutely did not amend the approach toward fiscal regulations in the oil industry. It was designed to shift the focus of taxation of the sector from levies on exports to production in general. These changes included a gradual reduction in the rate of export duties coupled with an increase in the basic rate of the Mineral Extraction Tax in line with the whole EEU synchronization process.[52]

These changes turned out to be not very harmful for the producers; thanks to the sharp fall in the ruble and a tax system that sees the government take a higher share of profits as prices rise, cash flows for Russian producers remained strong. Very soon the Finance Ministry, faced with a sharp fall in its own revenues, proposed to raise the tax take from the sector. President Putin endorsed the move, instructing the government "to work on channeling to the budget additional revenues of export companies, which they received thanks to the ruble devaluation." In 2015, oil companies managed to limit the state appetite by 200 billion rubles in taxes from the oil sector for the year 2016 rather than the 600 billion initially proposed by the ministry. This additional tax is imposed by maintaining export duties at 42 percent in 2016, though it was previously planned to lower them to 36 percent in 2016 under the Tax Maneuver (and it is likely that this freeze could be expanded further beyond 2016).[53] Most likely the direct impact of this tax change will be relatively minor, but the overall uncertainty of the taxation regime and fear of further tax changes will definitely further hurt investment.

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51. For example, I. Trunin, director of the department for tax and customs on tariff policy at the Ministry of Finance, stated that if a profit-based tax were introduced, federal budget losses could reach $44.4 million, according to initial estimates. "Минфин: Потери бюджета от перехода нефтянки на НФР могут достичь 2,8 трлн руб," Oil of Russia, March 17, 2015, http://www.oilru.com/news/452881/.

52. For more detail, see "Oil and Gas Tax Alert: Tax maneuver parameters and impact assessment," EY, December 2014, http://www.ey.com/Publication/vwLUAssets/EY-oil-and-gas-tax-alert-december-2014-eng/$FILE/EY-oil-and-gas-tax-alert-december-2014-eng.pdf.

53. "Временные сборы с нефтяников рискуют стать постоянными," *OIL.Эксперт*, December 9, 2015, http://www.oilexp.ru/news/russian_rinok/vremennye-sbory-s-neftyanikov-riskuyut-stat-postoyannymi/101028/.

Russian Oil and Gas Production and Exports in the New Conditions (2012–2015)

OIL PRODUCTION AND EXPORTS

There are very strong expectations that Russian oil production is approaching its peak. One of the main challenges for the Russian oil industry is the strong decline in the production rates of the existing oil fields in West Siberia, where more than 60 percent of Russian crude oil is produced. During the last five years in response to this challenge, Russian oil companies started to develop the eastern part of the country (Figure 5); cumulative growth of crude oil production here amounted to 88 percent in 2010–2014. This rapid growth was provided by the new exploration and production projects in this region, such as the Talakanskoe, Yurubchensko-Takhomskoe, Verkhnechonskoe, and Vankor oil fields. But to maintain production volumes, it is necessary to constantly introduce new fields into development. The situation is exacerbated by the fact that greenfields are currently located mainly in remote areas with severe climatic conditions and technical difficulties. Significant investments are therefore required to bring them into development.

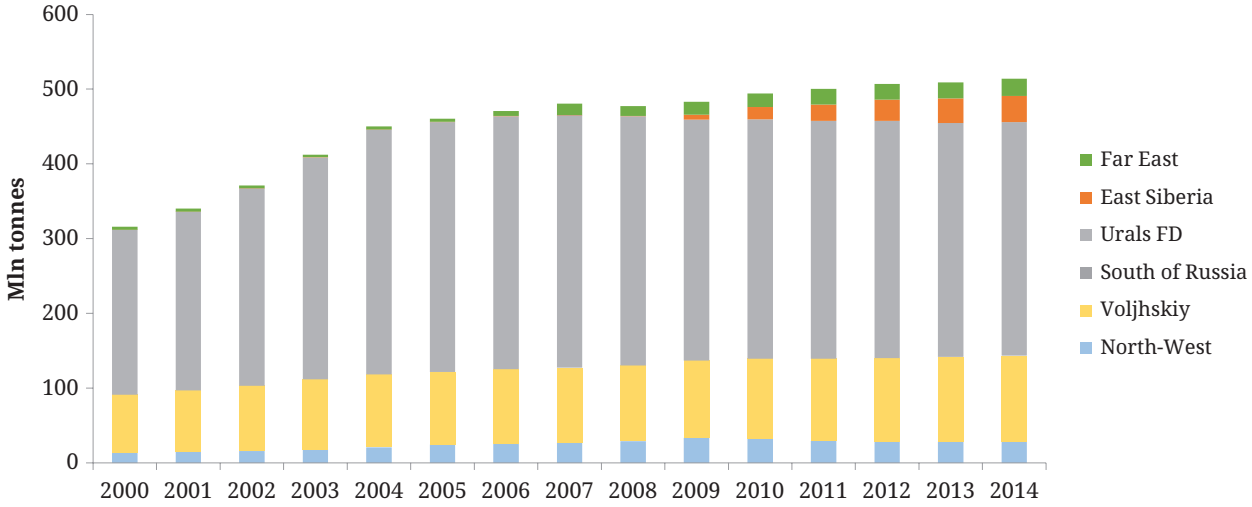
In 2014–2015, the brownfield production decline rate noticeably accelerated, as development drilling volumes dropped by 5 percent, reflecting the oil prices decline. Brownfield output declines were especially apparent at Rosneft, both in its legacy fields and those inherited from TNK-BP. By 2015 Russian oil companies found themselves in a truly difficult situation, and the decline in oil production seemed inevitable. However, industry statistics show quite paradoxical results: in 2015, Russian oil companies actually increased their oil output by 1.4 percent[54] instead of cutting it, as was expected (Figure 6).

This could be explained by several new factors that came into play at the end of 2014 and the beginning of 2015. First, production costs went down significantly, largely due to ruble devaluation from December 2014 to February 2015. Since Russian companies incur most of their costs in rubles and their exports are priced in U.S. dollars, this meant higher profits. In particular, salary costs nearly halved in U.S. dollar-equivalent terms, which was significant given that top management in Russian companies was among the most highly paid in the world. The same applied to the prices of metals, Russian equipment, domestic services, etc. Therefore, lower oil prices were fully offset by ruble devaluation, allowing Russia to keep costs competitive and even stimulate production.

The immediate impact of Western sanctions was also lower than expected. When sanctions were introduced, it seemed that a ban on importing hydraulic fracturing equipment would make the development of the fields in western Siberia, where production was slumping, much more difficult. The sanctions were also expected to cause serious difficulties for the development of new projects, as only a few dozen hydraulic fracturing operations out of 9,000 in Russia in a year used exclusively domestic equipment. However,

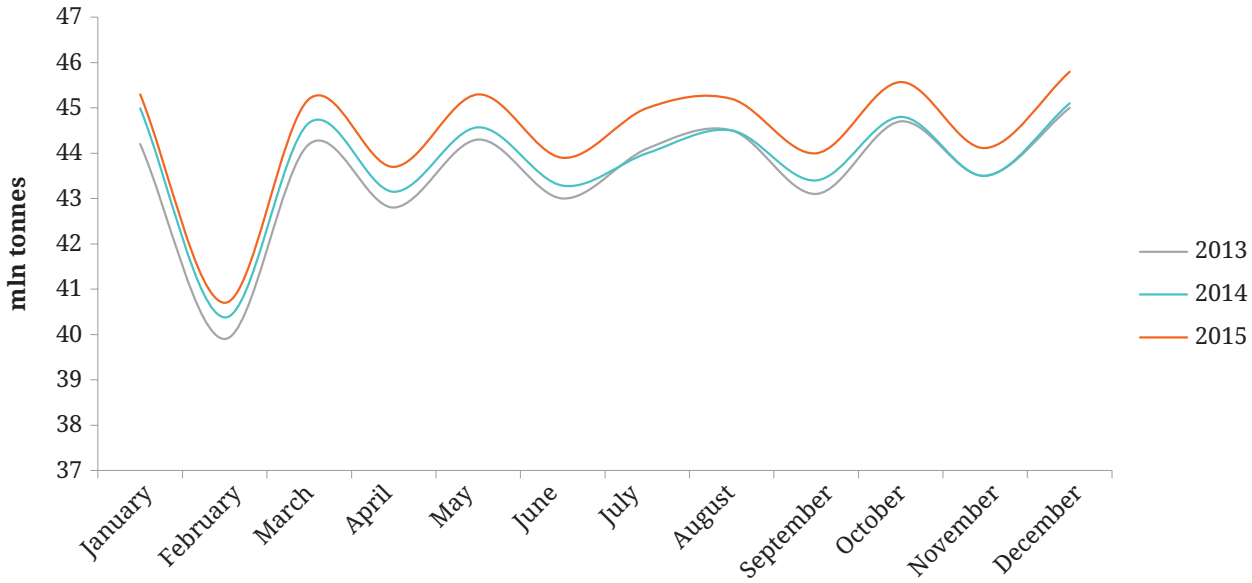
54. Timofey Dzyadko and Lyudmila Podobedova, “Конец изобилия: вырастет ли добыча нефти в России в 2016 году,” RBC, January 8, 2016, http://www.rbc.ru/business/08/01/2016/56796d749a7947023b992b1c.

Figure 5. Russian oil production by region



Sources: Rosstat, ERI RAS.

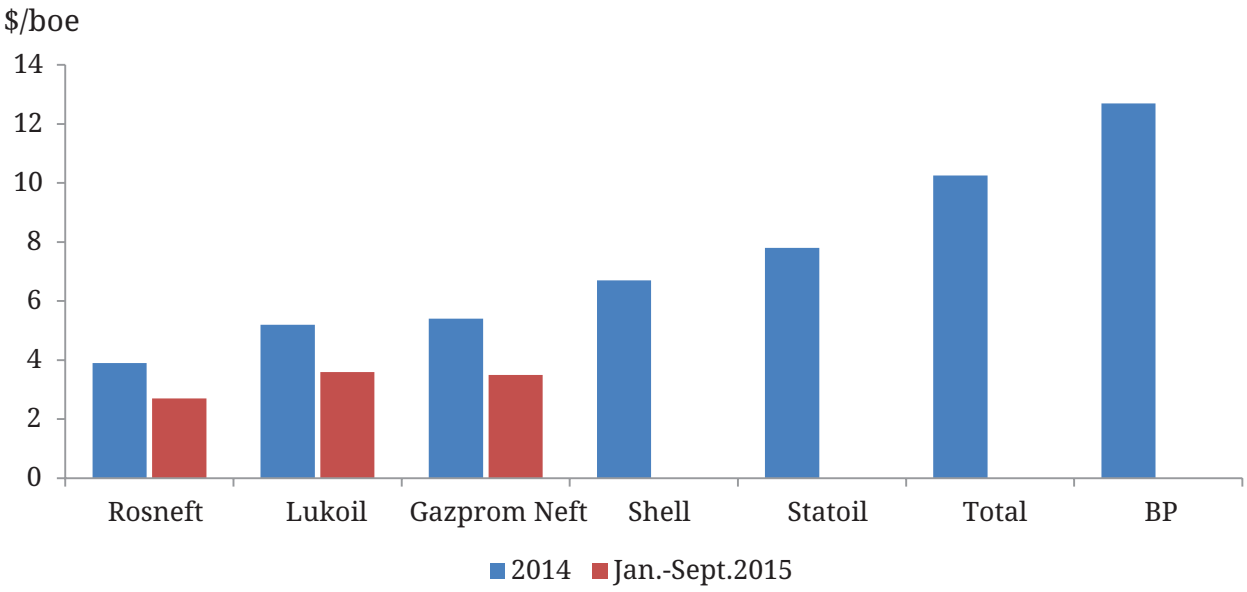
Figure 6. Monthly oil production in Russia in 2013, 2014, and 2015



Sources: Infotek, Central Dispatching Unit of Fuel Energy Complex (CDU TEK), ERI RAS.

sanctions were not imposed on the equipment required for one-stage hydraulic fracturing, with the ban applying only to multistage fracturing used for the development of the Bazhenov shale deposits. As mentioned previously, the development of these deposits is not critical for Russia to maintain relatively high output levels at least for a decade. One could also expect that in the medium term, Russian equipment manufacturers will be able to produce their own analogues for fracturing, which would eventually reduce the dependence of the Russian oil industry on imports.

Figure 7. Oil production costs comparison



Source: Dina Khrennikova, "Siberian Surprise: The Numbers Behind the Resilience," *Bloomberg*, December 20, 2015, http://www.bloomberg.com/news/articles/2015-12-20/siberian-surprise-the-numbers-behind-russia-s-oil-resilience.

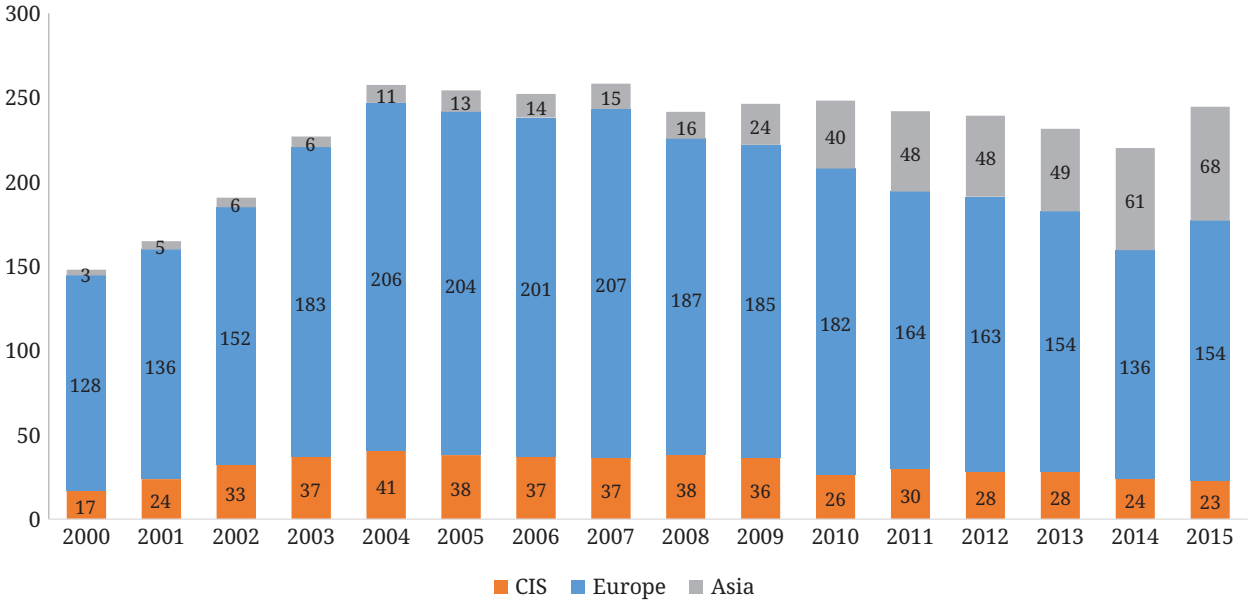
Another factor that has helped to sustain production volumes was an oil output increase in eastern Siberia. Nearly every field in this region has enjoyed tax concessions since 2013—its breakeven price is set at the level of specific OPEX+CAPEX (without tax payments that are often twice the amount of direct production costs). Therefore $30 to $50 a barrel is a relatively acceptable price, and even more so for the projects that have already been launched and will provide the main production increase in the period to 2020. Besides eastern Siberia, new oil fields are being prepared for production in other regions of Russia, although by 2018 the commissioning of new capacities is expected to slow down.

To summarize, ruble devaluation and tax concessions have significantly improved the situation of Russian oil-producing companies, contrary to the pessimistic expectations at the end of 2014. Sanctions have not proved as damaging, and Russia has managed to partially replace imported equipment. Russian producers also have a fairly healthy portfolio of long-term oil supply contracts, including those via the ESPO[55] and the Druzhba[56] pipelines. These stopped being marginal producers thanks to lower costs (Figure 7), meaning

55. The 4,200-kilometer (km) Eastern Siberia Pacific Ocean (ESPO) oil pipeline exports crude oil from Russia to the Asia-Pacific markets of Japan, China, and Korea. It transports crude oil from fields at Tomsk Oblast and the Khanty-Mansi Autonomous Okrug in Western Siberia, as well as oil from the provinces of eastern Siberia. The pipeline was built in two phases: the first was completed in 2009 and the second phase was completed in December 2012. It is planned to increase ESPO capacity up to 80 million tons per annum by 2020.

56. The 4,000-km-long Druzhba pipeline from the eastern part of European Russia to Ukraine, Belarus, Poland, Hungary, Slovakia, the Czech Republic and Germany was built in the Soviet era and remains the main route of Russian oil supplies to Europe.

Figure 8. Russian crude oil export dynamics by destination, 2000–2015, million tons



Source: "Экспорт Российской Федерации сырой нефти за 2000–2015 годы (по данным ФТС России и Росстата)," Central Bank of the Russian Federation, last updated June 25, 2015, http://www.cbr.ru/statistics/print.aspx?file=credit_statistics/crude_oil.htm, based on Russian Custom Service data, Rosstat.
CIS=Commonwealth of Independent States.

that for a certain period of time Russia will be able to maintain the leading position in the world oil production.

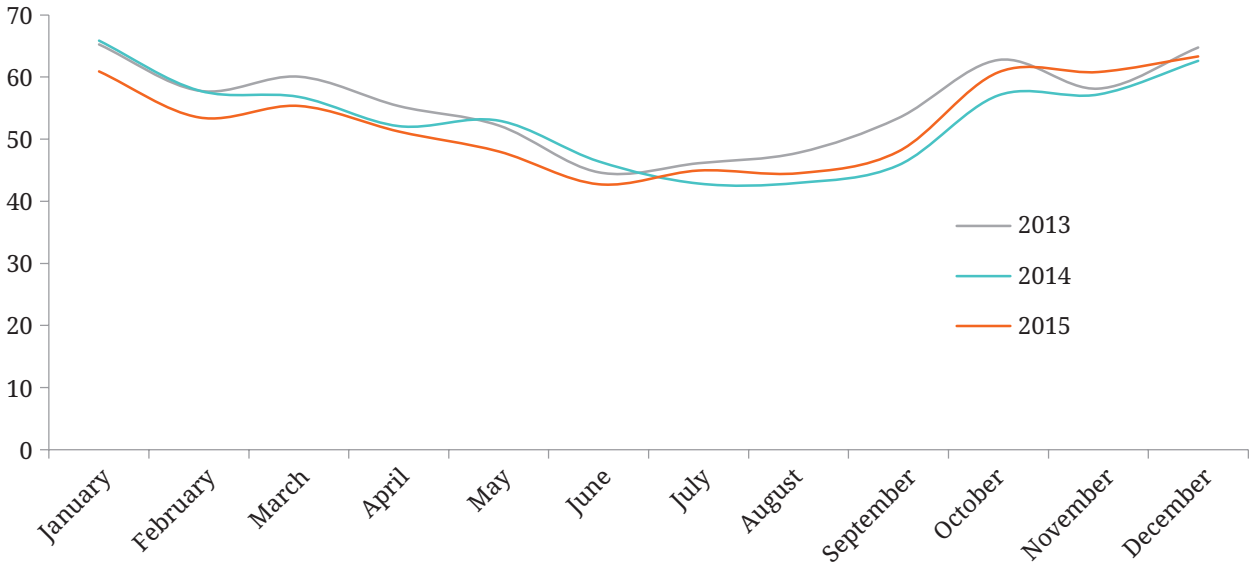
Yet during the last decade Russia has lost approximately 5 percent of its crude exports due to growing domestic consumption and stagnant production. Moreover, it has considerably changed the regional structure of its exports (Figure 8), with European supplies constantly declining and Asian exports growing almost 5 times over in 10 years with the ESPO oil pipeline construction and huge long-term contracts signed between Rosneft and CNPC.

GAS PRODUCTION AND EXPORTS

The recent performance of the gas industry has been quite different. Russia was dynamically raising its gas production in the "golden" decade of 1998–2008, but since the beginning of the crises in 2008, production has dropped significantly and still has not recovered as a result of the demand slowdown in the domestic and European markets and lower supplies to Ukraine and other CIS countries, despite huge production capacities. This decline is driven by lower demand and by the increasing security of supply considerations from the consumer side. In 2015, the next round of production decline occurred, and Russia lost 1 percent of its gas output (Figure 9).

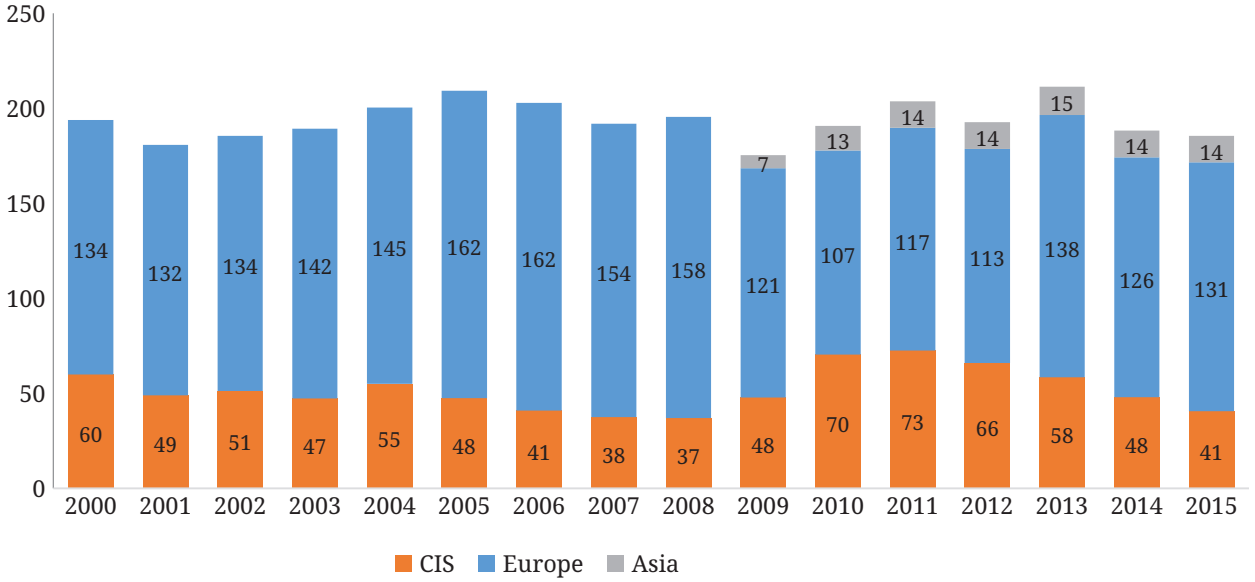
Despite price concessions and numerous contract revisions, Gazprom has not restored its precrisis export volumes to Europe (162 bcm in 2006 versus 131 bcm in 2015

Figure 9. Monthly gas production in Russia in 2013, 2014, and 2015



Sources: Infotek, CDU TEK, ERI RAS.

Figure 10. Russian gas export dynamics by destination, 2000–2015, bcm



Source: "Экспорт Российской Федерации природного газа за 2000–2015 годы," Central Bank of the Russian Federation, last updated June 25, 2015, http://www.cbr.ru/statistics/print.aspx?file=credit_statistics/gas.htm, based on Russian Custom Service data, Gazprom.

[Figure 10]), while the Ukrainian conflict dramatically reduced CIS sales volumes and created an unfavorable environment for Russian gas in Europe. Gas export to Asia is now limited to Sakhalin LNG exports, and the recently signed deal on pipeline gas supplies to China is only a longer-term prospect.

2 Russian Hydrocarbon Production Scenarios to 2025

The current situation on the global oil and gas markets is so uncertain that it is extremely difficult to make any forecasts. Therefore, this paper uses a scenario approach in order to assess the potential trajectories of Russian oil and gas sector development and the likely consequences of these scenarios for the country's economy and for global markets.

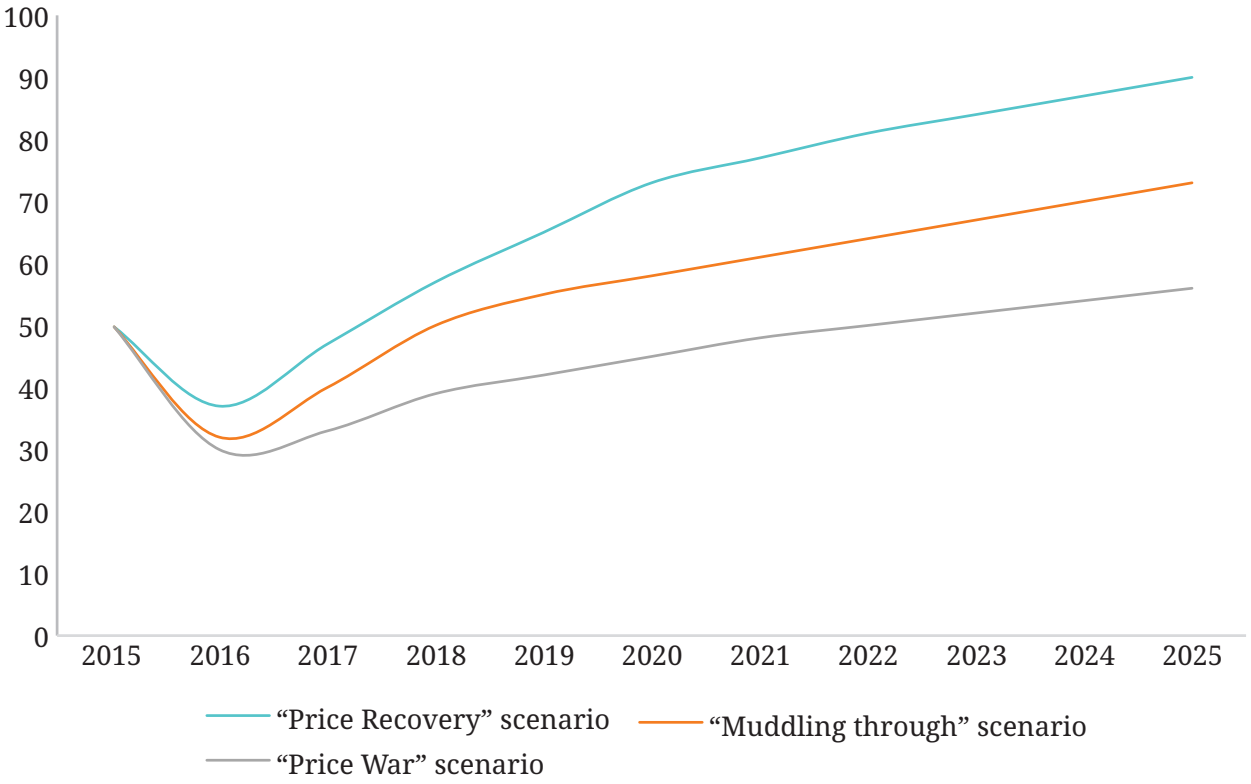
Oil Production Scenarios

All the turbulence in the global markets—the continuation of economic, geological, political, and technological factors—finally results in a certain price level. Therefore, we decided to take a look at Russia's energy sector behavior at different oil price levels, without regard for whether they result from the Organization of the Petroleum Exporting Countries (OPEC) changing its policy, the fate of the shale drilling, removal of Iranian sanctions, climate policies, Chinese economic performance, or any other factors. Three scenarios were considered, covering the range of the price projections that we consider realistic and adding to them assumptions on additional taxation and sanctions in order to provide a wide range of the potential outcomes (Figure 11):

- "Muddling through" (with oil prices rising to $50 to $60 per barrel in 2018–2020, moderate additional taxation, and international sanctions remaining at the current level);
- "Price Recovery" (with oil prices rising to $80 to $90 per barrel in 2018–2020, with no additional tax pressure, and economic and technological sanctions being removed completely by 2018);
- "Price War" scenario (with oil prices remaining at $30 to $40 per barrel up to 2020, with further increases of tax pressure, and expansion of technological sanctions including horizontal drilling and stricter implementation of financial sanctions).

Our analyses show that due to past investment, Russian oil production will likely continue rising in 2016 under any scenario—even under a premature tax increase and continued low oil prices. The contribution to growth from the Big Four so-called "old greenfields" launched in 2008–2009 (Vankor, Verkhnechonsk, Uvat, and Talakan) has already been expended, and their combined output will more likely stay flat through 2016. Yet there are already a large number of "next generation" fields, including those launched

Figure 11. Oil price scenarios (Brent, USD per barrel)



Source: Author's projections.

within the past couple of years and those not yet in production, such as Novoport and the Prirazlomnoe expansion (owned by Gazprom Neft), Yarudeiskoye (owned by Novatek), Suzun, Messoyakha, Labaganskoe (owned by Rosneft), Trebs and Titov (owned by Bashneft and Lukoil), and others. These contributed twice as much to output growth in 2015 as the Big Four did. Sberbank CIB calculations show that the "next generation" greenfields will take over as growth leaders and, together with increasing gas condensate production, they will be able to offset declining output in legacy ("brownfield") production, which currently accounts for 75 to 80 percent of the entire national output. The brownfield decline rates have been accelerating for the past four years, but the West Siberian brownfields are profitable even at $20 per barrel, since their total production cash costs (consisting of lifting costs and capex for drilling and infrastructure) averages at just $7 per barrel.[1] Therefore in the "Muddling through" scenario and the "High Price" scenario, Russian oil output is expected to stabilize or even grow.

Our analysis shows that theoretically, under favourable conditions, if Russia were to continue managing the production slowdown in western Siberia and increase production in eastern Siberia, it would be realistic to sustain increased production for the long-term,

1. Fak and Nesterov, "Russian Oil and Gas—Trimming the Belly Fat."

provided that a proper regulatory and taxation framework is created. So the forecasted output decline is not naturally predetermined, but rather results from the aboveground factors.

One of the main ways to maintain the level of oil production in Russia would be to increase oil recovery from existing fields. Currently, the country's recovery factor is 34 percent. If the recovery rate is increased, that could add significant additional production volumes, which are located in the areas with the existing infrastructure. However, the use of tertiary oil recovery techniques, mainly enhanced oil recovery (EOR) methods, is not cost-effective under the existing tax regime, and in these three scenarios under consideration it is assumed that no radical reforms take place and only minor tax regime adjustments occur. Therefore in the longer-term in all three scenarios, Russian crude oil and gas condensate production is expected to decrease, but at a different rate (Figure 12)—from 0.2 percent per annum on average in the "Price Recovery" scenario (which would result in minor cumulative reduction of 1.7 percent in 10 years) to 1.2 percent per annum in the "Price War" scenario, with the total reduction of the Russian oil output by 11 percent by 2025.

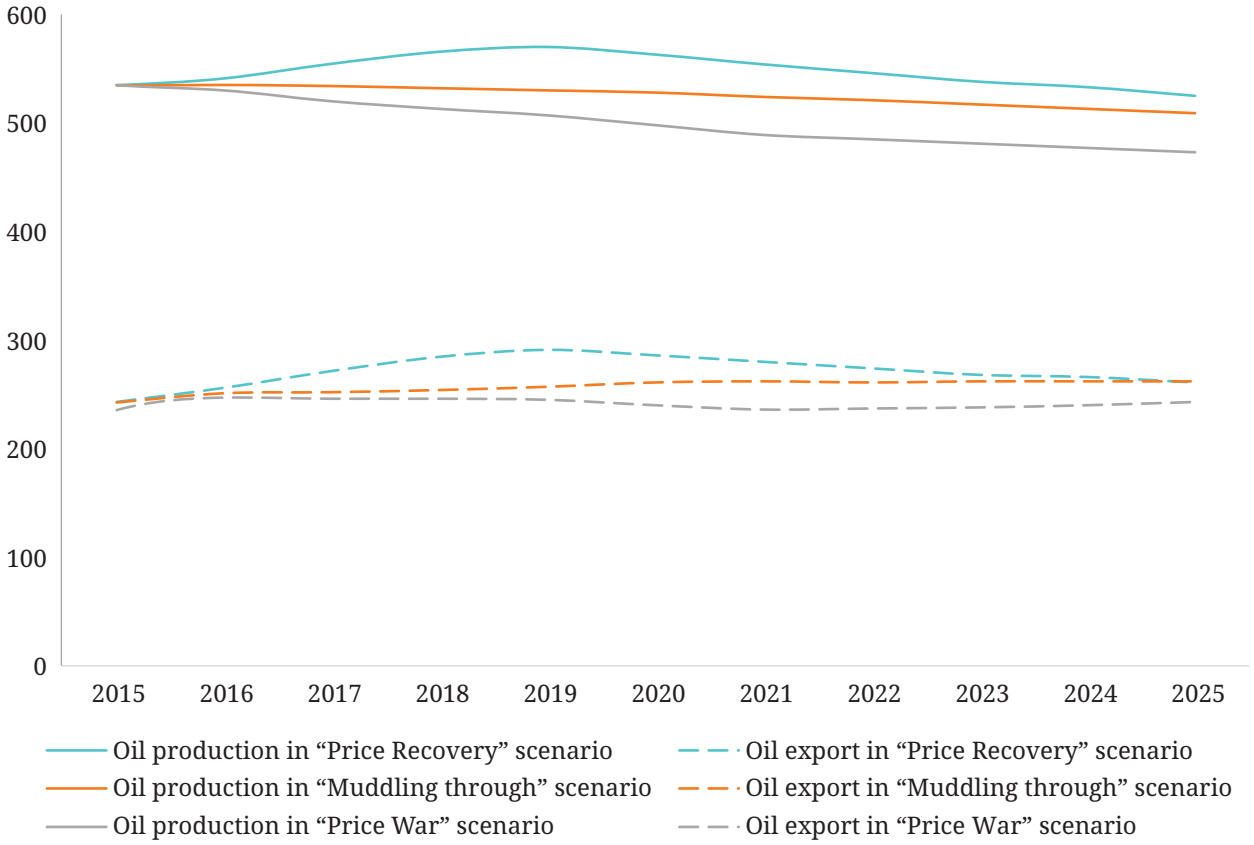
Both drilling and output may be at risk should taxes increase, which is an assumption of the "Low Price" scenario. The state's budget deficit in 2016 is expected to reach $60 billion at $30 per barrel oil. Normally, the state would borrow in the short term (or even for longer) to cover the deficit. But the sanctions against Russia, combined with the oil price level, will make it difficult for the Russian government to attract enough foreign funds to cover the gap in the budget. For its part, domestic money would be too expensive, and the two reserve funds have combined nominal assets of just $120 billion, enough to cover only two years' worth of deficits. The actual figure is lower, since this $120 billion includes Ukraine's Eurobonds and loans to corporations, which the state would not be able to monetize immediately. This is why the author believes that further increases in tax rates are almost inevitable—whether the oil price settles at $15 per barrel or at twice that level ($30 per barrel) or even twice that level again. The lower the oil price, the higher the potential tax hit could be. The government could do several things: reduce some tax preferences and raise the conventional brownfield MET by a lower margin; return to the idea of deflating the $15 cutoff in the MET formula; or even introduce an entirely new tax. Given that the sector as a whole would be left staring at net cash outflows in such a scenario, it would be forced to pare investments. Production one or two years down the line could therefore suffer a significant decline.[2]

To summarize, the trajectory of Russian oil production before 2018 seems to be quite stable due to the past investments, but after 2020, it is expected to be declining in all scenarios. The speed of this decline is the main uncertainty, and depends on investment availability (determined by oil prices, financial sanctions, and the taxation regime) and on the availability of technologies and services.

Even by 2025, the country's key production capacities will continue to be concentrated in West Siberia. The main reason for the drop in oil production in this region is the lack of EOR, resulting from poor state support for the use of these methods. Therefore Russian oil

2. Ibid.

Figure 12. Russian oil production and export outlook, million tons



Source: Author's projections.

production dynamics would depend largely on the pace at which state-of-the-art technologies are introduced, which would maintain production levels at existing fields. Moreover, the Russian oil sector needs a radical reduction in the costs of investment projects, together with a thorough evaluation of their cost-effectiveness and potential risks, as well as the postponement of the implementation of inefficient projects.

The drop in production in the traditional regions has to be offset by commissioning of the new fields, first of all in eastern Siberia and the Far East, which will depend to a large extent on the availability of the financing for the Russian companies. The development of stranded oil reserves (primarily in Bazhenov shale oil) and the Arctic shelf is not expected in this time frame.

Russian oil exports are expected to be generally quite stable in this timeframe in all scenarios, in the range of 245–260 mmta. This stability of export volumes is mainly driven by the fact that domestic demand projections are moving in the same direction as Russian oil production in all scenarios. This was already visible in 2015, when low oil prices and sanctions resulted in lower economic growth and stagnation of the domestic demand. All surplus was therefore exported, resulting in an 11 percent increase in exports, while production growth was just 1.5 percent. As growing projected oil exports in the "Muddling

Through" scenario clearly illustrates, for Russia the freeze of production at current levels, discussed in February 2016 in Doha,[3] will not necessarily result in the reduction of exports.

Government revenues are expected to increase in all scenarios as oil prices rise. Even in the "Muddling through" scenario, export revenues are expected to increase by 70 percent by 2025 (compared to the lows of 2015) and to double in the "Price Recovery" scenario. Only the "Price War" scenario envisages the further reduction of export revenues (by 5 percent to 40 percent per year from the 2015 baseline over the period before 2020), which creates additional challenges for the government. In this case, harsher policies could be implemented, including additional taxation of the oil companies, described above. Massive privatization or asset sale (in order to obtain additional budget revenues) could also be initiated, mainly to Chinese and Indian partners.

Russia maintains a significant potential to preserve its leading position in the global oil market in all these scenarios. But in the longer term, it will require successful testing of new technologies, incentives for developing stranded resources, and cost control in greenfields.

Gas Production Scenarios

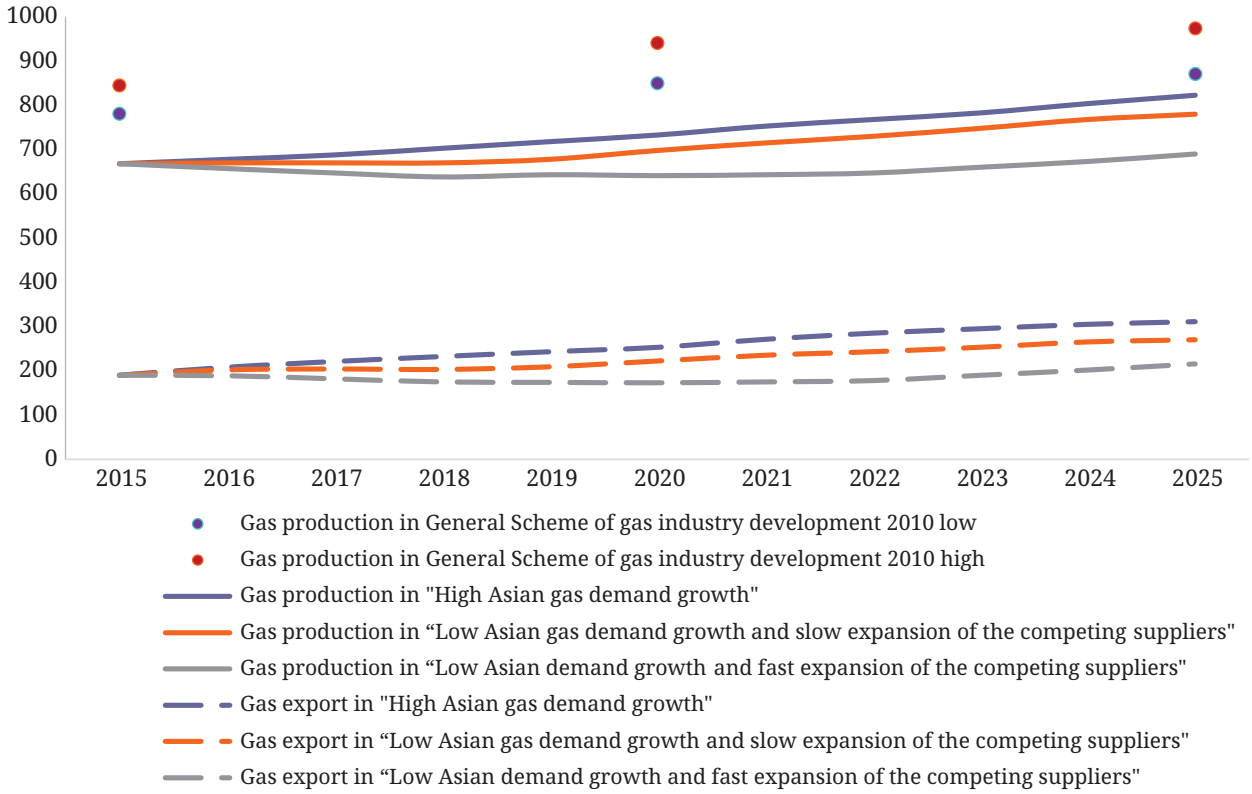
Russian gas sector undoubtedly has capacities for sustainable production growth: the resource base is huge and is sufficient to meet domestic and export demands. Theoretically, given investment availability and sufficient demand, Russia could produce 1 trillion cubic meters per year. As Russia has no gas resource constraints, its future gas production will depend solely on the availability of markets and investments to build the new gas transportation infrastructure. Therefore, it is not very dependent on the oil price scenarios. Thus we developed a set of different scenarios for the gas industry, depending on the supply-demand balance in the global gas market:

- High Asian gas demand growth and on-time development of competing suppliers (U.S. LNG, Australia, East Africa, Iran);
- Low Asian gas demand growth and slower development of competing suppliers;
- Low Asian demand growth and rapid development of competing suppliers.

Though the domestic market is consuming two-thirds of Russian gas output, it is very difficult to expect its radical expansion, as it is historically strongly correlated with GDP (which is projected to grow weakly). Thus the major influence on Russia's upstream would come from abroad, depending primarily on external demand. In the high-demand scenario, all new gas would be absorbed by booming Asian markets. That means that more LNG would divert to Asia and slightly more Russian pipeline gas would be required by

3. Galina Starinskaya and Michail Overchenko, "Россия и Саудовская Аравия призывают ограничить добычу нефти," *Vedomosti*, February 16, 2016, https://www.vedomosti.ru/business/articles/2016/02/17/629961-neftyanoe-peremirie.

Figure 13. Russian gas production and export outlook, bcma



Source: Author’s projections.

Europe. Such a call on Russian gas results in rather bullish production projections, rising from 650 bcm in 2010 up to 820 bcm in 2025 in the high-demand scenario (Figure 13), though these figures are still much lower than the previous production targets of the General Scheme of gas industry development drafted in 2008–2010.

The speed and success of the development of alternative suppliers is critical. If their entrance to the market is postponed, or some of them fail to deliver gas, then Russia is always in a position to compensate for their unavailability. But if they are successful in their project development, then Russia could face very difficult circumstances, especially in the period 2018–2023, when huge new volumes of gas are expected to enter the global market. In this case, Russia would have to struggle to protect its market share both in Europe and in Asia, and production volumes could stagnate for a decade. Much will depend on the pricing strategy chosen by the authorities and Gazprom; Russia has now huge spare gas production and transportation capacities, so it could theoretically follow Saudi Arabia’s example and try to squeeze other out producers by flooding the market with cheap supplies. But, so far, there are no evidences of such a strategy.

In sum, despite numerous challenges, the Russian oil and gas industry will most likely remain quite sustainable, with stable or expanding output and export volumes.

3 New Russian Oil and Gas Export Strategy

Tremendous shifts in the external environment, as well as changing domestic production and consumption, affect Russian hydrocarbon export strategy. For now, it cannot be regarded yet as a clear strategic vision or a set of explicitly formulated principles. Since these changes came as a surprise, there is still much more of an adaptation policy, trying to adjust and react, rather than a proactive position. It is very important to separate short-term tactical interests and policy movements, many of which are dictated by the current geopolitical crises between Russia and the West, and longer-term strategic interests.

Short-Term Adaptation and Implications

THE EUROPEAN MARKET

Europe has been Russia's core export market for five decades, and though it has mature and declining demand, its hydrocarbon import needs will nonetheless increase because of declining local European production. Increasing competition is expected here, as suppliers from the Middle East, Africa, and other regions are trying to obtain larger share in this attractive market. But, as Russia has all of the necessary infrastructure in place (if Ukrainian transit is regarded as a viable option)—which fully depreciated long ago and has comparatively low costs—it is in a very good position to compete with any newcomers to the European oil and gas market.

With the stagnant European demand for liquids, Russia was already constantly reducing its crude oil and products exports to Europe. Availability of the existing infrastructure and downstream refining assets have made this process slow and manageable. But recently, when Saudi Arabia started in 2015 an aggressive campaign for penetration into Europe, this position was challenged. With Iranian sanctions being lifted, Iran will try to restore its positions in Europe. Most likely, in order to protect its market share and existing oil export flows, Russia would be ready to step into a fierce price war by providing more attractive pricing. As was shown already in Figure 7, Russian oil companies have rather low upstream costs, so if the state is willing to protect Russia's role in the European market, it would be able to do so via export duty adjustments for crude and for various oil products.

Another serious challenge for Russian oil companies' operations in Europe (and primarily for Rosneft) is the decision of the Permanent Court of Arbitration in The Hague on the case brought by former shareholders of the now-defunct Russian oil company Yukos. The plaintiffs are seeking the enforcement of the decision, which awarded them $50 billion. After the seizure of Russian state assets in France and Belgium in 2015, these risks cannot be ignored.

In the short term, Russian gas export strategy in Europe faces huge adaptation challenges. Negative consequences of European gas demand declines since 2009 have been partially offset for Russia by problems with North African gas exports, by diversion of LNG to Asia following the Fukushima disaster, and by a sharp decline of gas production at the Groningen field in Netherlands. But since 2014, exports have been strongly affected by Russia's geopolitical problems over Ukraine. This conflict has undermined European confidence in Russia as a secure source of gas supply. The interruptions of transit through Ukraine in 2006 and 2009 raised initial questions about the need for the European Union to reduce its perceived dependence on Russian gas, and these concerns have been amplified since the annexation of Crimea in March 2014 and the subsequent conflict in eastern Ukraine.

The issue of Russian gas supply security to Europe, which is the main concern in the West, seems exaggerated. Neither Russia nor Ukraine are interested in supply interruption or any negative consequences for European consumers. For Ukraine, any failure to provide reliable transit would mean a loss of EU support and financing, while for Gazprom, as long as the bypass corridors are not completed, the Ukrainian route is critically important to fulfill its export obligations and avoid huge penalties. Moreover, assuming the new financial situation both in Gazprom itself and with the state budget, Russia simply cannot afford to lose European sales, which are now a main source of hard currency revenues, as was the case in Soviet times.

Over the last two years there have been no supply disruptions on this route, despite all the political tensions and military conflict. Despite the tough negotiations of the "winter package" deals and price discussions between Russian and Ukraine, both sides are primarily demonstrating political disagreements with each other rather than actually threatening to cut supply. The fact that the deal for gas supplies during winter 2015–2016 was signed at the end of October 2015, and that the first payment has already been received by Gazprom in early November, shows that both sides are in fact open to constructive cooperation.

Nevertheless, Russia argues that Ukrainian transit risk can be solved once and for all only through the construction of bypass transit pipelines, and it has offered several alternatives including South Stream, Turkish Stream, and hotly debated expansion of the Nord Stream. The evolutionary and somewhat improvised nature of Gazprom's export strategy to Europe is perhaps best exemplified by its infrastructure plans, which over the past 12 months have involved a commitment to end transit through Ukraine by building the South Stream pipeline; a switch from South Stream to Turkish Stream; a commitment to sell all of its Ukraine transit gas at a new Turkey/Greece hub; the announcement of an expansion of the Nord Stream; apparent uncertainty over the plans for the Turkish Stream, with

Map 1. Russia's gas export pipelines to Europe (existing and under discussion)

Source: Author's rendering.

contractor contracts being canceled, onshore lines postponed, and an intergovernmental agreement with Turkey delayed; and finally an apparent reversal, under the specific instruction of President Putin, of its original decision to eliminate Ukraine transit after 2019. Different options of South Stream reincarnations are coming under discussion, including a new version of the ITGI Poseidon project announced in February 2016.[1]

None of these pipeline options is guaranteed. The future of the Turkish Stream is strongly challenged by the deteriorating relationship between Russia and Turkey, while any version of the South Stream's and the Nord Stream's expansion faces a very negative attitude from the European Commission and a number of European member states. It could

1. On February 24, 2016, Gazprom, Edison SpA, and DEPA SA signed the Memorandum of Understanding on natural gas deliveries across the Black Sea from Russia via third countries to Greece, and from Greece to Italy. In working toward that goal, the parties are committed to taking advantage of the work done by Edison and DEPA within the ITGI Poseidon project to the fullest extent possible. See "Gazprom, DEPA, and Edison sign Memorandum of Understanding," Gazprom, February 24, 2016, http://www.gazprom.com/press/news/2016/february/article267671/.

eventuate that all three would be blocked and Russia would have to use Ukrainian transit without any new bypass construction. Other variants include construction of fewer Turkish Stream or new South Stream lines, additional Nord Stream lines, and different combinations of these two options. This gives the impression that neither Gazprom officials nor the Russian government know how this game will end. It depends on too many factors, mainly political: relations with Turkey, the European Commission, and Russia's Western partners. Russia is therefore trying to create multiple choices for future developments: having high hopes on a single project would be a mistake, and "improvisation" is the best term to describe the current short-term policy. An inability to make a long-term strategy in such an uncertain environment leads to multiple options to allow for flexible adaptation in the future, depending on market conditions and political barriers.

Aside from Ukraine, another difficult issue for Russia in Europe is the Third Energy Package, which makes it more difficult for major producers such as Gazprom to exercise dominance by controlling infrastructure or by monopolizing individual markets. The EU has also started proceedings against Gazprom with its competition authority, the EU Director-General for Competition (DG COMP), alleging unfair practices and pricing. The regulatory drive to ensure that Gazprom, as well as the other major gas market participants, adhere to new EU rules has added to the pressure on Gazprom stemming from the commercial issues mentioned previously (e.g., weak demand, increasing competition, and low prices).

During 2015, solid evidence of the direction of Russia's evolving gas export strategy could be provided as the negotiations with DG COMP over the latter's Statement of Objections are concluded and as existing long-term contracts come up for renegotiation. A new level of competition is, of course, exactly the outcome that the European Commission hoped to achieve with the Third Energy Package, and the investigation by DG COMP into Gazprom's past practices may also catalyze change when the negotiations restart in September 2015. Both sides have been very cautious in their statements to date, and so it is difficult to draw definitive conclusions. However, the fact that Gazprom in particular has not aggressively leaped to its own defense, preferring to take a calmer and more measured approach in its response, suggests that it may well agree with, or at least accept, the direction of travel that the European Union is encouraging.

The question of the timing of further moves toward a more market-based strategy will be driven by a number of other factors over the next few years: the impact of the December 2015 climate agreement in Paris; the likely arrival of the first U.S. LNG imports in Europe in 2016; the renegotiation of gas contracts with MOL, OMV, ENI, and Edison before 2020; the decision over gas transit through Ukraine after 2019; the ultimate outcome for the planned Turkish Stream and Nord Stream 3 and 4 pipelines; the price of oil; and perhaps most importantly the dynamics of the conflict in Ukraine, which could insert an overwhelming political dynamic into the commercial discussions. Yet overall, this succession of events would suggest that although there is unlikely to be a sudden announcement about

Gazprom's new export strategy in Europe, gradual momentum toward a more market-oriented, hub-based, trading-driven strategy seems clear and logical.

Gazprom has shown that it is willing to respond to competitive and regulatory pressure by adjusting its price level and its contractual terms, though some of these changes have been forced on it by arbitration cases. In 2013 Gazprom started to implement a new price discount model with so-called retroactive payments. Despite Gazprom's strident rhetoric in favor of traditional oil indexation, in fact numerous adjustments and contract reviews have already been made over the course of the last five years. In fact, by 2015 Gazprom had provided an average discount of almost 25 percent to its European customers compared to its precrisis traditional oil-linked price formulas. Low oil prices also relieve some buyer's pressure to renegotiate oil-linked contracts. However, to date Russian strategy has been very reactive, and once again it has looked for short-term solutions to immediate problems and to create multiple options for negotiating purposes rather than developing a coherent long-term strategy.

What is also clear is that EU legislation, in particular the Third Energy Package, is having a significant impact on Gazprom's strategy, while the activities of the European Commission in investigating Gazprom's activities in eight Central and Eastern European countries are also causing the company to reassess its position.

THE ASIAN MARKET

Russia's export focus has shifted eastward because of unfavorable conditions in the core European market together with increasingly cool relations with the West, EU pressure on Gazprom, and Western sanctions, while strong dependence on energy export revenues drives new sources of economic growth in a difficult market. These factors are pushing Russia toward closer energy cooperation with Asia (primarily China), though this cooperation is not developing effortlessly. It would seem that Russia and northeast Asian countries are ideal, complementary partners in energy trade: one is the holder of enormous hydrocarbon reserves, a leading exporter, and the others represent the largest consuming region and importer of hydrocarbons. But, for Russia, building energy relations with these countries is not a simple story at all.

With the completion of the ESPO pipeline, Russian oil exports to Asia are steadily increasing, and the expectation is to bring them further up in the forthcoming years. Long-term oil supply contracts signed already between Rosneft and CNPC, as well as the growing attractiveness of this export route compared to the Western route,[2] will further push up Russian oil exports to Asia in the coming years. Assuming the very structure of Russian-Chinese oil deals (with huge prepayments from the CNPC to Rosneft, which were

2. This export route is more attractive because the tariff for ESPO was designed in such a way that it incentivizes this route's utilization. China (and Asia more broadly) is also a growing market when compared to stagnant Europe. Finally, Russia's share in this market is still low and therefore has room to expand, while in Europe the opportunities for market share expansion are already limited.

already received and spent, actually), Russia has a very limited choice: it has to deliver the prepaid volumes at even lower prices than in Europe (according to UBS, the price discount for these contracts is on average $4 per barrel).[3]

To lessen dependence on the European gas market, Russia managed finally to sign the gas deal with China, but "Power of Siberia" pipeline construction will take five years, and an additional five years will be needed to bring the pipeline to its full capacity of 38 bcma, which means that at least until the mid-2020s, eastward gas exports will not be able to replace the reduction of supplies to Europe.

The project is under construction now, but the key question is whether Gazprom will try to optimize its cost in the low price environment or postpone it, or indeed decide not to proceed with it at all. According to Sberbank CIB Investment Research,

> at $30 per barrel oil price, the average price tag for gas delivered from 2021 at just north of $3/mmBtu. Even if oil prices would recover, gas prices in Asia are unlikely to exceed about $5.5/mmBtu in the long term. Even though Gazprom's China contract is tied to the oil price, we believe China will not take the gas unless it is competitively priced against alternative supplies. This sets a cap on the price. We have now cut our capex expectations for the project to about $40 bln from $55 bln previously, on the back of the depreciation. However, we have some doubts that the "depreciation gains" could actually be skimmed. The capex cut pushes the breakeven price for the project down to $7/mmBtu, still way above what Gazprom could charge given the competitiveness of expected supplies to the Chinese market. The best course of action for Gazprom right now would be to find the least costly method of backing out of the contract. The second_best option would be to invite Chinese contractors to march into East Siberia and build the pipeline at what would likely be a much lower cost than Russian companies could offer.[4]

Immediately after this deal was signed, Gazprom started negotiations with CNPC on the "Western route." It consists of the 6,700-kilometer-long "Altai" pipeline with 30 bcma capacity from western Siberia, potentially diverting supplies targeted to the European market. The pipeline could be built rather quickly. It does not need any upstream investments and in the future, its capacity might be expanded up to 100 bcma. In October 2014, a framework agreement for this Western route was signed. This memorandum of understanding lacks agreement on crucial details such as price, but if the details are worked out and both deals are implemented, the supply of 68 bcma to China would make the country Russia's largest single gas customer. This would also increase Gazprom's bargaining power in Europe, as it could arbitrage between Europe and China. But even if both Power of Siberia and Altai are built, together with the existing Sakhalin-2 LNG supplies, Asian exports by 2025–2030 would amount to 80 bcma—roughly 60 percent of supplies to Europe.

3. Fadeeva, "«Роснефть» получила 1 трлн рублей авансов."
4. Fak and Nesterov, "Russian Oil and Gas—Trimming the Belly Fat."

Yet even these volumes are now questionable, as Chinese gas demand growth is slowing down. Moreover, there is a growing disappointment in Russian-Chinese long-term strategic cooperation. It seems that China is using gas negotiations to gain Russia's agreement to the Silk Road Belt project (which certainly touches Russia's vital interests in Central Asia).

Another new feature of Asian gas exports is shifting the focus from LNG projects, which, until recently, were extremely popular in Russia and enjoyed strong state support, to the "good old pipelines"—at least in the short to medium term. This shift was influenced by Western sanctions and limited opportunities for cooperation with the international oil companies (IOCs) in the new geopolitical environment. For example, in October 2014 Gazprom announced that it is ready to cancel Vladivostok LNG and to send all the feed-gas to China via pipelines.

Novatek has still failed to announce outside financing for the Yamal-LNG project. But it looks likely that the deal will be finalized, making Yamal-LNG the only Russian LNG project advancing in the current environment. The entrance of China's state-owned Silk Road Fund as a new 9.9 percent Yamal-LNG shareholder, accompanied with a $1.4 billion payment to Novatek on top of an $800 million loan, suggests that Chinese parties are interested in advancing the project.[5]

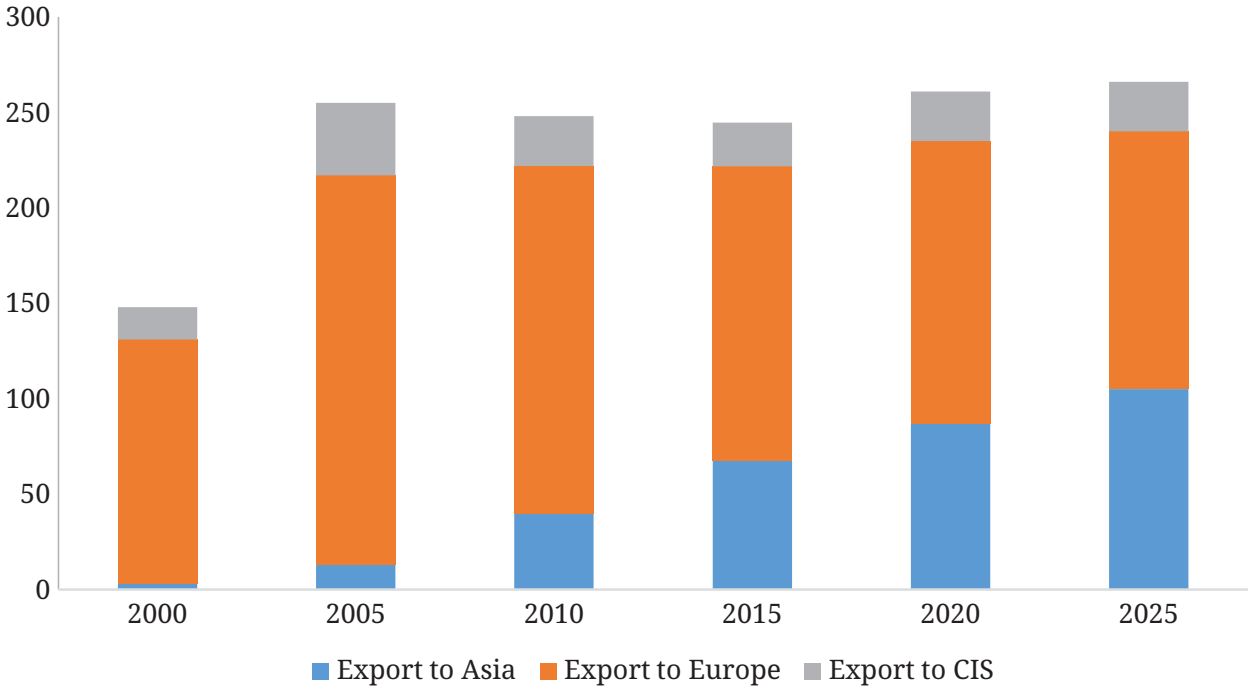
Long-Term Export Strategy

In the longer term, when Russia adapts to stronger competition and financial constraints, the main focus in the organization of the export routes and investment projects will most likely concentrate around supplies to the Asia-Pacific region, with a slump in supplies toward Europe. The current orientation of the Russian oil and gas industry to the West possesses great risks in case of further European demand decline. Yet even in the long term, with supply volumes to Asia growing steadily, neither absolute export volumes nor Russian market share come close to the levels that have already been reached in the European markets.

Oil exports will likely stay stable or increase slightly alongside falling production and flat or decreasing domestic demand. The regional structure of oil supplies will change in favor of Asian consumers, while European supplies will further decline (Figure 14). To achieve this strategic goal, all Eastern transportation capacities (including the ESPO pipeline system and marine oil terminals) will almost double. Therefore, during the forecast period, reduction in the interdependence of Russia and Europe in the liquid fuels market is expected, with a simultaneous reorientation of crude oil exports to the East. But even with these challenges and a painful transition to the new strategy, Russia will undoubtedly remain a key player in the global hydrocarbon market, and its influence should not be overlooked.

5. Ibid.

Figure 14. Russian crude oil export forecast to 2025, million tons



Source: Author's calculations.

Long-term projections of the Russian gas exports are now revised significantly downward, compared to the previous estimations (from 350 bcma to 270 bcma), but they will still remain the largest in the world. Russia will attempt to solve the twin problems of protecting its 30 percent market share in Europe while simultaneously substantially increasing gas supplies to Asia (Figure 15).

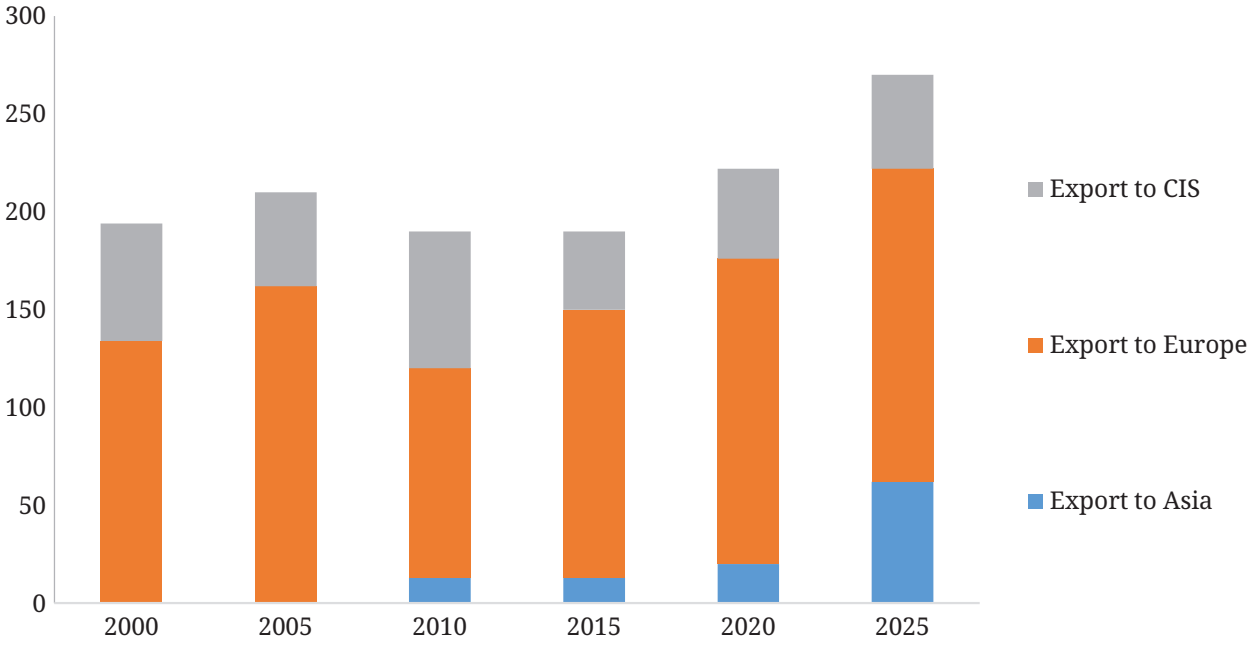
In the longer term, after 2018 the threat of new sources of supply to Europe will begin to emerge, the most notable example being the planned arrival of 10 bcma of Azeri gas via the TANAP and TAP pipelines; meanwhile, the continuing growth of shale gas production in the United States improves the prospect of LNG imports arriving at Henry Hub linked prices beginning in 2016. Furthermore, this U.S. LNG, which is being portrayed in some quarters as a potential "savior" of the European market,[6] is likely to be supplemented over the next five years by LNG from sources such as Australia and Papua New Guinea, which will be entering the international gas market, creating a potentially global oversupply situation.[7]

If it decides to enter a price war, Russia has a strong competitive position and one of the lowest supply costs in the market (though, of course, it would try to avoid this scenario as much as possible).

6. Steven Mufson, "Can U.S. natural gas rescue Ukraine from Russia?," *Washington Post*, March 7, 2014, https://www.washingtonpost.com/news/wonk/wp/2014/03/25/can-u-s-natural-gas-rescue-ukraine-from-russia/.

7. "Oversupply, Price Risks Dimming U.S. LNG Prospects," Fitch Ratings, May 7, 2015, https://www.fitchratings.com/gws/en/fitchwire/fitchwirearticle/Oversupply,-Price-Risks?pr_id=984264.

Figure 15. Russian gas export forecast up to 2025 by destination, bcma



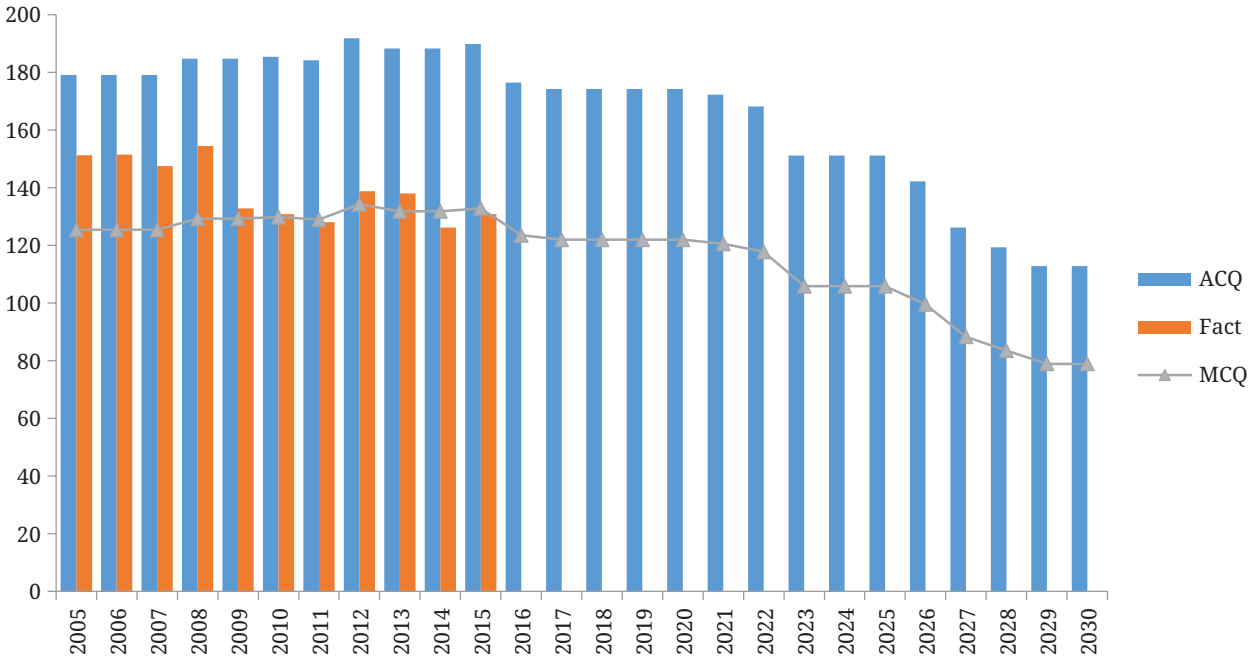
Source: Author's projections.

The positive news for Russia is that if it needs to compete to maintain its position in the European gas market then it has enough low-cost supply to meet its objectives. Although the full cost of developing fields on the Yamal peninsula is high, with a breakeven cost of $7 to $10/mmBtu delivered to Europe, the short-run marginal cost of West Siberian supply is much lower at around $3.5 to $4/mmbtu, thanks to low upstream costs and the benefits of ruble devaluation. At this level it can compete with U.S. LNG imports based on a Henry Hub price of $3/mmbtu, meaning that on a purely commercial basis, Russia could effectively choose its own market share in Europe.

Although Russia would prefer the status quo to persist, it is preparing to respond to change and competition by altering its pricing methodology and contractual terms. The existing portfolio of already-signed long-term contracts (even with the revised take-or-pay obligations) guarantees Russia sales of at least 110 bcma up to 2022 (Figure 16). Additional volumes could be sold at European hubs, thus providing an opportunity for Russia to protect current export volumes to the European market, though any significant growth of these exports does not seem likely. Nevertheless, any significant increase in Russian gas exports to Europe is unlikely in these circumstances.

In Asia in the long term, Russia has multiple options for gas exports to Asia via LNG terminals and pipelines. By 2025, total Eastern gas exports could reach 60 bcma (with the potential uplift to 85 bcma, depending on the success of the Altai pipeline negotiations and success in cooperation with the foreign partners in the joint LNG projects). This is one-third of the current exports to Europe. In the longer term, further exploration of the

Figure 16. Contract volumes and supply volumes of Russian gas to Europe, bcma



Sources: Cedigaz, Nexant, ERI RAS.

Sakhalin-3 through Sakhalin-9 projects, as well as eastern Siberia, could open up the new possibilities for gas exports growth.

Anyway, even in the long term Europe will stay in Russia's focus. As our calculations show, even by 2030–2040, Russian oil and gas exports to Asia will be far lower than its exports to Europe.

4 Conclusions

Russia's recognition of the importance and durability of new market conditions has been slow, but decisionmakers have come to appreciate that energy demand growth has slowed in new and old markets, an abundance of supply is forcing competition for market share, the Russian energy sector must utilize its available capital more efficiently, and the impact of sanctions on the sector will worsen over time. Yet so far, Russian authorities have responded with opportunistic tactical maneuvers rather than formulating a coherent strategy to address the challenges they face. These tactical responses will have impacts on the domestic oil and gas industry, favoring the politically connected, deferring long-awaited reforms, and further concentrating control over the energy sector among large players like Gazprom and Rosneft. Internationally, Russia will see a stagnating European export market, and although it will pivot eastward to find alternative markets, Asia-bound energy exports are very unlikely to approach the levels of those bound for Europe, or to replace lost revenues. At the same time, pressure on government revenues caused by low energy export revenues will encourage higher taxation on the energy sector, undermining investment in the sector while also deferring reform.

Nonetheless, Russia's low-cost hydrocarbon production and short-term energy sector and overall economic resiliency will ensure that the country remains a major oil and gas exporter for the foreseeable future. Significant fluctuations in oil or gas production are unlikely, with oil production likely to stagnate and gas production likely to increase somewhat. Yet in the longer term, U.S. and EU financial and technological sanctions and low oil prices, which have had limited impacts thus far, are likely to significantly inhibit investment and thus the replacement of production declines if they remain in place.

Despite common domestic and foreign expectations, the Russian economy has not collapsed as a result of sanctions or the oil price decline. Yet it has become obvious that the oil and gas sector will not be able to drive formerly high GDP and budget revenue growth rates. The current situation has revealed the structural weaknesses of the Russian economy, including poor governance, corruption, and inefficiency. It has also challenged the country's entire economic development model, which emerged over a decade of high oil and gas prices. The Russian oil and gas sector prove to be amazingly sustainable and resilient, but it is not sufficient to overcome the current challenges faced by the Russian economy, which extend far beyond oil and gas.

About the Author

Tatiana Mitrova is head of the Oil and Gas Department at the Energy Research Institute of the Russian Academy of Sciences (ERI RAS) in Moscow. Dr. Mitrova has 20 years of experience dealing with the development of Russian and global energy markets, including production, transportation, demand, energy policy, pricing, and market restructuring. She is currently leading the "Global and Russian Energy Outlook Up to 2040" project. Since 2015, she has been a senior visiting research fellow of the Oxford Institute for Energy Studies. From 2011 to 2012, she was head of global energy at SKOLOKOVO Energy Centre, responsible for analyses of global energy market development and the Russian Federation's energy export and import policy. From 2006 to 2011, she was head of the Center for International Energy Markets Studies at ERI RAS. Dr. Mitrova is a member of the Governmental Commission of the Russian Federation on fuel and energy complex and a member of the Board of Directors of E.ON-Russia JSC. A graduate of Moscow State University, she is an assistant professor at Gubkin Oil and Gas University and a visiting professor at the Institut d'Etudes Politiques de Paris (Sciences Po), Paris School of International Affairs. She has authored more than 120 publications in scientific and business journals and four books.

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