

РОССИИ
БЕНЗИН
200 руб.



Car fuel sold along roads in Chechnya, 2008. Photo courtesy of Konstantin Rubakhin, all rights reserved

Energy Dependence



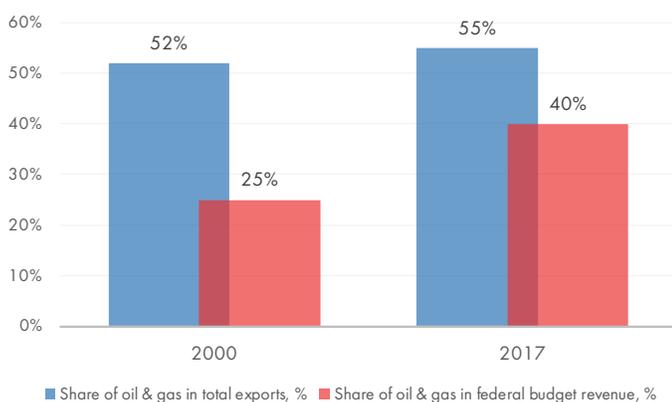
This chapter is a product of a team effort by Free Russia Foundation staff with advisory and editorial support from Vladimir Milov

Sources of discontinuity

1. Sharp decline of energy export revenues and profits

Today, Russia's dependence on energy export revenues and profits is an issue of higher importance than ever before. During the time of Vladimir Putin's rule, Russia has not been able to make any meaningful progress in reducing its dependence on oil and gas exports. In fact, by all metrics, Russia's oil and gas dependence has grown: in 2017, the share of oil and gas revenues in exports stood at 55%, as opposed to 52% in 2000; the share of oil and gas revenues within the total federal budget – 40% in 2017, as opposed to 25% in 2000.

Russia's increasing oil & gas dependence in 2000-2017



Data: Rosstat, Federal Treasury, Federal Customs Service

Despite its persistent “diversification” rhetoric from as far back as the 1970s Soviet Union stressing the need to reduce such dependence, Russia under Putin has not made even the slightest progress in that direction.

The current level of dependence exposes Russia to serious strategic risks:

- The global shift from fossil fuels to renewable energy may significantly reduce international demand for Russian oil and gas, shrinking oil and gas rents and thus rendering the country's current economic strategy defunct;
- The output potential of the relatively cheap oil and gas field stock in Western Siberia is rapidly depleting, whereas costs for the development of oil and gas production in new areas (Eastern Siberia, Arctic, offshore) are much higher and would not provide the same level of rents as the bulk of current output provides;
- Heavy reliance on oil and gas severely hampers the development of other promising economic sectors, increasing Russia's vulnerability to “impact events” on the international oil and gas markets. Major shifts in the global energy mix would deprive the country of its oil and gas rents yet there would be no other sectors of the economy comparable in size and competitive enough to fill this void and replace export revenues and profits.

One issue which often flies under the radar is the dependence of Russia on coal exports. As virtually all experts forecast a severe decline in coal consumption, prospects are bleak for current international coal export markets. This may have strongly negative economic impact on Russia.

Understanding Russia's dependence on energy exports

While the international focus has been on Gazprom and Russian gas exports, in reality, the contribution of the oil industry to the Russian state budget is four times larger.

Russia's progressive system of taxation of energy exports introduced in 2004 (stipulating that once the price of oil surpasses \$40 per barrel, the largest portion of sale revenues goes to the treasury and not to oil companies) only applies to the oil industry. The level of taxation for the natural gas industry has stayed relatively low. Moreover, the Russian oil industry exports much more oil to the international markets compared to the exports by the natural gas industry, both in absolute and relative terms. In other words, **international oil markets have much more profound strategic implications for Russia's future than do the natural gas markets.** This is not to say that the gas industry is not a source of sizable rents, but these are far smaller than rents generated by oil.

Gazprom is seen by Putin's clan not as a major source of revenue for the budget, but as a key source of enrichment for members of Putin's inner circle. A significant portion of the natural gas rents goes not to the federal budget, but directly to Putin's cronies who benefit from large capital investment and construction contracts. This is precisely the reason behind the reluctance of the Russian government to bring up the taxes levied on the natural gas industry to levels comparable with the oil industry.

Whereas a collapse of oil prices would be potentially devastating for the Russian economy, any large reduction in the value of gas exports would be less significant, although it would still matter.

Possible "black swans" in the international oil markets

There are two developments that would pose major strategic risks for Russian oil exports:

1. The rise of alternative oil producers, primarily U.S. shale oil, capable of providing additional supply volumes sufficient to ensure that oil prices will not rise above \$100 per barrel in the foreseeable future;
2. A structural shift in oil demand (for example, development of electric vehicles (EVs)) which would significantly lower the international demand and prices for oil.

The \$100 per barrel price assumption is central to the Russian economy and political regime. It is simply not possible to realize growth under

the present economic system without oil prices reaching \$100 or higher. Experiences of 2008-2010 and 2014-2018 demonstrated that oil prices below \$100 merely provide Russia with the ability to operate in the "survival" mode, with little or zero or even negative economic growth. Positive dynamics of GDP growth (at least 3-4% a year) were last observed in 2010-2013, when oil prices reached the level of \$100/barrel or higher, and oil and gas exports stood at \$250-300 billion a year.

Unless oil prices plunge to the \$25-30 per barrel levels, the Russian government would still be able to control and stabilize the situation. However, with prices remaining under \$100, the status quo can be sustained only through redistribution and fiscal consolidation —at a high political cost, as suggested by the population's reaction to the announced rise of taxes and retirement age in 2018— while meaningful growth could not be possible at all.

Russian GDP growth vs. oil exports prices in 2008-2018

Year	Average oil export price, \$/bbl.	GDP annual growth rate, %
2008	90.7	5.2%
2009	55.6	-7.9%
2010	74.1	4.5%
2011	101.7	4.3%
2012	103.1	3.4%
2013	100.4	1.3%
2014	94.2	0.7%
2015	50.1	-2.8%
2016	39.6	-0.2%
2017	50.5	1.5%
2018	70.9	1.8%

Sources: Rosstat, Russian Central Bank, Russian Ministry of Finance

The U.S. shale revolution has the potential to preclude the rise in oil prices above \$100/barrel for the foreseeable future, though relatively short periods of high prices caused by geopolitical turbulences may still occur. This may hold true notwithstanding even a massive divestment in conventional—particularly capital intensive offshore—oil reserves (analysis by the International Energy Agency suggests that such divestment may cause shortages of oil supply and the oil prices climbing back above

\$100/barrel at some point after 2020¹).

As the period of relatively high oil prices between 2004-2014 demonstrated, oil price levels higher than \$100/barrel inevitably lead to the rise of two conditions that make high prices non-sustainable. Firstly, they dramatically increase the number of oilfields that can be developed profitably, and thus, increase the potential future oil supply, contributing to the reduction of prices. The development of U.S. shale oil since 2000s is a direct outcome of an era of high oil prices – shale deposits became profitable to develop. Secondly, expensive oil inevitably slows down global demand.

The emergence of new major sources of global oil supply which had not existed before the mid-2000s – the U.S. shale oil – has made international oil markets far more competitive and less prone to manipulation. It is reasonable to expect that the market forces described above will not allow oil to become overly expensive, and periods of high oil prices (above \$100/barrel) will not last long. We will probably never again see protracted periods of very expensive oil. This dynamic will undoubtedly limit Russia's export revenues and undermine its ability to realize economic growth for the foreseeable future.

Throughout the two recent periods marked by lower oil prices (2008-2010 and 2014-2018), Russian economic and political system proved flexible enough to deal with changes. Future catastrophic shifts are unlikely unless oil prices drop below \$25-30 per barrel and stay there for a prolonged period, such as 5 years or more.

Undoubtedly, zero-growth periods would be difficult, with conflicts flaring up within the elites and the society in general, as they compete for limited resources. Recent social unrest caused by the raising in the retirement age is a perfect illustration of a situation where an economy with no growth and modest oil export revenues has forced the authorities to make unpopular decisions for the purpose of fiscal consolidation that otherwise (in a higher

oil price environment) would not be necessary. In the long run, lack of growth and grim realities associated with a “redistribution economy” (as opposed to a “growth economy”) would lead to adverse political consequences.

A much greater challenge, however, is posed by the rise of electric vehicles (EVs) as an alternative to internal combustion engines (ICEs), which would result in a sharp reduction of the global oil demand as we know it. Today, the transport sector is responsible for about two-thirds of the global petroleum consumption. Within the transport sector itself, oil and petroleum products account for over 90% of energy sources globally.² Automotive transport is responsible for about 85% of the total energy consumption of the transport sector.³

While the current share of EVs on the global car market is relatively small, rapid technological progress and fast commercialization make it plausible that sometime around 2025-2030 EVs may claim a significant market share, at the expense of traditional ICE vehicles, and thereby dramatically reducing global demand for oil and revolutionizing international oil markets. This is a process that will not be driven by policy choices made by specific governments. Virtually all major oil-consuming countries have focused on developing EV technologies and markets in order to reduce dependence on oil imports. The progress in development of EVs to date has been rather fast⁴ making realistic the prospect of peak oil demand or even collapse of international oil demand in the next decade or so.⁵

Such developments will have a profound effect on the operation of the current Russian economic model. They have the potential to bring down oil prices to the level of \$25-30 per barrel and lower without any prospect of recovery. This would be something qualitatively from the unfortunate, but survivable “redistribution” economic model that has emerged in the past few years as a reaction to the \$40-80 per barrel oil. As result of such developments,

1 IEA “Global oil supply to lag demand after 2020 unless new investments are approved soon”, <https://www.iea.org/newsroom/news/2017/march/global-oil-supply-to-lag-demand-after-2020-unless-new-investments-are-approved-so.html>

2 <https://webstore.iea.org/world-energy-balances-2018>

3 U.S. Energy Information Administration, “International Energy Outlook/Transportation Sector Energy Consumption” [https://www.eia.gov/outlooks/ieo/pdf/0484\(2017\).pdf](https://www.eia.gov/outlooks/ieo/pdf/0484(2017).pdf) data from graphs on pages 127 and 129

4 International Energy Agency, “Global Electric Vehicle Outlook 2018”, <https://webstore.iea.org/global-ev-outlook-2018>

5 “Rethinking Transportation 2020-2030. The Disruption of Transportation and the Collapse of the Internal-Combustion Vehicle and Oil Industries”, James Arbib and Tony Seba, May 2017 <https://tonyseba.com/portfolio-item/rethinking-transportation-2020-2030/>; In addition see WoodMackenzie: <https://oilprice.com/Energy/Crude-Oil/WoodMac-Demand-For-Oil-In-Transportation-Sector-To-Peak-In-A-Decade.html>

Russia may find itself in a severe economic downturn without viable recovery options, as its economy has not spawned any other internationally competitive sectors besides oil and gas. There will be simply nothing to replace oil and gas exports revenues.

Creating new internationally competitive economic sectors would require years of painful structural reforms, which would directly challenge the fundamentals of Putin's political and economic models. The Russian government is in denial of this risk, which is apparent from official statements depicting alternative sources of energy as a fleeting fringe phenomenon (partially in an effort to calm down the public) and insist that "oil will be still in demand just the same for the foreseeable future"⁶. Strategic planning documents and various capital investment programs of Russian government agencies and large state companies put a disproportionate emphasis on development of oil and gas production and ignore the potential revolution in oil demand related to the EV technology.

If Russia again finds itself unprepared for a major systemic shift in the oil prices as occurred in the mid-1980s, we can expect a similar period of sharp economic downturn, but this time without any comparable prospect for recovery, unless the Russian government adopts key structural reforms aimed at opening the economy to market forces and international investment.

Needless to say, such reforms would involve significant decentralization of economic power, which in turn would directly challenge the authoritarian political system built by Vladimir Putin. But, again, these developments are most likely to happen beyond 2025 (although some experts are more optimistic regarding the pace of the EV revolution in the automotive industry and the corresponding collapse of oil demand).⁷

2. Failure to monetize Russia's natural gas potential

Despite being the subject of intense international focus, natural gas is much less important to the overall

functioning of the Russian economic system than oil. The revenue from the production and export of oil (mineral extraction tax on oil and condensate plus export duties on crude oil and petroleum products) made up 15.8% of the total consolidated budget revenue in 2017, whereas the revenue from the production and export of natural gas (mineral extraction tax plus export duties on natural gas) – constituted a mere 3.7% of total revenue.⁸ In 2017, Russia exported oil and petroleum products worth \$152 billion (42.4% of total exports) and only \$41 billion of natural gas and LNG exports (11.6% of total exports).⁹

This persistent disparity can be partially explained by the difference in ratio at which oil and gas supplies are directed to domestic and international markets. **Whereas the oil industry exports most of its products, the gas industry exports only about a third of the produced gas**, with two-thirds supplied to the domestic market where the prices are far lower than those on the international markets. Another contributing factor is the government policy of under-taxing Gazprom. For instance, effective mineral extraction tax rates for Gazprom during the first half of 2018 were at about \$4 per barrel of oil equivalent, whereas for Rosneft's oil production – \$26.8— more than 6.5 times higher.¹⁰ Such a disparity cannot be reasonably explained by differences in shares of supplies of oil and gas to domestic and international markets. Over the past few years, the effective gas export duty as share of the export price has been steadily declining due to multiple exemptions provided for Gazprom. In 2005, the effective export duty (amount of export duty paid as a share of revenue from gas exports to Europe) stood at 27.2% of the European gas price, while during the first half of 2018 it declined to 19.2%.

Additionally, **Gazprom and other gas producers tied to Putin's inner circle receive sizeable tax exemptions for new export-oriented projects**, thereby diminishing the prospect that such projects would bring any meaningful revenue to the state budget. Examples of tax exemptions include:

- Tax benefits bestowed on Gazprom for the

6 June 2018 speech by Rosneft's CEO Igor Sechin:

<https://www.vedomosti.ru/business/articles/2018/06/22/773498-sechin-defitsit-nefti>

7 See the above quoted report by James Arbib and Tony Seba "Rethinking Transportation 2020-2030

8 <http://www.roskazna.ru/ispolnenie-byudzhetrov/konsolidirovannyj-byudzheto/>

9 http://www.customs.ru/index2.php?option=com_content&view=article&id=26258

10 Gazprom IFRS reports H1 2018: <http://www.gazprom.ru/f/posts/01/851439/gazprom-ifrs-2q2018-management-report-ru.pdf>; Rosneft IFRS reports H1 2018: https://www.rosneft.ru/upload/site1/document_cons_report/MDA_RUS_2Q2018.pdf

construction of its Power of Siberia gas pipeline to China. They included a zero mineral extraction tax rate for 15 years for gas fields that are to serve as a supply base for the project (Chayanda gas field in Yakutia and Kovykta gas field in the Irkutsk region), as well as a zero property rate for 20 years. In its explanatory notes to the government, Gazprom admitted that without these vast tax exemptions the “Power of Siberia” project would not be profitable;¹¹ Novatek — 23.5% of whose shares are owned by one of Putin’s closest associates, Gennady Timchenko— has secured a zero mineral extraction tax rate for 12 years for its Yamal LNG project, as well as many other direct subsidies from the state. The government has spent 97 billion rubles on the construction of the Sabetta Seaport, which is part of the project’s infrastructure. To finance the project, Novatek has received 150 billion rubles of cheap 15-year loans from the National Wealth Fund.¹²

The Russian government favors Gazprom with low tax rates in order to boost capital investments, which are significantly higher than capital spending by oil companies. In 2017, Gazprom’s capital investment spending has accounted for 23% of its annual revenue, as opposed to 10-15% for Rosneft and Lukoil. Such a policy, however disregards Gazprom’s significant surplus of upstream and pipeline capacity which means that there is no real need for such massive investment. Gazprom has a surplus of active upstream gas production capacity in the range of 100-150 bcm per year¹³ and excessive export pipeline capacity.¹⁴

Key entities and individuals benefiting from new Gazprom construction are, once again, the closest business associates of Vladimir Putin. For instance, the combined annual revenue of just three major contractor companies owned by Arkady Rotenberg and his family (Stroygazmontazh and Gazprom Drilling) and Gennady Timchenko (Stroytransneftegaz) is about 0.5 trillion rubles. These companies occupy high positions on the “RBC-500” ranking of Russia’s largest companies by the size of revenue.

Company	Position on the RBC-500 list	Annual revenue, in billions of rubles
Stroygazmontazh (Rotenberg family)	44	276
Stroytransneftegaz (Timchenko)	98	121
Gazprom Drilling (Rotenberg family)	161	64

Source: 2016 RBC-500 overall ranking of the biggest Russian companies by the size of revenue

The combined revenue of the three companies featured in the table above comes up to 65-70% of Gazprom’s annual capital expenditure on new upstream gas projects and pipelines (640-715 billion rubles in 2016-2017).

It is worth noting that Rotenberg’s Stroygazmontazh and Gazprom Drilling are effectively former Gazprom’s wholly-owned pipeline and upstream construction subsidiaries, which were bought by Rotenberg in 2008-2010 with a significant discount to real value and in a very non-transparent manner, subsequently becoming key contractors of Gazprom, now privately owned.

Essentially, **the Russian natural gas industry, while not a major source of budget revenue, is instead a mechanism for transferring profits into the pockets of Vladimir Putin’s closest circle.** It also is of a much lesser importance as source of export revenue when compared to the oil industry. Therefore, changes in gas prices and positions of Gazprom (and new players like Novatek and possibly Rosneft) in the global markets matter significantly less to the Russian economy as opposed to what happens with the oil markets and prices. Moreover, gas exports prices predominantly are indexed to international oil prices, which predetermines the fact that any future export revenue dynamics in the gas industry would also depend on the oil prices and be prone to incurring similar collateral damage in the event oil prices fall.

The rapidly increasing gas-to-gas competition and emergence of many new alternative suppliers of gas, primarily due to rapid development of LNG, is a prominent

11 State Duma Approves Tax Breaks for Gas Supplies via Power of Siberia” <http://www.forbes.ru/news/273003-gosduma-utverdila-nalogovye-lgoty-dlya-postavok-gaza-po-sile-sibiri>

12 “How State Helped to Build Yamal LNG” <https://www.rbc.ru/opinions/business/11/12/2017/5a2e37599a79476b576c3f91>

13 “Miller: Gazprom’s Gas Output Potential Exceeds Actual Production by 150 bcm/year”, <https://tass.ru/ekonomika/3417610>

14 See V. Milov presentation at the European Commission representation in Moscow: <http://www.milov.org/entry/2316>

feature of international gas markets that may further exacerbate the situation for natural gas as the source of export rents for Russia. Between 2000-2017, global LNG trade volumes have tripled, increasing from 300 to almost 900 million tons per year¹⁵. The volume of global LNG trade is projected to double in the coming years.¹⁶

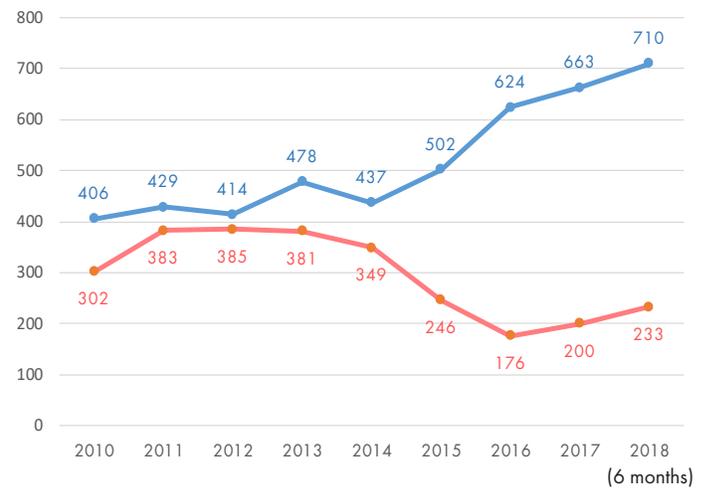
In the past decade, due to pressure from the increasing competition, Gazprom has been forced (in some cases even through courts, but for the most part, of its own volition) to abandon oil price indexation and mandatory “take or pay” conditions in its contracts with European consumers. As a result, Russian gas exports have been slowly but surely decoupling from oil prices. By 2018, the correlation with the oil prices for European consumers had been reduced by over \$35 per thousand cubic meters. The table below compares European gas sales price for Gazprom between 2007 and the first half of 2018, periods when oil prices were fairly similar:

	2007	H1 2018
Brent oil price	72.5	70.6
Gazprom gas exports price for Europe	269.4	233.1

Source: Gazprom IFRS reports, Brent oil price market data

Competition makes Gazprom’s gas sales to Europe highly dependent upon price levels. In 2010-2014, when price of gas exports to Europe ranged between \$300-400 per thousand cubic meters, export gas sales to Europe dropped to a record low 400-480 million cubic meters per day.

Gazprom’s gas exports to Europe: volumes vs prices



Source: Gazprom IFRS reports

The recent surge in sales’ volumes to Europe to 600-700 million cubic meters per day became possible only after prices fell into the range of \$180-230 per thousand cubic meters. This means that Gazprom can now only sell bigger volumes to Europe at relatively low prices, which does not generate much rent. Rapidly increasing competition in the international gas markets has already done to Gazprom what the EV revolution is yet to do to the price of oil, — gas export prices have been remarkably low and there is hardly any prospect for them to ever climb back to the 2010-2014 levels.

Russia’s gas industry is vexed by competition and lower prices at target markets due to a more competitive environment on the one hand, and the state’s unwillingness to properly tax Gazprom on the other hand. Putin’s government prefers to transfer available profits from gas exports to the pockets of its cronies who have monopolized Gazprom’s construction contracts and control over capital investment flows.

It is unlikely that Gazprom will be able to compete successfully in the international gas markets, as a continuing oversupply at the LNG market is projected beyond 2020.¹⁷ Gazprom is ranked only 8th among the biggest global LNG suppliers, even lagging behind Trinidad and

15 International Gas Union, “2018 World LNG Report” https://www.igu.org/sites/default/files/node-document-field_file/IGU_LNG_2018_0.pdf

16 Gloystein, Henning, Global LNG trade volumes to double in coming years – Vitol, Reuters, September 17, 2018, accessed at <https://www.reuters.com/article/lng-vitol-global/global-lng-trade-volumes-to-double-in-coming-years-vitol-idUSL5N1W3019>

17 “Market imbalance ‘beyond 2020’ will keep LNG prices low, Moody’s predicts”, https://www.lngworldshipping.com/news/view/market-imbalance-beyond-2020-will-keep-lng-prices-low-moodys-predicts_46638.htm

Tobago¹⁸. The only new LNG plant (Baltic LNG) is still in its initial planning stages, and already promises to be very capital-intensive. It would almost certainly require significant new tax exemptions from the state, thus providing little benefit for the state budget.

The entry of U.S. LNG into the market as a result of the shale gas revolution has introduced yet another actor contributing to downward pressure on prices. Traditional customers in Central and Eastern Europe where Gazprom had enjoyed higher sales prices due to lack of competition (the Baltic States and South-Eastern Europe) are now developing infrastructure allowing supplies from alternative producers (LNG terminal in Lithuania, Bulgaria-Greece interconnector, BRUA gas pipeline between Bulgaria, Romania and Hungary, etc.). Moreover, granting access to LNG exports to Russian gas producers beyond Gazprom (Novatek with its Yamal LNG project) has created competition among Russian companies for international markets. Gazprom, which has been vocal in communicating this concern to the Government, can do very little, since Novatek is backed by a strong Putin ally, Timchenko.

Since for the foreseeable future the global gas market promises to be far more competitive and generate far less rents than the oil market, there is no reason to consider the gas industry as a major potential contributor to the Russian economy and budget in the future – even less so than it is now.

Sizable rents are being collected by Putin's associates involved in construction of Gazprom's new infrastructure, financed through Gazprom's capital expenditure budget. But the efficiency of such spending is low. Many of the projects end up as sunk costs, and do not generate the needed value and multiplier effects that may boost the country's overall economic growth.

It is also worth noting that the key current investment projects massively pushed by Gazprom – which are primarily gas pipelines (the largest part of Gazprom's capital investment program – 33% of the 1.5 trillion rubles spent on capital expenditure in 2017)¹⁹ – do not aim to significantly increase profits from gas exports and would not yield substantial returns for the state. As mentioned

above, the Power of Siberia pipeline to China is barely profitable and will not generate tax revenue for the government.

The new massive pipeline projects in European directions – Turkish Stream and Nord Stream-2 – will not open up any new profitable markets for Gazprom, but these many billions of dollars will be expended with the political purpose of bypassing the Ukrainian gas transit network. Gazprom will not realize any financial gain (the transit fees will remain comparable to those charged by Ukraine), but will spend a lot of money on the construction of these pipelines, most likely further leveraging itself with debt.

There is no "new" gas demand at the end of these pipelines: natural gas consumption in the European Union, despite some rebounding in recent years, was at the level of 450-470 bcm per year in 2016-2017, significantly lower than the levels of 2004-2010 (over 500 bcm per year). Although European natural gas consumption may slightly grow in the future, the growth will not be overwhelming due to energy policies prioritizing the development of alternative sources of energy. Europe benefits from a healthy competition boosted by the development of alternative gas imports infrastructure (i.e. excess LNG re-gasification import capacity, permanently developing internal interconnection networks, etc.)

While the EU's own gas production is steadily falling at a rate of about 3% per year due to the depletion of North Sea gas fields, numerous options exist for importing gas from virtually anywhere in the world due to excessive LNG regasification terminal capacity, which will be expanded even further.²⁰

Gazprom's current investment strategy is not focused on maximizing future returns from gas exports. The opposite is true—**most of the current capital spending would not make gas exports more profitable, but instead will generate more debt.**

A high degree of indexation of gas export prices to international oil prices would still remain in Gazprom's and Novatek's contracts beyond 2020, which means that the gas industry revenues are also vulnerable to a scenar-

18 BP Statistical Review of World Energy 2018, <https://www.bp.com/content/dam/bp/en/corporate/pdf/energy-economics/statistical-review/bp-stats-review-2018-full-report.pdf>

19 Gazprom 2017 Annual Report accessed at <http://www.gazprom.ru/f/posts/57/287721/2017-mgt-report-ru.pdf> p.47

20 Lewis, Ian, LNG in Europe: the Heat is On, published by Petroleum Economist on June 22, 2018, accessed at <http://www.petroleum-economist.com/articles/midstream-downstream/lng/2018/lng-in-europe-the-heat-is-on>

io where oil prices collapse due to shifts in demand.

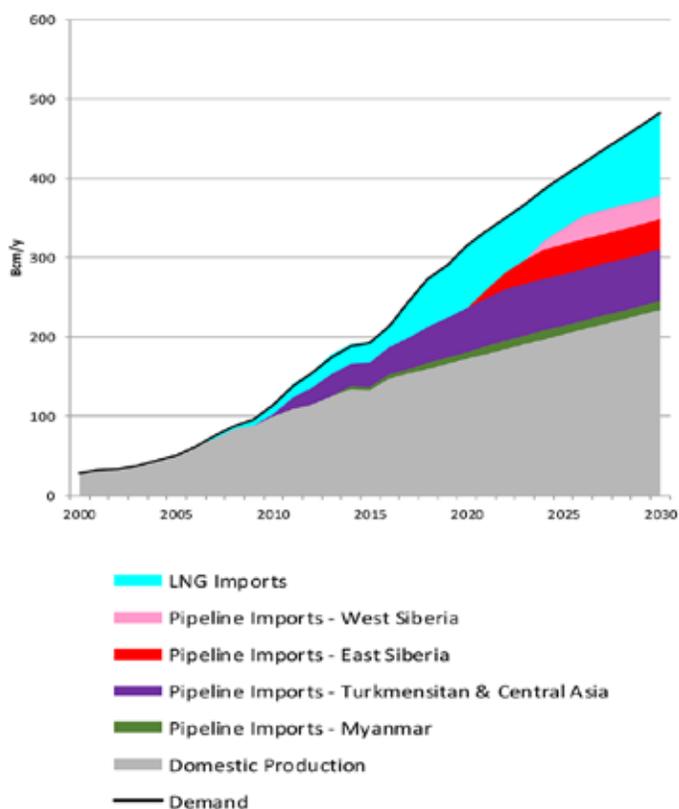
3. Failure to profitably diversify energy exports to Asia

Putin's government has consistently portrayed Russia's relations with China as a superior alternative to the West, citing specifically Russo-Chinese deals in the energy area. Gazprom has been threatening its European consumers with "a pivot to China" and diverting the Russian gas from European markets for well over a decade now. However, the **practical results of energy co-operation between Russia and China have been quite modest** to say the least, as is obvious from the data provided by the BP Statistical Review of World Energy 2018:

- Despite the 2009 opening of a direct oil pipeline corridor to China (complementing the preexisting sizable railroad oil supplies), Russian crude oil supplies to China in 2017 accounted for just 21.6% of Russia's total crude oil exports, with over 61% of crude oil still being exported to Europe;
- In 2017, China imported no pipeline gas from Russia (as opposed to over 36 bcm from Central Asia – 15% of China's total gas consumption and 39% of its total gas imports, pipeline and LNG), and only 0.6 bcm of LNG from Russia (Sakhalin-2 project), a negligible amount;
- Even after the anticipated commissioning of the "Power of Siberia" gas pipeline to China, natural gas supplies would be limited, and Russia will remain only a marginal gas supplier to China. The peak supplies volumes of 38 bcm per year projected for after 2025, would merely match the current imports of gas to China from Central Asia, and China plans to double the amount of pipeline gas imports from Central Asia. According to many forecasts, Chinese imports of pipeline gas from Russia will be trailing three other major sources of gas supplies (domestic production, LNG imports, and imports from Central Asia) all the way through to 2030 (see the graph below).

Gas imports from Russia are on a periphery for China

China Supply and Demand – 2008 to 2030, High Demand Assumption



Source: Asian LNG Demand: Key Drivers and Outlook, published by the Oxford Institute for Energy Studies, 2016²¹

- According to the Russian Central Bank, the cumulative Chinese FDI stock in Russia (in all areas, not only energy) is negligible: at mid-2018, it made up only \$3.5 billion, down from \$4.5 billion in early 2014²².
- Many ambitious energy projects with China that have been announced through the years by Russians

21 <https://www.oxfordenergy.org/wpcms/wp-content/uploads/2016/04/Asian-LNG-Demand-NG-106.pdf>

22 http://www.cbr.ru/vfs/statistics/credit_statistics/direct_investment/dir-inv_in_country_1.xlsx

never materialized – Vladivostok LNG, Western Gas Pipeline Corridor through Altai, a pipeline from Sakhalin, etc.

There are several reasons for the very slow progress in the area of energy cooperation with China, in stark contrast to the optimistic Russian rhetoric:

- Most of the Russian oil and gas resources are still located in Western Siberia, which is effectively a part of Europe. Eastern Siberia and the Far East hold less than 30% of Russia's proved and probable oil reserves, and only about 10% of proved and probable Gazprom gas reserves.
- Most of the oil reserves are located offshore in the Pacific and can be exported globally (as is the case with the Sakhalin-1 and Sakhalin-2 projects), so they need not be marketed to China specifically – and other Asia Pacific markets often offer premiums over Chinese import prices.
- Western Siberian resources are extremely difficult to deliver to China due to vast distances and the lack of necessary infrastructure, construction of which would be very costly. It is still far more economically viable to export the bulk of Russia's oil and gas to Europe, which Russia has been doing all along, despite the aggressive rhetoric about "diversification of exports to China".
- China's dependence on imports of natural gas is relatively limited. A large portion of the Chinese gas demand is satisfied by domestic production, which supplies over 60% of China's gas and has been growing at an annual rate of 9% for the past decade, a trend that is likely to be sustained for the foreseeable future.
- In search of new import supplies of energy, China has traditionally prioritized those countries which provide Chinese with control over projects, oil and gas fields, and pipelines. Russia has been reluctant to do so – it has never been willing to surrender control over the projects and only offer to China minority participation, basically suggesting that China buy wholesale oil and gas volumes at the border. This is exactly the reason why Central Asian countries – which have surrendered much greater control over oil and gas projects and assets to Chinese companies – have outplayed Russia in supplying China so far. This also explains the very small amount of Chinese FDI

stock that has been acquired by Russia so far.

Sino-Russian cooperation today is limited to just a handful of tactical projects comfortable for the Chinese side, as opposed to the "partnership of global significance" vision advanced by the Russian side.

China is in a dominant position when it comes to negotiations with Russia – it is capable of securing access to multiple resources around the globe and will only pick Russian options if they offer superior conditions compared with the others. Russians, in fact, have not truly grasped and rarely admitted this, but even when they did (like conclusion of the contract on gas supplies via the *Power of Siberia* gas pipeline which delivers near-zero profits to the Russian side) they went on with the deals heavily favoring China and with questionable economic gain to Russia.

It is safe to assume that future progress in Sino-Russian partnership will remain sluggish. Even if some projects proceed, China will exert similar pressure on conditions of supply just as it has done previously – which is why future energy relations with China will hardly deliver to Russia any sizable oil and gas rents. The presumption that supplies to China will be less profitable is also supported by higher production and transportation costs for Eastern Siberian oil and gas delivered to China.

Another interesting factor is the dependence of Russia on Chinese financing of energy projects. As mentioned above, Chinese direct investment in Russia has been fairly negligible. But to pursue their projects Russian oil and gas companies have been borrowing heavily from China, and at the moment, the total Chinese debt portfolio of the largest Russian energy companies (Rosneft, Novatek, Transneft, Gazprom) exceeds \$70 billion (of which about \$45 billion is borrowed by Rosneft – \$30 billion in the

form of advance payments for supplies of oil and petroleum products, and another \$15 billion – in the form of a 20-year loan from China Development Bank).

It is remarkable that Russia, a major global oil exporter, has emerged from the period of very high global oil prices heavily indebted to China, an oil importer. This says a lot about the efficiency of the Russian state management under Vladimir Putin.

Despite the high energy-related debt to China, negotiations with China on providing debt financing to Russian companies and projects have never been easy. Chinese banks and financial institutions have always conditioned them on guaranteed oil and gas supplies to China (often at discounted prices), procurement of Chinese goods and services, etc. Without doubt, any further Chinese financing of Russian energy companies and projects will continue to be tied to specific deals between the two countries, and China has no interest in financing general development of the Russian oil and gas industries.

4. Collapse of the coal exports

Another issue that has not been sufficiently examined is the dependence of Russia on coal exports. Russia exports over \$10 billion of coal a year (\$13.5 billion in 2017, about 4% of the total Russian exports, making it the 3rd largest exported commodity by value after oil and gas). Russia has, for a long period, held the position of the third largest supplier of coal to international markets, behind Australia and Indonesia.²³ **Coal exports are the major contributor to current, albeit sluggish, economic growth** – without it, GDP growth rates in 2017-2019 would have been even lower. For instance, in 2017, coal output grew by 6.4%, to a post-Soviet record of 410 million tons of produced coal (primarily for exports, as domestic consumption has been declining), contributing about 0.15-0.2 percentage points to the modest 1.5% growth of GDP that year.

It is worth noting that the prospects of the global coal market look even bleaker than those for oil and gas. Coal is rapidly losing its competitiveness to natural gas and renewable sources of energy, and the global demand for coal has most likely already peaked in 2013. Climate change mitigation policies and the Paris Agreement make

forecasts for the coal industry even bleaker. This will inevitably have a profound effect on Russian coal exports, as international coal trade is relatively marginal (only 16% of globally produced coal is traded internationally, according to the International Energy Agency), and most countries consume coal they produce themselves, importing only limited amounts. Therefore, it is safe to assume that the decline of global coal demand will have drastic ramifications for international coal trade, as coal-consuming countries would abandon imports first. This will be a major blow to the Russian economy.

Although coal is not as critical to the stability of the Russian economy as oil and gas, it nonetheless may yet contribute to a future economic downturn – given its current significant contribution to GDP growth and exports – and may dramatically impact the economy of several important industrial regions heavily dependent on coal production (Kemerovo and Krasnoyarsk especially), adding to the country's economic woes.

5. Failure to efficiently use energy export revenues

Apart from energy revenues and rents forecasts, an important factor determining Russia's economic future is the efficiency with which this money is spent. A key problem with the current Russian state-controlled dirigiste crony capitalism is that it offers little incentive to spend funds efficiently, instead **incentivizing corrupt behavior and the invention of unnecessary projects just to earn profits through construction.** There are specific beneficiaries of this set-up who are closely linked to Vladimir Putin. We have already mentioned oligarchs like Arkady Rotenberg and Gennady Timchenko who dominate the construction of new upstream facilities and pipelines for Gazprom. These same individuals, along with a handful of other close Putin's friends also manage lucrative contracts for construction of new roads, bridges, airports, and other infrastructure. The efficiency of their multibillion-dollar construction and development efforts is questionable at best.

The inefficiency of Putin's model of economic development based on heavy state investments as opposed to private investment can be easily measured. In 2013, before oil prices collapsed and Russia found itself under

23 http://www.customs.ru/index2.php?option=com_content&view=article&id=26258

Western economic sanctions in response to its intervention in Ukraine, total investments financed by state budgets of all levels had reached almost two trillion rubles (2.6% of GDP) and have stayed roughly at this level ever since.²⁴ Combined with the capital investments by the top 10 largest state companies, that would amount to 5 trillion rubles, or about 6.5% of GDP. However, 2013 was the last year when Russia saw modest, but notable economic growth before the outbreak of the economic crisis of 2014-2018. Since then, economic growth as such has ceased to be – despite massive capital investment by the government and the biggest state monopolies.

The inefficiency of state-linked capital investment can be observed in the examples of Gazprom and Rosneft. Currently, both companies invest heavily. For the past 6-7 years, Gazprom has maintained its capital investment program at RUR 1.5 trillion (2.5-3% of GDP). That's a sharp increase from the 2008-2009 levels of around 2% of GDP. However, gas production in the past years has fallen to humiliating historic lows. The last time when Gazprom's natural gas output surpassed the 500 bcm per year level was in 2011 (513 bcm). In 2017 its output stood at 471 bcm – down 14% from the 2008 level and about the same percentage lower than in 1999.

Gazprom maintains heavy surplus capacity in both, the upstream and trunk pipelines, and some of the investments have produced ludicrous “white elephants” of the modern era. For instance, the Sakhalin-Khabarovsk-Vladivostok gas pipeline, which came with a half a trillion rubles price tag and which was built by a consortium of companies including Stroygazmontazh owned by Arkady Rotenberg, operated with the load factor below 40% until, in 2016, the data on the level of its utilization was classified by the Russian government, to avoid further humiliation. The well-known Nord Stream pipeline operated far below its capacity until 2016-2017 when it reached an 80-90% load factor. The heaviest current capital spending effort by Gazprom is dedicated to projects which do not deliver additional profits, but rather pursue geopolitical or corruption-related goals (Power of Siberia, Turkish Stream, Nord Stream-2).

In the past few years, Rosneft has dramatically increased its capital expenditure. In 2017, its capex reached 922 trillion rubles, up from 400-500 trillion rubles in 2011-2014. However, the oil output growth has not kept up with these high dynamics. In 2017, the output

grew by 11% as compared to 2015 (organic output, not taking into account the acquisition of Bashneft – only by 1%), whereas capital investments grew 55% in rubles and 62% in dollars. While some of this investment growth was related to future greenfield projects with more complex conditions, the overall massive growth in investment did not result in improved actual performance.

The situation is similar within the road construction sector which is financed by state-controlled funds via taxpayer's money, and managed by oligarchs Rotenberg and Timchenko. In 2017, the consolidated Federal Road Fund budget reached a record high 1.5 trillion rubles – enough to build about 15,000 km of new roads assuming the average cost of 1 new kilometer at 100 million rubles. The construction of new roads, however, was at the all-time low. About 230 km of new federal roads were built in 2017 (as opposed to 934 km in 2000), and about 1860 km of federal and regional roads (about 4 times less than in 2000). This phenomenon is explained by Russia's cronyism and corruption: according to Rosavtodor—the federal agency managing road operations and construction—the bulk of the Road Fund is spent on continuous repairs of roads constructed just months earlier.

Other white elephants include large hydropower plants in Eastern Russia which operate at only 30-40% load factor, empty stadiums and other infrastructure built for the 2014 Sochi Winter Olympics and the 2018 FIFA World Cup—all projects benefiting mainly Putin's inner circle.

Even Putin's May 2018 Decree—touted as the roadmap for boosting economic development through massive state investment in infrastructure—has fallen victim to the ineffectiveness of state investments. The plan envisioned investments of about 8 trillion rubles in the so-called “national projects” which are supposed to boost the economy. However, about half of that sum has already been appropriated for building a high-speed railroad between Moscow and Saint Petersburg that may neither have sufficient passenger demand, nor stimulate economic development, and would only shorten the time of travel between the two cities from 4 to 2.5 hours. What is beyond doubt, however, is that this project would provide generous benefits to Putin's cronies.

Wasteful state spending on questionable large-scale projects benefiting Putin's friends

24 http://www.gks.ru/free_doc/new_site/business/invest/Inv-if.xls

is one of the key reasons why despite its oil and gas rents the Russian economy is unable to break through its current stagnation. If the international oil and gas price environment deteriorates any further, it will deprive Russia of essential resources even more quickly.

There is no reason to believe such spending of investment funds by the state and state monopolies will end. There are significant vested interests sustaining this trend; competition and private initiative in Russia are shrinking; private capital is fleeing the country. So, the fight for limited resources against the background of low efficiency of state-controlled economic agents will only intensify further, with little prospects that massive new investments will deliver growth.

Possible scenarios

	Minimal	Moderate	Extensive
Sharp decline of energy export revenues and profits	Oil price stabilizing at \$50-60/bbl in 2020-2030	Oil price falling to \$30-40/bbl after 2030 without ever recovering	Oil price falling to \$30-40/bbl after 2025 without ever recovering
Failure to monetize Russia's natural gas potential	Russian gas export revenues not significantly increasing as opposed to present levels	Russian gas export revenues stagnating until 2025 and substantially decreasing beyond 2025 as opposed to present levels	Russian gas export revenues substantially decreasing beyond 2020 as opposed to present levels
Failure to profitably diversify energy exports to Asia	Russia fails to export over 25% of its oil and 5% of its gas to Asia after 2020	Russia fails to export over 30% of its oil and 10% of its gas to Asia beyond 2020	Russian oil and gas exports to Asia fall below current levels after 2025
Collapse of coal exports	Russian coal exports falling from over \$10bn/year to \$5bn/year or lower after 2020	Russian coal exports falling to far less than \$5bn/year or lower after 2020	Russian coal exports falling closer to zero after 2020
Failure to efficiently use energy export revenues	Russian GDP/real income growth significantly lagging behind energy export revenue	Zero/negative GDP/real income growth on the background of remaining sizable energy export revenue	Significant decline in GDP/real income on the background of remaining sizable energy export revenue

Indicators to watch

Sharp decline of energy export revenues and profits	U.S. shale oil production (continues to rise); Share of EVs in the global car park (continues to rise); Share of oil in the global transport sector energy consumption (declines, first below 90% and then downward); Global oil demand (begins stagnating at some point); Russian oil exports in \$.
Failure to monetize Russia's natural gas potential	Gazprom's gas export prices to Europe and China; Gazprom's gas export volumes vs. prices; Comparison between gas export prices and the oil prices (interdependence will go down over time); Russian gas export volumes in \$.
Failure to profitably diversify energy exports to Asia	Share of Russian oil exports to Asia (monitor whether oil exports to Europe continues to dominate); Share of Russian gas exports to Asia (monitor whether gas exports to Europe continues to dominate)
Collapse of coal exports	Global coal demand and specifically in China (key global coal consumer and a key importer of Russian coal) (will decrease over time) Russian coal exports in \$ (will decrease over time)
Failure to efficiently use energy export revenues	Ratio of GDP and real personal income growth versus energy export revenue (in worst case scenarios, GDP and real income dynamics will lag behind energy export revenue growth, illustrating that even high energy export revenue is not converted into economic development and improvement of living standards of ordinary Russians)

Ramifications for U.S. Security

Main risks associated with negative energy scenarios are the prospects that:

- Russia transforms into a permanent zone of social and political instability, with frequent change of governments, potential coups, riots and even local armed conflicts, erratic shifts in domestic and foreign policy;

- Russia steps up its aggressive international behavior in order to compensate for the deteriorating economic situation and win popular support through creation of a “wartime” mentality;
- Conservative and ultra-nationalist forces rise to power in Russia;
- Russia becomes more dependent on foreign authoritarian powers such as China which will begin dictating its policy to a much greater extent in exchange for economic aid.

including the worst-case scenarios whose absence was so detrimental during the process of disintegration of the Soviet Union and Yugoslavia in the 1980s and 1990s.

How the U.S. Can mitigate risks

The U.S. should explore policy options for 2025-2030 and beyond involving scenarios where Russia finds itself in a serious economic trouble caused by the lack of global competitiveness in the emerging post-oil world.

Given the current state of affairs, it is difficult to imagine a reasonable dialogue with Putin’s government on the future of the post-oil era Russia. Putin’s cagey and circum-spect approach has put Russia on a collision course with all of these risks.

Presently, a positive vision of relations with the West is largely absent from the Russian domestic public narrative. Putin advances the narrative that the West will always be hostile to Russia, upholding a Cold War era rhetoric. The Russian people are bombarded with negative signals, for example Western sanctions.

The U.S. should develop and advance a vision of a completely different, mutually advantageous post-Putin relationship between Russia and the Western world. This vision would make clear to the Russian people the benefits of openness, friendly relations, trade and investments. The Russian elites and ordinary Russians must understand that other options exist for building relations with the West and that Putin’s outdated approach to foreign policy is a steep obstacle to establishing them.

Such measures will help pave the way for a turn toward the West for new Russian leaders who will inevitably emerge to replace Putin. Incentives and assurances on the prospects for re-establishing normal relations with the West and the benefits of doing so will help them change policy and normalize relations.

The U.S. government may want to think through potential crises in a “dysfunctional post-oil Russia” and narrow down the list of options for dealing with major risks,