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Russian LNG: Progress and delay in 2017

Introduction

This year, 2017, is set to mark the start of production from one of Russia's most important gas projects for many years, namely Yamal LNG. It will be the first LNG development to be operated by a Russian company from first conception to delivery of first cargo, and as such will be a significant milestone for the country's gas industry. It will not be the first project to deliver LNG from Russia - this came from the Sakhalin 2 project in the Far East in 2009 - but if all goes to plan by 2020 it will become the largest LNG production site in the country. Perhaps most interesting, though, is that it will not be run by Gazprom but by Novatek, the independent gas company with close ties to the Kremlin but no direct state ownership. Indeed, Novatek has significant plans for further growth in the LNG business, as it seeks to capitalise on the potential success of its first project.

Before considering the implications of this development, though, it is worth considering the history of Russia's LNG plans in order to understand why it is that Novatek, rather than Gazprom, stands on the brink of becoming Russia's main LNG player. As noted by Stern (2005)[1] LNG has been a topic of conversation in Russia since the 1970s,[2] but only became a realistic prospect in the early 2000s when the US appeared to be on the brink of becoming a major gas importer as its domestic production started to go into decline. Indeed Gazprom's Annual Report in 2003 noted the potential for LNG exports from Siberia and the Far East of the country,[3] while the company CEO Alexei Miller offered cautious optimism in stating that "Russia may consider supply of LNG to the American market…In principle, the unique Yamal and Northern Sea fields provide a basis for implementation of LNG production."[4]

The following year, in the 2004 Annual Report, Gazprom's plans had crystallised somewhat, with the Shtokmanovskoye (Shtokman) field being identified as the key Northern Sea asset and Kharasevey as the main Yamal asset. A third project was also mentioned near St Petersburg – Baltic LNG, a stand-alone liquefaction scheme that would receive gas from Siberia via the main trunk pipeline system rather than be associated with any one field.[5] These projects were all pointed towards western markets, but interest in Asia emerged in 2005 and 2006 as Gazprom opened negotiations on, and ultimately acquired, a 50% plus one share in the Sakhalin 2 project, buying its share from Shell and the Japanese consortium that was developing the scheme. Indeed Shell continued to manage the operations of the

[1] Stern, J. (2005) *The Future of Russian Gas and Gazprom,* Oxford University Press for the Oxford Institute for Energy Studies, pp.162-165
[2] US Department of State, Office of the Historian, 1973, "Memorandum from the President's Special Consultant for Energy (DiBona) to the President's Assistant for National Security Affairs (Kissinger): Soviet LNG" sourced from https://history.state.gov/historicaldocuments/frus1969-76v36/d174 on 2 March 2017
[3] Gazprom Annual Report 2003, p.4
[4] Alexey B. Miller, "Eurasian Direction of Russia's Gas Strategy", 2003, World Gas Conference, Tokyo
[5] Gazprom Annual Report 2004, p.27

development until it came online in 2009,[6] meaning that Gazprom was largely a passive partner in the early years of its ownership.

Sakhalin 2 shipped its first cargo to the Asian market in April 2009,[7] with Gazprom now taking over control of Sakhalin Energy, the field operator. Its confidence in its LNG future started to grow, and in its strategy presentation to investors in February 2010 it again reiterated the potential for production from Yamal, Shtokman and Sakhalin to serve the North American and Asian markets.[8] A year later it stated that its target was to have a 14% share of all globally traded LNG by 2030, both from projects in Russia and overseas, with the implication that this would mean production of 44bcma by 2020 and 85bcma by 2030.[9] Interestingly it also claimed that Shtokman would be one of the lowest cost LNG producers in the world, with a breakeven price of around US$6/mmbtu, after cost escalation at many other global LNG projects had occurred during the 2000s.[10]

Over the next two years the company continued to devote significant time to the establishment of Shtokman as a viable LNG project, but unfortunately the combined effects of the aftermath of the 2008/09 economic crisis and the rise of shale gas in the US meant that demand for its gas declined even as its estimated cost of development was rising.[11] This resulted in the project company, which Gazprom had formed with Total and Statoil, being wound up in August 2012,[12] with Gazprom declaring in 2013 that the field would only be developed "by future generations." This certainly appeared to be an eminently rational decision, and indeed was hailed by some commentators as "a triumph for common sense" because it prevented the company spending a huge amount of money on a project with significant technical, commercial and financial risks.[13]

In its place the company started to focus on LNG trading and small-scale projects aimed at supplying gas for the transport market,[14] while in 2014 it also introduced plans for a new large-scale (10-15mt) project in Vladivostok, at the end of the (yet to be built) Power of Siberia line that will also take gas direct to China. At this point it seemed that Gazprom could be producing as much as 25-35mtpa of LNG by 2020. The Baltic LNG project was due online by 2019, the Vladivostok scheme by 2018,[15] and the company had also signed an agreement with Shell for the expansion of Sakhalin 2, with the possibility that a third 5mt train could also be online by the end of the decade.[16] Indeed in its 2015 presentation to investors the company was stating a target of LNG production of more than 30mtpa (41bcma) by 2022, underlining its aggressive growth plans.[17]

However, by 2016 it had become clear that, for all the grand ambition, the reality of market conditions and Gazprom's inability to coordinate such large engineering projects using a technology with which it had very little experience would mean significant delays. By the time of the February 2016 presentation to investors, Vladivostok LNG had been postponed amid uncertainty about gas supply and project economics, Baltic LNG had been pushed back to 2021 and the expansion of Sakhalin 2 had also gone backwards (again to 2021) amid confusion over the source of gas for the project.[18] Subsequently it would seem that Baltic LNG has slipped further, to 2023,[19] while the FID for the expansion of Sakhalin

[6] New York Times, 21 Dec 2006, "Shell cedes control of Sakhalin-2"
[7] Shell web site at http://www.shell.com/about-us/major-projects/sakhalin/sakhalin-one-of-the-worlds-largest-integrated-oil-and-gas-pro.html, accessed on 17 Feb, 2017
[8] Gazprom Presentation, Feb 2010, "Gaining Momentum; Gazprom Investor Day", slide 24
[9] Gazprom Presentation, Feb 2011, "All You Need Is Gas", slide 22
[10] Songhurst, B. (2014) *LNG Plant Cost Escalation* Working Paper NG 83, Oxford Institute for Energy Studies, Oxford, p.2
[11] LNG Journal, 7 Nov 2006, "Shtokman LNG project may cost $40bn"
[12] Financial Times, 29 Aug 2012, "Shtokman exit shows a realistic Gazprom"
[13] The Times, August 2012, "Costs force Gazprom to quit vast Arctic gasfield", quoted by Utilitas Solutions at http://www.utilitas-solutions.co.uk/news/News/2012-08-30 accessed on 2 Mar 2017
[14] Gazprom Presentation, Feb 2012, "Scale Does Matter", slide 24; Gazprom Presentation, Feb 2013, "Gas for the Future", slide 26
[15] Gazprom Presentation, Feb 2014, "Investor Day 2014", slide 9
[16] Gazprom Press Release, 23 Feb 2014, "Gazprom and Shell sign roadmap for third train of Sakhalin 2"
[17] Gazprom Presentation, Feb 2015, "Gazprom Investor Day: Gas Business", slide 34
[18] Gazprom Presentation, Feb 2016, "Gazprom: navigating in a new market environment"
[19] Interfax, 8 Nov 2016, "Gazprom says launch of Baltic LNG might be postponed to 2022"

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2, which had been expected in 2017, has been deferred once more and may have to wait until a final agreement has been reached with Rosneft over use of gas from Sakhalin 1 or a development plan for Gazprom's Sakhalin 3 fields has been finalised (see later discussion). Indeed in its recent Eurobond document Gazprom estimated that first gas from the new train would not be produced before 2023/24 at the earliest.[20]

As a result, it is clear that Gazprom's plans for the development of a Russian LNG business have consistently disappointed over the past decade. Not all of the blame can be laid at the company's door, though, as changing market conditions have clearly shifted the playing field and it could be argued that the company was sensible to realise that some of its projects were economically unviable in a lower oil and gas price world. Nevertheless, in overall terms it is obvious that Russia cannot claim to be a global gas player without a significant LNG presence, as a number of major markets are not accessible by pipe, and the country has fallen well behind Australia and the US, as well as Qatar, as the industry leaders. It is perhaps not surprising, then, that in 2013 President Putin decided that Gazprom's gas export monopoly should be loosened to allow Novatek and Rosneft to develop some specific LNG projects designed to supply markets in Europe and Asia.[21] What was something of a shock, though, was that he did this only one year after ordering Novatek to co-operate with Gazprom in the development of LNG on the Yamal peninsula, and indeed the two companies had signed a joint venture agreement in which Gazprom had a controlling 75% stake.[22] Within 12 months, though, Novatek had the confidence to go it alone, essentially in a direct challenge to Gazprom's LNG aspirations, and to develop a strategy that could well see it become Russia's dominant LNG player for the foreseeable future. With Rosneft also having plans to become an LNG player, Gazprom's position is clearly facing a significant challenge in this area.

Novatek's Grand LNG Strategy

The progress of the Yamal LNG project has been well documented in Novatek presentations and press reports, but some interesting observations can still be made when comparing the development with the lack of progress made by Gazprom. Firstly, when the final investment decision was taken in December 2013, a target date for the commercial launch of first LNG in 2017 was set and a budget of $26.9 billion was established.[23] As the project now stands, it seems that, despite the impact of US sanctions, which undermined Novatek's initial financing plans for the project,[24] the date for first gas will be met (albeit with a slight delay to the second rather than the first half of 2017)[25] and the budget will be adhered to.[26] Given the turbulence of oil and gas prices during the entire development period and the necessity to re-negotiate project financing to avoid using US banks, this is an impressive performance, especially when the Finance Director of Novatek, a US citizen, was forbidden from taking part in any discussions.[27]

Secondly, Novatek has successfully managed a foreign consortium of investors including Total, CNPC and the Chinese Silk Road Fund to bring technical expertise, financial support and an important LNG buyer together to help optimise the Yamal LNG project. Total has brought its global LNG expertise, CNPC has contracted to buy 3mtpa of LNG and the Silk Road Fund investment has catalysed Chinese financial support, with Chinese banks lending a total of $12 billion to the project[28] while the Fund directly invested €1.087 billion for its 9.9% stake.[29] As a result, Novatek not only became an important vehicle

[20] Reuters, 13 March 2017, "Russia's Gazprom delays Baltic, Sakhalin LNG projects"
[21] Reuters, 2 Dec 2013, "Russia's Putin approves LNG exports for Gazprom's rivals"
[22] Gazprom Press Release, 10 Jan 2013, "Gazprom and Novatek setting up joint venture for LNG production in Yamal Peninsula"
[23] Novatek Press Release, 18 Dec 2013, "Final Investment Decision made on Yamal LNG Project"
[24] Reuters, 22 Mar 2016, "Russia's Novatek CEO admits sanctions hurt Yamal LNG"
[25] Interfax, 9 Feb 2017, "Yamal LNG plans launch in October 2017 – Total"
[26] Interfax, 20 Jan 2017, "Yamal LNG investment totals $21bn, 2017 budget is about $6bn"
[27] Reuters, 27 Aug 2014, "Sanctions headache for foreign executives at Russian firms"
[28] Bloomberg, 29 April 2016, "Russia LNG plant gets $12 billion from China amid sanctions"
[29] Novatek Press Release, 15 Mar 2016, "Novatek and China's Silk Road Fund conclude selling 9.9% stake in Yamal LNG"

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for international partnership but also became a key link in Russia's drive to expand links with Asia as part of the country's "Pivot to Asia".

Thirdly, Novatek also managed a development that has been technically challenging and has required significant innovation. Yamal LNG will be the world's first LNG project inside the Arctic Circle, necessitating new technology to be used in a number of areas. Special drilling equipment was designed and constructed for the 200 wells required; tens of thousands of piles have been driven into the permafrost to support all the liquefaction and storage equipment on a scale not seen before;[30] an international airport and new shipping port have been constructed to receive much of the new facility in modular form from yards in Asia; and specially designed ARC7 ice-breaking LNG tankers have been designed to deal with the significant issue of transporting LNG across ice-bound waters.[31]

A fourth point to be noted is that Novatek has also received vital government support that has underpinned the commerciality of the Yamal LNG development. A 12-year tax holiday from Mineral Extraction Tax, added to the fact that Russia LNG exports pay no export tax, has improved project economics, and the Russian government has also subsidised the construction of the port facilities as part of its plan to develop the Far North of Russia.[32] These factors have all been vital in making Yamal LNG a viable project in a low gas price environment (see Figure 1 below). Furthermore, it can be asserted that Yamal LNG forms an important part of Russia's broader plan to establish itself as an Arctic power, and it is interesting to note that Vladimir Voronkin, the deputy head of Yamal LNG, was quoted in 2014 as saying that "we are confident. The port and the plant are under the protection of the president and the government."[33] This attitude of the Russian government has been in marked contrast with the lack of support offered to Gazprom in its Arctic LNG project at Shtokman, which failed to gain any tax relief or financial backing.[34]

Overall, then it would seem that Novatek is set to bring Yamal LNG online within the agreed timeline and budget, and has helped Russia to advance its Arctic and Asian ambitions while also expanding the country's presence in the global gas market. It is perhaps not surprising then that the project has received significant support from the Russian President.[35] Indeed, Novatek now appears to be confident enough in this support to be making ambitious plans for further LNG developments in the region, with an overall goal of seeing production from the Yamal and Gydan peninsulas actually overtaking Qatar in terms of LNG production, and also participating in Asian markets where the LNG is being sold.[36]

[30] Total web site, "Yamal LNG: The Gas that came in from the Cold", at http://www.total.com/en/energy-expertise/projects/oil-gas/lng/yamal-lng-cold-environment-gas, accessed on 20 Feb 2017
[31] Novatek presentation, April 2013, "Russia's Natural Gas Frontiers: "Harnessing the Energy of the Far North", slide 18
[32] Novatek presentation, November 2015, "Harnessing the Energy of the Far North", slide 26
[33] Reuters, 11 April 2014, "Arctic gas project backs political strategy as Russia turns east"
[34] Reuters, 23 Mar 2012, "No tax breaks yet for Shtokman"
[35] Reuters, 17 Dec 2015, "Russia's Putin pledges further support for Yamal LNG"
[36] Interfax, 24 Nov 2016, "Novatek proposes cooperation in LNG along whole chain to Japan, names Arctic LNG2"

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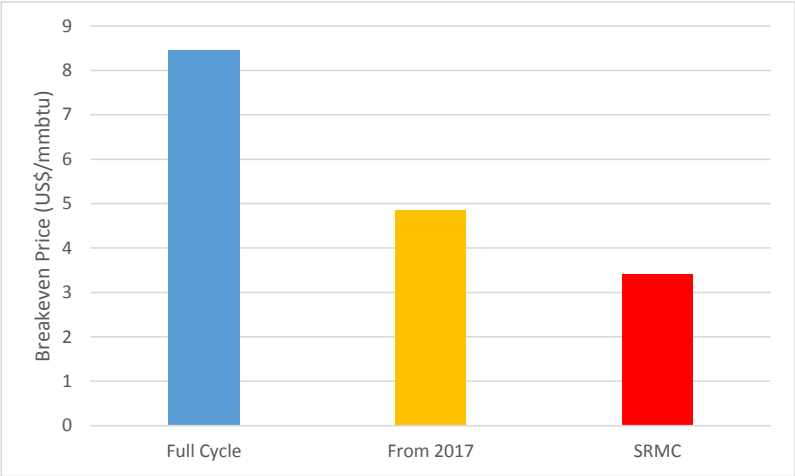
Figure 1: The Economics of Yamal LNG

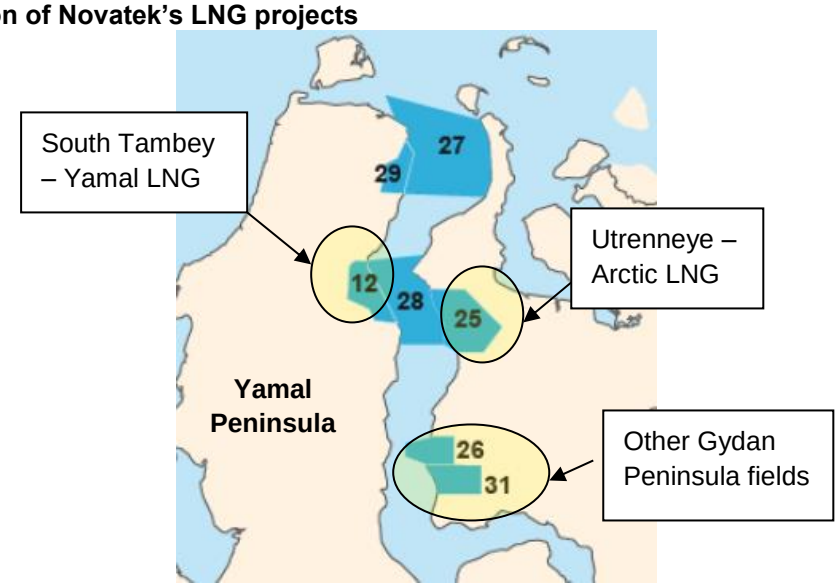


Source: Author's Analysis

Arctic LNG and expansion on Yamal

Novatek's proposed second project, provisionally named Arctic LNG-2, is based around the Salmanovskoye field on the Gydan peninsula (on the other side of the Ob Bay from the Yamal LNG project – see Map 1), which contains proved reserves of 388bcm but has a total resource base of over 1tcm under the Russian classification.[37] The company has been examining a number of concepts for project development, with the latest plan being to build a two or three train liquefaction facility with a capacity of 12-18mtpa located on gravity-based platforms placed just offshore in the Ob Bay. It is believed that this would give the project more flexibility and efficiency, and would also allow for a more gradual development timetable depending on market conditions in the mid-2020s.[38] It is also believed that Novatek's experience with Yamal LNG, combined with a different development concept, could significantly reduce costs, with a preliminary capital expenditure estimate for Arctic LNG-2 being put at not less than $10 billion.[39]

Map 1: Location of Novatek's LNG projects



Source: Novatek, with Author's additions

[37] Interfax, 15 Feb 2017, "Novatek increases resource base for LNG projects by 16%-26%"
[38] Interfax, 19 Jan 2017, "Arctic LNG-2 capacity at 12-18 mln tonnes/yr; technology to be selected soon – Mickhelson"
[39] Interfax, 21 Nov 2016, "Novatek estimates investments in Arctic LNG-2 to be at least $10bn"

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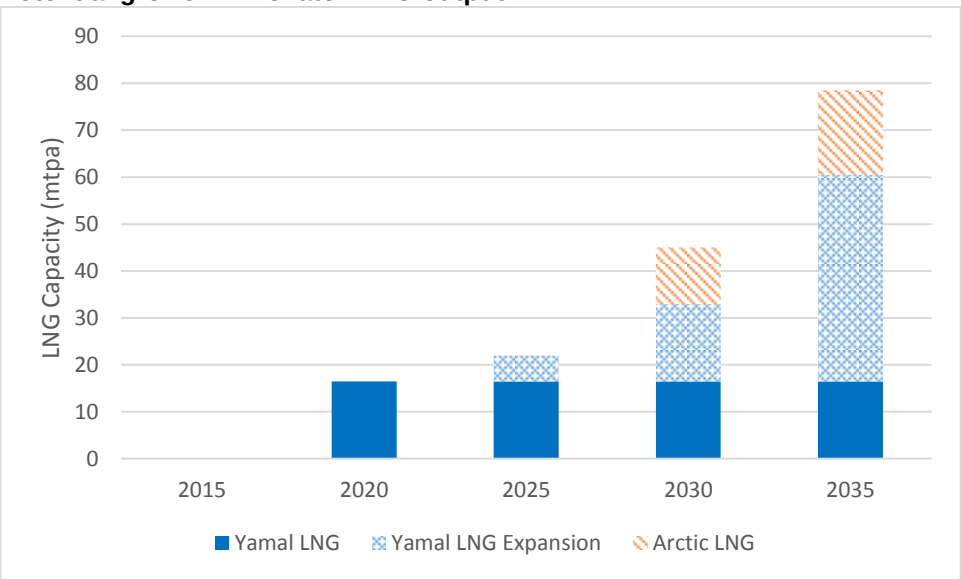
Interestingly, though, discussions about Arctic LNG-2 have now been somewhat interrupted by the thought that expansion of Yamal LNG would be more commercially rational. It would be difficult to bring reserves from across the Ob Bay to Yamal, but it now seems that Novatek may have enough resources to expand Yamal LNG from its existing fields, and even more unprecedentedly may be able to acquire new fields in the area from Gazprom. Novatek CEO Leonid Mikhelson has already agreed that the existing resource base at the South Tambey field, which is the source of Yamal LNG's gas, is large enough to countenance a fourth train at the project, and indeed space has been made available for just such a facility to be built. Furthermore, the point is underlined by the fact that reserves at South Tambey have recently been upgraded by 16% to 607bcm under the very conservative SEC rules, while under the Russian classification they total 1.4tcm.[40] This would be more than enough to accommodate a fourth 5.5mt train at Yamal LNG.

A grander and more revolutionary plan would involve the acquisition by Novatek of 4 fields currently owned by Gazprom that are located close to the Yamal LNG facilities. These fields were intended to be the foundation for the Gazprom-Novatek LNG JV mentioned earlier, and have also been provisionally put aside by Gazprom to supply the Bovanenkovo field and pipeline system when current production goes into decline. They make up the Tambey Group of fields, which includes North Tambey, West Tambey, Malyginsky and Tasiisky, and contain a combined total of 2.65tcm of gas, according to reports in the Russian press.[41] Theoretically, this could be enough gas to add a further eight trains to the Yamal project, or around 44mtpa of LNG. If this was then added to the 4 trains of Yamal LNG already mentioned (three under construction and one planned), plus two trains of Arctic LNG-2 then the total of 78mtpa mentioned by Mikhelson could be reached (see Figure 2). Clearly this is a very ambitious target, especially at a time when the outlook for gas in a decarbonising global energy market is unclear, and any future LNG development will be dependent on finding sufficient customers for the gas. Novatek is clearly confident in the outlook, but the use of shading in Figure 2 demonstrates the caution that should be applied to any forecast.

Figure 2: Potential growth in Novatek LNG output



Source: Author's analysis

Apparently Novatek has offered 3% of its shares, worth $1.2 billion, in return for the fields, but perhaps not surprisingly Gazprom is not interested in such a minority stake, which it could add to the 10% of

[40] Interfax, 15 Feb 2017, "Novatek increases resource base for LNG projects by 16%-26%"
[41] Interfax, 28 Nov 2017, "Novatek in talks with Gazprom to acquire 4 major Yamal deposits – paper"

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Novatek which it already owns.[42] It is in any case disinclined to sell such strategic fields to a "competitor". Novatek has indicated that negotiations are on-going and it has enlisted the help of the Energy Minister, Alexander Novak, to request assistance from President Putin in getting the deal done.[43] Novatek have argued that it can monetise the fields much more rapidly than Gazprom, who would be unlikely to use the gas much before 2035 given the state of the European gas market at which they are aimed and the ample reserves which already exist in fields closer to market. On the other hand, the Tambey Group of fields could form the basis of a globally significant LNG scheme similar to that being run from the North field in Qatar, which could not only provide extra export revenues but could also support the development of a domestic LNG industry in Russia.

Building a Russian LNG value chain

This additional point could be a very important argument for Novatek, as import substitution has become a major theme for the Russian government since the imposition of sanctions by the US and EU in 2014 in the wake of the Ukraine crisis.[44] Since 2014 Novatek CEO Mikhelson has been discussing the creation of a Russian engineering firm which could cover many of the needs of an LNG project, and he has subsequently suggested purchasing equity in one of the contractors for Yamal LNG, as a starting point for building a production base for the Arctic LNG-2 project.[45] Furthermore, the company has discussed building facilities in Murmansk that could be used to construct the gravity-based platforms that would be the foundation of the scheme. Indeed a wharf is already under construction, and Mikhelson plans to localise as much of the LNG implementation chain as possible over the next decade.[46] It is widely accepted that Russia is unlikely to be fully self-sufficient in LNG technology, and negotiations with Japanese, Korean, European and US manufacturers continue, but Novatek is certainly leading the way in bringing as much of the technology onshore Russia as possible. Whether it is ultimately successful or not, and indeed whether there will ultimately be a need for the gas in the global energy market, remains an uncertainty, but nevertheless this initiative alone could well be enough to generate more support from the Kremlin to underpin Novatek's ambitions in the LNG market, especially if concerns about possible future sanctions on LNG technology persist.[47]

One final point on Novatek is that the company is also considering moves downstream, with possible co-operation with foreign companies on the development of new markets as well as direct investment in regasification facilities.48 Indeed one of Novatek's major shareholders, Gennady Timchenko, has suggested that the company could invest in regasification facilities in China, if Chinese companies purchase enough Russian LNG to justify a project.49 In addition, Novatek has also started to trade more actively in the LNG market, with its subsidiary Novatek Gas & Power opening an LNG division. Its initial business concerned the onward sale of 2.38mtpa of LNG from Yamal LNG, but it has also now entered the spot market, trading a Trinidad cargo to Chile and underlining that it has plans to be an active participant across the LNG chain.50 As a result, it is clear that Novatek not only has plans to become Russia's largest LNG producer, but also a significant player in the global LNG market.

Rosneft – keeping its options open

Rosneft was, almost more aggressively than Novatek, an initiator of the 2013 Russian government decision to liberalise LNG exports. However, the company is much further away from any realistic LNG output than its independent domestic gas peer, begging the question as to why it expended so much effort to support a law which will have little if any short-to-medium term impact on the company. One

[42] Press report from RBC, cited at https://greatest.info/michelson-has-offered-to-gazprom-3-novatek-for-fields-on-the-yamal-peninsula/ and accessed on 20 Feb 2017
[43] Interfax, 16 Feb 2017, "Energy Ministry supports use of 4 Tambey fields for LNG project"
[44] Sputnik News, 23 Dec 2016, "Russia makes serious steps in import substitution – Putin"
[45] Interfax, 4 Oct 2016, "Novatek considering purchase of LNG contractor for localisation of equipment production"
[46] Interfax, 24 Nov 2016, "Novatek selects concept for new LNG project"
[47] Platts, 12 Dec 2016, "The effectiveness and future of Western sanctions on Russia: Fuel for thought"
[48] Interfax, 24 Nov 2016, "Novatek proposes cooperation in LNG along the whole chain to Japan, names Arctic LNG-2"
[49] Interfax, 8 Feb 2017, "Novatek could invest in re-gasification terminals in China – Timchenko"
[50] Interfax, 7 July 2016, "Novatek Gas & Power ships first LNG cargo"

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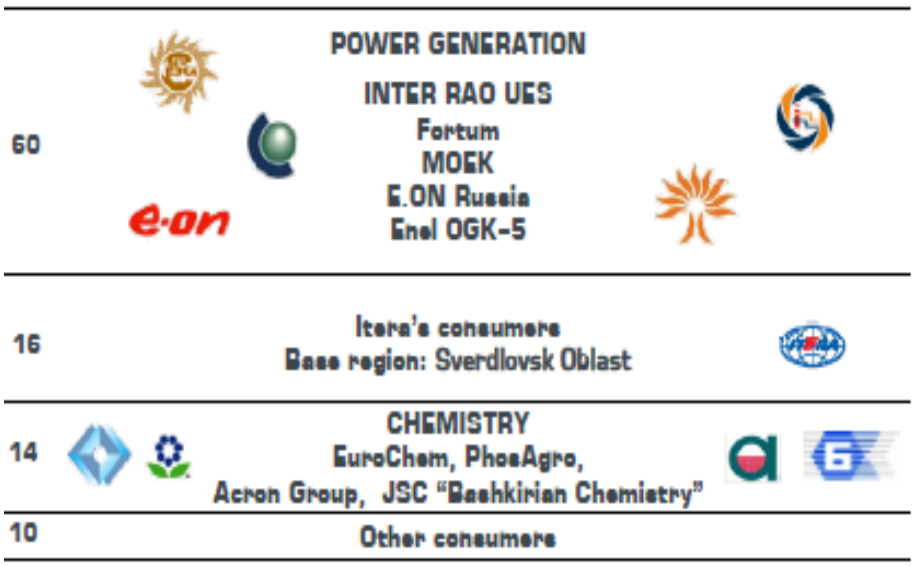
answer, it would seem, is that Rosneft is keeping its gas options open, and that its LNG plans are just one part of an overall strategy to exploit perceived Gazprom weakness and thereby to create new business opportunities. Furthermore, the company has many other priorities, not the least being to pay down debt for its major acquisitions, the financing of a refinery upgrade programme, the maintenance of oil production in Russia and increased international investment, which could all push back its plans in the gas sector.[51]

Another contrast with Novatek is that, while the latter's domestic gas sales seem set to peak in the next couple of years (production from fields other than South Tambey and the Gydan peninsula could be in decline by 2020),[52] Rosneft's domestic production is forecast to continue growing to 2020, when it is likely to overtake Novatek as the second largest seller of gas inside Russia. Novatek's focus is on growth from LNG exports and from increased production of liquids, while Rosneft's main objective is to expand gas production for the domestic market to 100bcma by the end of the decade. While the two companies may actually be producing very similar amounts of gas at that time, around one quarter of Novatek's output will be exported while all of Rosneft's will be sold domestically.

From a Rosneft perspective, there seems to be no way to avoid the domestic focus in the short-term. Contracts with industrial customers and power generators have been signed which will require the company to sell 100bcma of gas by 2020 (see Figure 3), and the assets within Rosneft's portfolio to produce this gas have been identified. The Rospan, Kharampur, Sibneftegaz and KCHLA assets can combine with existing fields and increased use of associated gas to increase the company's output to the targeted level by the end of the decade, but merely by dint of their location in the heartland of West Siberia these fields are dedicated to the domestic market.

Figure 3: Split of Rosneft domestic Russian gas contracts (%)



Source: Rosneft

Rosneft's export ambitions are therefore longer term by definition, and it would seem that the company is using its LNG ambitions, which do involve potential real projects, as a tool to negotiate a greater role in Russia's gas sector. The projects themselves may or may not come to pass, as will be discussed below, but it seems very clear that they will be used in negotiations with Gazprom and the Kremlin to secure Rosneft's future growth in the Russian energy business. This is likely to involve further lobbying

[51] Rosneft presentation, 27 Feb 2017, "IFRS Results, Q4 and 12M 2016", slides 2-10
[52] Sberbank Report, Oct 2016, "Russian Oil and Gas: Breaks and Fractures", p.32

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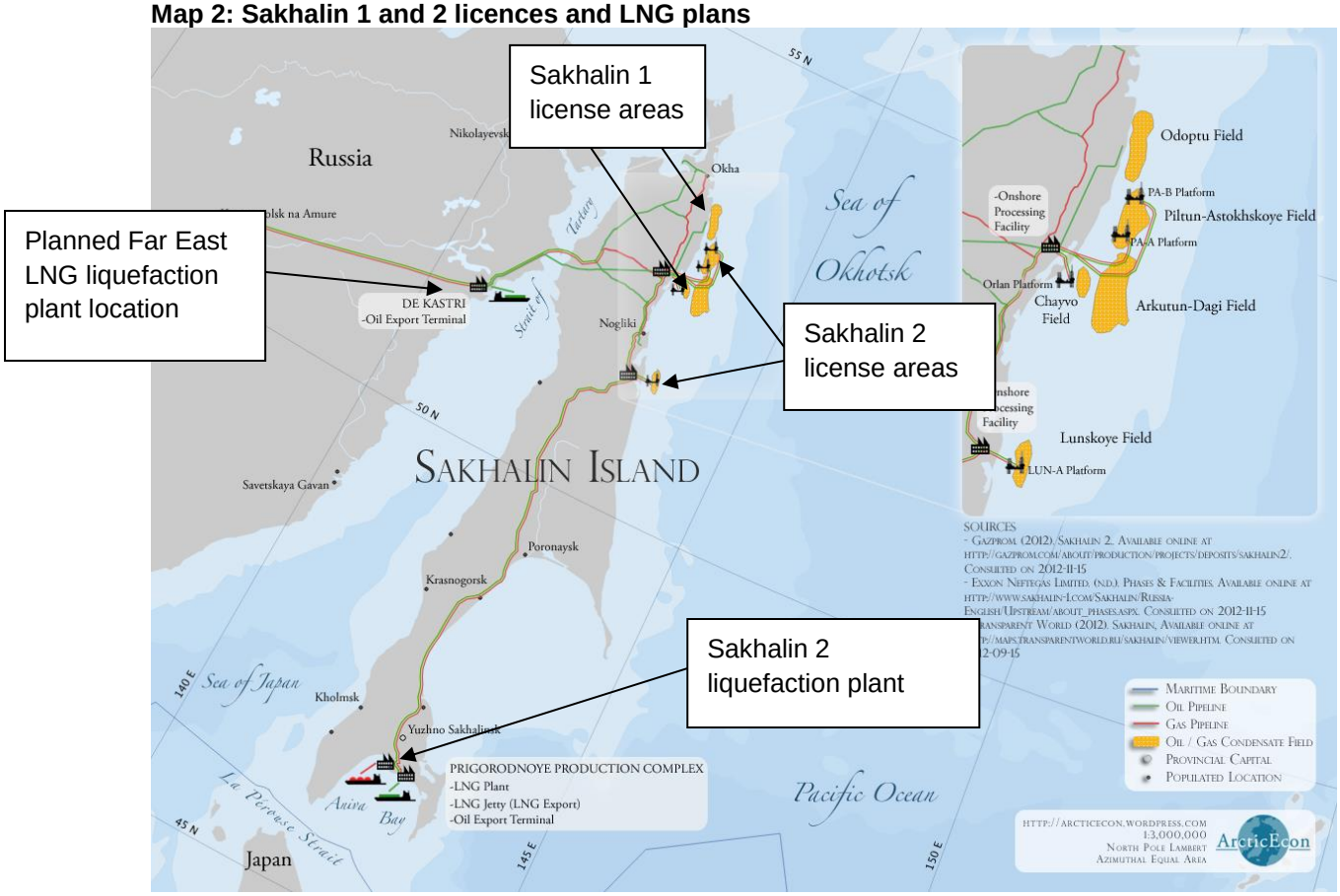
for access to pipeline exports to Asia, and may also include a repeat of its request to sell gas to Europe in a direct challenge to Gazprom's core business.[53]

Far East LNG – an option for Sakhalin 1 gas

Rosneft has identified a resource base of 582bcm in and around the northern tip of Sakhalin Island, the majority of which is contained in the Chaivo field of the Sakhalin 1 license. Furthermore, it estimates that there could be a further 1.76tcm of exploration potential in its licenses nearby.[54] The key question, though, is how to monetise this gas, and the issue has been exercising the company and its major partner ExxonMobil for more than two decades, as the PSA which included the right to build a pipeline to China was signed in 1996. By 2006 the Sakhalin 1 partners had agreed a provisional deal to export gas via pipeline to China,[55] but when this was undermined by Gazprom's insistence that its export monopoly should be maintained, a lengthy period of negotiation began. Gazprom has consistently demanded that Sakhalin 1 gas be sold to it at close to the domestic market price, while Rosneft and ExxonMobil have countered that they should be given a price closer to the export netback level which Gazprom could earn if the gas is liquefied at the Sakhalin-2 plant.[56]

Map 2: Sakhalin 1 and 2 licences and LNG plans



Source: ArcticEcon, with Author's additions

The debate has intensified as both sides' need to monetise the gas resources on the island has intensified. For Gazprom, Sakhalin-1 gas provides the most obvious, and cheapest, source of gas to

[53] Reuters, 7 Mar 2014, "Rosneft challenges Gazprom monopoly to export Russian pipeline gas"
[54] Rosneft presentation, October 2016, "Rosneft Gas Business", slide 20
[55] Moscow Times, 24 Oct 2006, "Exxon's Sakhalin-1 signs China deal"
[56] Reuters, 2 July 2008, "Gazprom offers below market for Exxon Sakhalin-1 gas"

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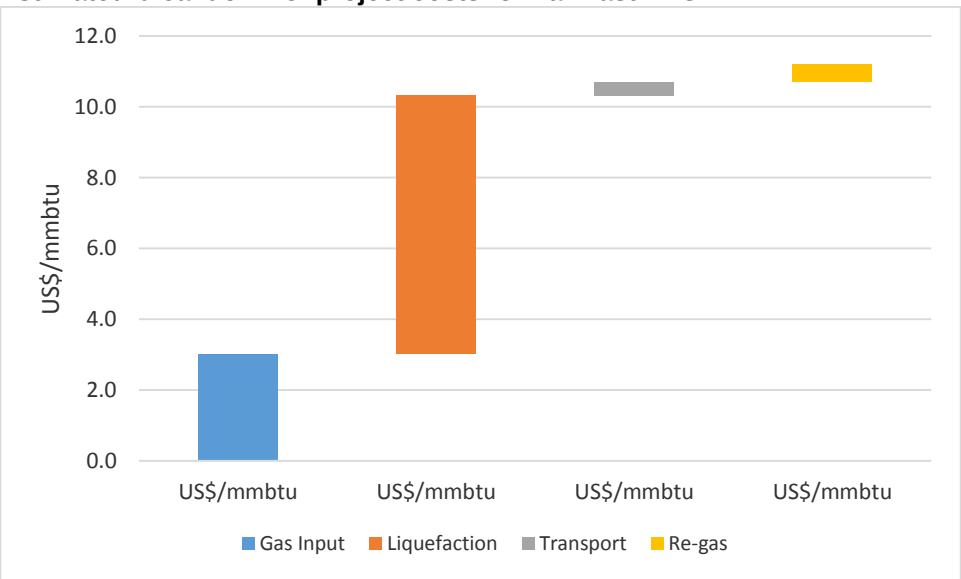
supply the planned third train of the Sakhalin-2 project, as the alternative (development of the South Kirinsky field at Sakhalin 3) will be both technically challenging and expensive. Furthermore, the US sanctions regime now covers this field because of its oil reserves, making it more difficult for foreign companies to become involved.[57] A sale of gas to Sakhalin-2 also makes sense for the Sakhalin-1 partners as the easiest route to monetisation, but only, of course, at the right price. The bargaining position of Rosneft and ExxonMobil was rather weak until 2013, as the gas was effectively stranded, but after the liberalisation of LNG exports, which was specifically designed to allow offshore reserves owned by state companies to be exported as LNG, the companies have been able to show that they have an alternative.

Economically, it is hard to believe that a stand-alone 5mt LNG plant built on a greenfield site in a remote part of eastern Russia can really make sense in a world where LNG prices in Asia have fallen to $7-8/mmbtu. Indeed, our preliminary analysis suggests that Far East LNG, the scheme planned to liquefy Sakhalin-1 gas, would need a price of $10-11/mmbtu to breakeven, based on total capital expenditure of $12 billion and a discount rate of 10% real (see Chart 4). At the Sakhalin Oil and Gas Conference in September 2016, the project partners made it clear that they are looking to optimise costs and improve the potential project economics, so this breakeven figure could certainly fall, but it was also stated that a number of alternative monetisation options are being considered. Alexander Zharov, Rosneft's head of offshore exploration, stated that "it's probably rash to say that we're ready to make a decision [on construction], but the company is intent on considering the project." Furthermore, his presentation suggested that a final investment decision could possibly be made in 2017-18, and that a timetable for construction is "2019-2023+".[58]

Figure 4: Estimated breakdown of project costs for Far East LNG



Source: Author's Analysis

The Sakhalin-1 partners are also considering the best location for a possible LNG plant, with De-Kastri, the site of the oil export terminal, now seen as having the best potential. Furthermore, they have won the legal right to use Gazprom's pipeline on the island to transport gas to a new plant, after a lengthy legal dispute.[59] However, it is interesting that the proposed plant is not on Sakhalin Island itself, and so is likely to receive less support from the regional governor. Furthermore, ExxonMobil have continued to

[57] Henderson, J. & Mitrova, T. (2015) *The Political and Commercial Dynamics of Russia's Gas Export Strategy* Working Paper NG 102, Oxford Institute for Energy Studies, p.69
[58] Interfax, 28 Sept 2016, "Rosneft, Exxon trying to reduce capex for Far East LNG, FID possible in 2017-18"
[59] Interfax, 3 Nov 2016, "Gazprom proposes legal changes after losing case on Rosneft access to Sakhalin-2 pipeline"

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state that "while an LNG plant is an option to maximise benefits to the consortium and the Russian state, we continue to explore every opportunity to fully monetize Sakhalin-1 gas resources."[60] Again, it seems to be clear that the Sakhalin-1 partners are using the LNG option as one of many alternatives, in order to establish a stronger bargaining position with Gazprom over a potential sale of gas to Sakhalin-2. Far East LNG certainly could go ahead, if necessary, but as will be discussed below, even the Russian government now sees the need to encourage a more optimal outcome of cooperation between its two main state energy companies, especially as the final investment decision on expansion of Sakhalin 2 is expected in 2017.[61]

Pechora LNG – another option with alternative outcomes

The Pechora LNG project, which as its name suggests is located in the north-western Timan Pechora region of Russia close to the Barents Sea, was originally conceived by private company Alltech as a way to monetise the gas reserves in the Kumshinskoye and Korovinskoye fields.[62] Rosneft bought into the project in 2015, and now has a controlling 51% stake,[63] but the potential to fully realise an LNG export scheme has been undermined by two key obstacles. Firstly, the project is not eligible to export LNG, as it is not a state-owned *offshore* asset, and the fields do not have LNG exports as part of their license allocation – LNG schemes must meet one of these criteria in order to qualify for an export licence.

Secondly, although the two fields mentioned above have gas reserves estimated at 160bcm, this would only be enough to justify a small-scale operation of up to 4mtpa. To be an optimal commercial project more reserves would be needed to support a larger liquefaction plant, but Rosneft has been thwarted in its attempts to acquire new fields. In fact, it would appear that Gazprom may have deliberately overpaid to buy gas-fields nearby in order to undermine Rosneft's LNG ambitions, purchasing the Layavozhskoye and Vaneivisskoye fields for what was described as "a top-dollar price."[64] While any discussion of price is clearly subjective, it certainly appears that Gazprom hardly had any need for new gas in this region, as the nearest pipeline system (the Bovanenko-Ukhta line) will be filled with gas from the Yamal region for the foreseeable future. As a result, claims that the purchase was made just to block Rosneft's ambitions would appear to have some validity, and underline the continuing competition between the two companies.

As a result of this loss, Rosneft has been forced to reconsider its options. While not ruling out an LNG project, the company has now started to assess the potential for a gas chemicals plant and is apparently also considering just selling gas directly to Gazprom (again using the LNG option to optimise an otherwise weak bargaining position).[65] Therefore, it would appear that once again Rosneft's LNG plans are more concerned with creating optionality rather than being driven by an outright objective of building a core LNG business.

International plans could include LNG

Interestingly, although Rosneft's plans to export LNG from Russia are still some way from being achieved, the company is also exploring opportunities in the international gas market. During a presentation in October 2016 it highlighted gas-related investments in Venezuela, Vietnam, Brazil and Mozambique, with the latter appearing to have the greatest potential as an LNG project. Rosneft and ExxonMobil won three exploration blocks in the third licensing round in 2015, with the licenses being close to the fields that will form the basis of an LNG scheme being developed by ENI (Coral South).[66]

[60] Interfax, 26 Dec 2016, "Exxon considers De-Kastri as best location for LNG plant, project to maximise advantages under Sakhalin-1 PSA"
[61] Interfax, 30 June 2016, "Gazprom plans to approve FID for 3rd train of Sakhalin-2 in Q1 2017 – Deputy CEO Medvedev"
[62] Mitrova, T. (2013) *Russian LNG: The long road to export*, IFRI Russia/NIS Centre, Paris, p.31
[63] Russisa Energy Forum, 8 Dec 2015, "Rosneft buys controlling stake in Pechora LNG", sourced from http://russianenergyforum.com/2015/12/08/rosneft-buys-controlling-stake-in-pechora-lng/ on 22 Feb 2017
[64] Interfax, 20 June 2016, "Gazprom paid top dollar for new fields, despite ample gas resources"
[65] Interfax, 11 Nov 2016, "Rosneft thinks gas chemicals, pipeline gas supplies under Pechora LNG"
[66] Reuters, 5 Aug 2016, "ENI reaches deal with Exxon on Mozambique gas project"

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Indeed ExxonMobil has now bought into the Coral South project, meaning that any new gas reserves found in its partnership with Rosneft could naturally become part of the same development.[67]

Subsequently Rosneft has completed its own deal with ENI on a more northerly project, the Zohr field offshore Egypt, where it purchased a 30% stake for $1.5 billion in December 2016.[68] Production is due to commence from the 950bcm field in 2017,[69] with the gas initially destined for the domestic market, but ultimately the gas could be used to re-start Egypt's currently dormant LNG export business, as the country has ample under-utilised liquefaction capacity.[70] Indeed, this potential outcome was mentioned by Rosneft CEO Igor Sechin in December 2016 as 19.5% of the company was being sold to a consortium of the energy trader Glencore and the Qatari sovereign wealth fund. With Glencore being a significant LNG trader and Qatar being the world's largest LNG exporter, there is clearly some potential for cooperation in expanding Rosneft's global gas ambitions, with the use of Egyptian gas being one potential example.[71] Furthermore, plans for the Zohr field may also be catalysed by the introduction of BP as a partner, after it purchased a 10% stake in November 2016.[72]

However, while acknowledging Rosneft's international ambition, it would seem that once again the strategy should perhaps be described as opportunistic rather than calculated. Rosneft is creating options for itself both domestically and overseas, with the possibility of partnership in both arenas, but it remains to be seen how firmly the company will commit to its global gas market plans. It would seem that its growth in the Russian domestic market is guaranteed, at least until 2020, but its export plans, both from Russian and international projects, are rather more speculative and long-term, and may ultimately just be bargaining chips in a broader negotiating game.

LNG as a bargaining chip for pipeline exports?

Part of the broader Rosneft gas strategy concerns access to the export market via pipeline, particularly in Asia but also potentially in Europe,[73] and it is possible that the company's LNG ambitions could be used as a negotiating tool in this debate. Rosneft has made it very clear that it is frustrated that its 1.2tcm of gas reserves in East Siberia are essentially stranded because of a lack of infrastructure, as access to the Power of Siberia pipeline is being restricted by Gazprom. Rosneft has gas fields in two core areas, the Lensky and Yurubchensky Clusters (see Map 3), the former of which is very close to the Power of Siberia line.[74] Rosneft is very keen to gain export rights to China, and has ramped up the pressure on Gazprom and the Russian government by bringing Beijing Gas in as a partner at Verkhnechonskneftegaz (VCNG) with a 20% stake.[75] Although the company currently produces mainly oil, the key Verkhnechonsk field also contains 115bcm of gas and it is clearly this which is of most interest to the Chinese capital's gas distribution company. Indeed, Rosneft CEO Igor Sechin remarked on the announcement of the deal that it would "open wide perspectives for a significant expansion of Rosneft activities in the Chinese market [and would] give a new impetus to the relations between the two countries in the area of energy cooperation."[76] Furthermore, because the gas is associated gas, linked to an oil field, Rosneft also argues that it should be given priority access to the Power of Siberia pipeline, as the only alternative is to flare it, which in turn would run counter to the government strategy of encouraging 95% utilisation of all produced gas.

[67] LNG World News, 8 Aug 2016, "ExxonMobil buys stake in ENI's Mozambique LNG development"
[68] Financial Times, 12 Dec 2016, "ENI sells 30% stake in Egyptian gas field to Rosneft"
[69] Interfax, 12 Dec 2016, "ENI agrees on sale to Rosneft of 30% in Egypt's Shorouk block for $1,5bn"
[70] GIIGNL, March 2016, "The LNG Industry GIIGNL Annual Report, 2016 Edition", p.19
[71] Interfax. 11 Dec 2016, "Rosneft's JV with hew shareholders interested in upstream, including shelf; synergy in Egypt possible"
[72] Reuters, 25 Nov 2016, "BP buys stake in ENI's giant Zohr gas field offshore Egypt"
[73] Energia16, 26 Jan 2017, "BP and Rosneft agree to sell Russian gas in Europe", sourced from http://www.energia16.com/bp-and-rosneft-agree-to-sell-russian-gas-in-europe/?lang=en on 17 March 2017
[74] Rosneft presentation, October 2016, "Rosneft Gas Business", slide 19
[75] Interfax, 7 Nov 2017, "Rosneft, Beijing Gas Group sign agreement on BGG's purchase of 20% of Verkhnechonskneftegaz"
[76] Interfax, 7 Nov 2016, "Base value of 20% of VCNG that Rosneft selling to Beijing Gas approx $1.1bn"

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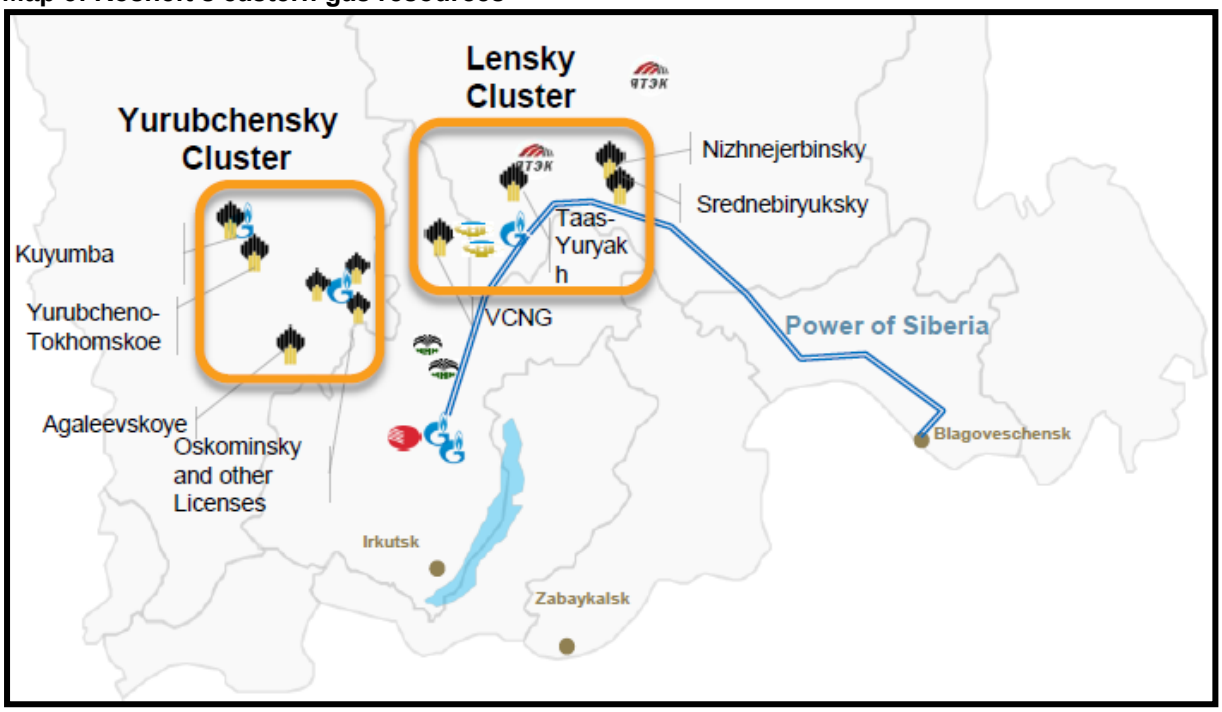
Map 3: Rosneft's eastern gas resources



Source: Rosneft

It is rather obvious, then, that Rosneft has gas export ambitions for its East Siberian gas, and may also hope that gas from the Sakhalin 1 project could flow down the SKV pipeline into NE China as well. However, a more logical outcome could be for Rosneft to finally agree to sell Sakhalin 1 gas to Gazprom at Sakhalin 2 in return for greater access to export markets for its East Siberian gas, in a move that it could also argue would be optimal for Russia as a whole. In this way plans for Far East LNG, which looks economically marginal in any case, could be sacrificed for an alternative pipeline export strategy.

Gazprom – a revision of plans and a focus on core skills?

Although the analysis above has focused on the failure of Gazprom to fulfil its, and Russia's, ambitions in the global LNG market to date, allowing a gap to be filled by its independent rivals, it would be wrong to dismiss Gazprom's role in developing LNG in Russia altogether. The company is the only current producer, via its investment in Sakhalin 2 with Shell, Mitsui and Mitsubishi, and the project has continued to perform well, consistently selling more than its nameplate capacity of 9.6mtpa. Indeed LNG export increased by 13% in 2016 to reach 10.8mt, although the monetary value fell by more than a third to $2.9 billion due to the collapse in the oil price and the consequent impact on Asian LNG prices.[77]

However, despite this success there is a growing sense that Gazprom's LNG strategy is changing, that its influence on Russia's LNG future is waning and that in terms of exports it is focusing more on maintaining and growing its core pipeline business, which has been its main strength throughout the post-Soviet era. One example of its decreasing influence can perhaps be seen in the debate over gas supply for an expanded Sakhalin 2 project. The project partners originally agreed that a third train should be constructed at a meeting in Moscow in late 2013,[78] with Gazprom subsequently committing in 2014 to provide the supply needed to fill the 5.5mt capacity. However, since then the debate on the gas supply has continued, as the negotiations with Sakhalin 1 have coincided with Gazprom's attempts to confirm the development of the gas reserves at Sakhalin 3, where it has a 100% stake. The South

[77] Interfax, 3 Feb 2017, "Sakhalin Energy ups LNG exports 13% in 2016, but price drops by a third"
[78] LNG World News, 24 Dec 2013, "Gazprom, Shell Agree on Sakhalin-2 LNG Expansion"

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Kirinskoye field, which contains over 700bcm of reserves, is complex and will require sub-sea technology that Gazprom has little experience in using.[79] The introduction of the other Sakhalin 2 partners at Sakhalin 3 would be a logical step, to provide expertise and financial support and also to allow the upstream partnership to mirror the shareholder structure at Sakhalin Energy (the operator of the Sakhalin-2 LNG scheme) but, although it has been discussed, a final agreement has been undermined by Gazprom reticence and US sanctions.[80] As a result, progress appears to have stalled, which has also undermined Gazprom's negotiations with Rosneft and ExxonMobil. Instead of having a potential oversupply of gas for Sakhalin 2, it would seem that there is no firm commitment on gas supply, and it is as much for this reason as the weakness of global gas markets that the expansion of the project has been deferred to beyond 2020. The project partners confirmed in September 2016 that they want to launch the project in 2021,[81] but until the supply issue has been resolved even this date must be in some doubt. Indeed, in March 2017 Gazprom announced that the expansion project would not be ready before 2023/24 at the earliest, underlining that that dispute with Rosneft is not close to a resolution. A benign interpretation might also suggest that this further delay might be beneficial, given the impending oversupply in the LNG market caused by new projects in the US and Australia, but such a proactive strategy was not suggested in Gazprom's announcement suggesting that the real reason is continued uncertainty over gas supply to the project.[82]

The Russian government seems to be as frustrated as the companies involved over the procrastination, which is undermining the country's position as a global gas player. As a result, the Energy Ministry has stepped into the debate between the Sakhalin 1 and Sakhalin 2 partners and has insisted that they reach some form of decision over the two options on the table: either Sakhalin 1 gas is sold to Sakhalin 2 or it is developed as a stand-alone project.[83] This element of "banging heads together" by the government demonstrates the point that Gazprom can no longer be relied on to get the job done, as far as LNG is concerned, and also emphasizes the rivalry between the two state energy companies that was also evident at Pechora LNG.

Another interesting twist to the Sakhalin 2 debate is that Gazprom has announced recently that it has re-opened discussions with China over sending gas for export via the Sakhalin-Khabarovsk-Vladivostok (SKV) pipeline (see Map 4). This Far East route was first mentioned in September 2015, at a time when President Putin was in Beijing and needed a substitute for the western Altai pipeline, which no longer appears to be of short-term interest to China.[84] It was rekindled at a meeting in February 2017 in a discussion between Gazprom and CNPC over broader energy cooperation, raising the possibility that Sakhalin gas could be sent via pipe rather than LNG to China. The SKV pipeline is already in place and could be expanded to 30bcma, from its current 6bcma, capacity with the addition of extra compressors, and provides an alternative outlet for either Sakhalin 3 gas, or Sakhalin 1 gas, or both. Given the combined production capacity of these licences (8bcma or more from Sakhalin 1 and 26.5bcma from Sakhalin 3),[85] this would not preclude the expansion of Sakhalin 2 as well, but it will be interesting to see if the pipeline option, more in tune with Gazprom's core business, starts to increase in importance.

[79] Interfax, 29 Sept 2016, "Gazprom maintaining schedule for Yuzhno-Kirinskoye field, but it will depend on markets"
[80] Reuters, 10 Aug 2015, "US sanctions put Gazprom-Shell alliance plans in jeopardy"
[81] Reuters, 29 Sept 2016, "Russia's Gazprom plans to launch third LNG train at Sakhalin-2 in 2021"
[82] Reuters, 13 March 2017, "Russia's Gazprom delays Baltic, Sakhalin LNG projects"
[83] Interfax, 26 Dec 2016, "Ministry ask Sakhalin-1, Sakhalin-2 to decide on gas supplies for Far East LNG, LNG plant expansion"
[84] Henderson, J. & Mitrova, T. (2015) *The Political and Commercial Dynamics of Russia's Gas Export Strategy* Working Paper NG 102, Oxford Institute for Energy Studies, p.28
[85] Interfax, 29 Sept 2016, "Gazprom maintaining schedule for Yuzhno-Kirinskoye field, but it will depend on markets"

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Map 4: Russia's Far East gas pipeline

Source: Gazprom

Baltic LNG – creating a new model for Russian LNG exports

Gazprom's other major LNG development plan has also been on the table for a decade or more. Baltic LNG was first discussed in 2004, and nearly reached a final investment decision in 2007 when PetroCanada was the lead foreign partner. However, the 2008/09 financial crisis and the emergence of shale gas in the US led to the postponement of the project.[86] It re-emerged as a serious prospect in 2015, when Shell entered negotiations with Gazprom on the development of a 10mt plant that could provide an alternative export route for cheap Russian gas supply.[87]

The Russian Gas Bubble, an oversupply of gas caused by overinvestment by Gazprom in the 2000s at a time when European demand was expected to rise significantly, has been well documented.[88] Although estimates vary, CEO Alexei Miller has estimated that the company could produce as much as 600bcma, compared to the 419bcm produced in 2016.[89] However, finding a market for this gas has proved increasingly difficult, as European demand has stagnated since 2008, FSU demand for Russian gas has declined for commercial and political reasons and Gazprom has faced increasing competition in its domestic market.[90] As a result, the construction of an LNG plant on the Baltic coast which could source cheap gas at regulated domestic Russian prices (which have become even cheaper since 2014

[86] Reuters, 7 Feb 2008, "Gazprom drops Baltic LNG, PetroCanada plant in limbo"
[87] The Maritime Executive, 7 Sept 2015, "Gazprom, Shell in talks on Baltic LNG" sourced from http://www.maritime-executive.com/article/gazprom-shell-in-talks-on-baltic-lng on 22 Feb 2017
[88] Henderson, J. (2016) *Gazprom – Is 2016 the Year for a Change of Pricing Strategy in Europe?* Oxford Energy Comment, Oxford Institute for Energy Studies
[89] Speech by Alexei Miller at Valdai International Discussion Club in Berlin, 13 April 2015, sourced from Gazprom web site at: http://www.gazprom.com/press/miller-journal/029076/
[90] [90] Henderson, J. & Mitrova, T. (2015) *The Political and Commercial Dynamics of Russia's Gas Export Strategy* Working Paper NG 102, Oxford Institute for Energy Studies, pp.3-6

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thanks to the devaluation of the rouble), has appeared as a plausible option comparable with the export of US LNG based on low Henry Hub prices thanks to the prevalence of shale gas.

It is interesting that this shift in strategy, from field-based to market-based LNG projects, has been noted by the Russian government, who have attempted to prevent excessive exports of cheap gas, which could undermine the domestic market, by liberalising Gazprom sales to LNG plants and other export-oriented businesses (for example petrochemicals) in order to ensure that the state benefits fully from any gas-related exports.[91] Of course Gazprom can still effectively benefit from its low cost of gas supply in any company-owned LNG facilities, and with the current regulated price of approximately $1.80/mmbtu being much lower than the average US gas price in 2016 (US$2.51/mmbtu) it is clear that a Baltic LNG-style project could be competitive. The key remaining questions, though, are whether there is a market for large volumes of LNG from NW Russia and what the cost of constructing and operating a large greenfield LNG plant would be (as opposed to the mainly brownfield operations in the US, which have often been built on the site of regasification facilities).

In terms of cost, the initial estimates for a Baltic LNG project have been rather high and wide-ranging, from $7.5 to 15 billion. Using these figures, a breakeven price for the project could be in the range $6.50-10/mmbtu delivered to Europe, which would be challenging given the average European spot price in 2016 of around $4.57/mmbtu. Gazprom has plans to minimise the cost of the project by helping to establish a domestic LNG base of its own, potentially in partnership with Linde,[92] and this could provide an additional source of import substitution in the Russian oil and gas industry to match Novatek's plans at Murmansk. However, perhaps more importantly, Baltic LNG might compete with Gazprom's pipeline gas in Europe, creating a potential oversupply situation. Gazprom has identified alternative regional markets for its potential LNG in South America, the Middle East and SE Asia, but in all these regions it might struggle to compete with supply from competitors more conveniently located near the customers.

As a result, another alternative Gazprom strategy has been raised, based on the Baltic LNG concept but smaller, and focused on emerging markets for LNG. When initially conceived the Baltic LNG project's capacity was estimated at 3-5mtpa,[93] but this then expanded as Gazprom became more ambitious to reach 10mtpa, with potential expansion to 15mtpa.[94] However, as one of the key emerging markets in Europe is LNG as a transport fuel, either a bunker fuel for shipping or for some forms of road transport, there may be more short-term interest in plants that can supply smaller cargoes. Gazprom has mentioned that its Baltic LNG plans could handle small loads, but in practice it is also actively considering an alternative strategy, the construction of small-scale LNG plants that can truck and ship LNG to specific off-grid markets.

Gazprom's plans for small-scale LNG

Gazprom has some indirect involvement in projects already via its subsidiary Gazprombank (in which it has a 35.5% stake). For example, a Gazprombank subsidiary, Kriogaz, is supplying LNG to Estonia for use in a Baltic ferry, trucking the liquefied gas from its plant in Pskov 350km to the Estonian capital of Talinn.[95] The plant is very small, producing only 20-23,000 tonnes of LNG per year, but Kriogaz already has a second plant in Kingisepp and is planning three other facilities in Kaliningrad, Petrozavodsk and Vysotsk over the next three years. The combined capacity of all these plants is less than 1 mtpa, but they will provide the basis for expansion of sales into the Baltic States and also the bunker market around the Baltic Sea.[96] Furthermore, the Kaliningrad plant will have important political implications, as it will allow Gazprom to support the energy needs of a Russian region that is currently dependent on gas that must transit Lithuania.

[91] Interfax, 7 Feb 2017, "Econ Min supports idea to liberalise Gazprom gas price for exporters of LNG, processed gas products"
[92] LNG World Shipping, 15 Feb 2017, "Linde Group builds LNG ties with Gazprom"
[93] Alexander's Oil & Gas Connections, 27 May 2004, "Petro-Canada discusses LNG deal with Russians"
[94] Interfax, 16 June 2016, "Gazprom, Shell sign memorandum of understanding on Baltic LNG"
[95] Interfax, 27 Jan 2017, "Ferry, for first time powered by Russian LNG, begins crossing Baltic"
[96] Nefte Compass, 10 Nov 2016, "Gazprom diversifies exports with small-scale LNG"

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However, Gazprom is now taking active steps of its own. The company has taken the decision to spend around $2 billion on a 1.5-2mt small-scale plant at Portovaya, next to a compressor station on the main trunk pipeline from West Siberia,[97] while a Gazprom subsidiary called Gazprom Gazomotornoye Toplivo (which focuses on the gas for transport business) owns small plants in Kaliningrad and Petergof.[98] Overall, the company exported around 22,000 tonnes of LNG from its combined portfolio in 2015, with plans to almost double this in 2016 and grow by a further 50% in 2017. As a result, although the overall volumes are small the growth is clearly rapid.

Once again, though, Gazprom is not without competition from independent players, with the private company LNG Gorskaya planning to develop a 1.26mt plant in three phases over the next four years. The first train is expected online in December 2017, and will be competing for sales in the Baltic bunker market and in the Gulf of Finland.[99] Having said that, Gazprom's plans are moving ahead in cooperation with key technical partners, the most important of which is German company Linde who will provide heat exchangers for Gazprom's plants. Indeed Linde has been discussing the opportunity to build plant to construct heat exchangers, which are a key part of the liquefaction process, in Russia, specifically signing a joint venture agreement with Russian company Power Machines of a production facility in St. Petersburg.[100]

Map 5: Potential LNG plants on the Baltic Coast

Source: Gazprom, Gazprom Export, Energy Intelligence Group

Gazprom's strategy for small-scale LNG has also extended east, with plans to build a number of plants on the border with China. The company has reported that it is in discussion with a number of potential Chinese partners, and will be looking at the possibility of building small schemes along the border from

[97] Interfax, 28 Oct 2016, "Gazprom awards contract to build LNG plant at Portovaya for 127 billion roubles to Peton"
[98] Nefte Compass, 10 Nov 2016, "Gas has big plans for small-scale LNG – interview"
[99] Information sourced at http://www.lnggorskaya.ru/en/about-project on 23 Feb 2017
[100] Interfax, 23 Nov 2016, "Power Machines, Linde to sign agreement on JV for heat exchangers for LNG"

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Irkutsk to Vladivostok, with plants on the Pacific Coast also able to serve consumers in Japan and South Korea. The target market segments are similar to Europe, being off-grid customers, the LNG vehicle fleet and the bunker market, with NE China offering a significant opportunity in all three areas, as LNG-fuelled road and river transport is already quite prevalent.

Having said all this, one should not exaggerate the likely impact of small-scale LNG on a company like Gazprom. The volumes will be tiny in comparison with its pipeline export business, and even the construction of one large-scale plant, for example Baltic LNG, would dwarf all of its small-scale plans. Nevertheless, it is interesting to note that Gazprom does appear to be searching for a niche in the LNG market where it can diversify its export plans, and the growth of its small-scale business does appear to be moving ahead while its large plants are delayed. To an extent this is a function of the ease of building and financing smaller facilities, and the future of Train 3 at Sakhalin 2 and Baltic LNG should not be dismissed. Indeed Gazprom has recently signed another memorandum with Shell covering the marketing model for Baltic LNG, and both companies seem to be committed to its ultimate progress.[101] However, with both Sakhalin 2 expansion and Baltic LNG having been delayed into the next decade, and with small-scale LNG, although interesting, not likely to provide a significant contribution to Gazprom's overall portfolio, it is probably safe to say that the company is still some way from realising the LNG objectives it set itself over a decade ago.

Gazprom to remain focused on pipeline exports

Indeed, one interpretation of Gazprom's deferral of its main LNG plans is that the company understands that its core pipeline export business should take priority. 2016 was a very successful year for sales to Europe, as exports reached a record level of 179bcm (albeit that around 10bcm of this was indirectly sent to Ukraine), and Gazprom has plans for further growth over the next few years. However, increased competition is likely to be faced from LNG as the much heralded "new wave" of projects finally emerges from the US and Australia, and the company also faces political challenges in Europe from countries keen to diversify supply. In addition, Gazprom plans to build a number of significant new export pipelines, (Nord Stream 2, Turkish Stream, Power of Siberia-1) and could well decide that these should take priority over expensive new LNG schemes in a low gas price environment. Even in the Far East, where the expansion of Sakhalin 2 with a third train appears to be an obvious commercial decision, the company may be tempted to send new gas supply via the SKV pipeline to China, if an agreement can be reached.

Furthermore, it could be argued that the battle to be the champion of Russia's LNG business has been lost, with Novatek set to take the lead and with competition in general having been catalysed by the change in the gas export law in 2013. On the other hand, if Gazprom can demonstrate that it should retain its pipeline monopoly by optimising sales to Europe and developing the Asian market, then it can maintain its dominant position in the Russian gas sector well into the future. Its competitors concede that there is no short-term threat to the monopoly, with Novatek's CEO Leonid Mikhelson saying that pipeline gas export liberalisation is not expected in the next 1-2 years.[102] Nevertheless, beyond that date the question may be rekindled if Gazprom has not proved its continuing worth, and it is clear that Rosneft is continuing to push for change, with its recent deal to sign a preliminary agreement with BP to sell 7bcma of gas for export another reminder of its ambitions and the threat to Gazprom.[103]

Conclusions

Assuming that the Yamal LNG project comes online in 2017, which seems very likely, a new phase in the development of the Russian gas industry will begin. By 2020 Novatek will become the country's largest LNG producer, and if its further expansion plans mature it is set to become Russia's LNG champion. Indeed, Gazprom may even sell assets on the Yamal peninsula in order to facilitate Novatek's growth. This shift appears to be supported by the Russian government, and it would seem likely that, once Novatek has proved that it can successfully complete its mission at Yamal LNG then

[101] Interfax, 5 Oct 2016, "Gazprom confirms signing of memorandum with Shell on Baltic LNG"
[102] Interfax, 20 Jan 2017, "Mikhelson: pipeline gas export liberalisation no expected in 1-2 yrs; no talks on Arctic Gas deal"
[103] Interfax, 25 Jan 2017, "Rosneft, BP have memorandum on purchase of 7bcm of gas, await govt decision"

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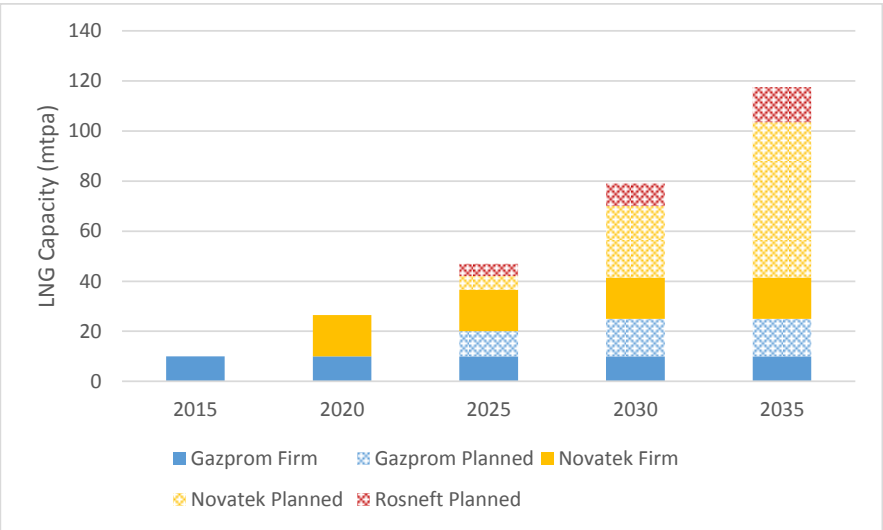
the backing of the Kremlin for further projects will be forthcoming. Figure 5 below shows that, if all its projects are ultimately fulfilled, including the significant expansion of Yamal LNG, it could lead Russia to a leading position in the global LNG market. There is much to be done between now and then, and the outlook is clearly very speculative, but it is interesting that the ambition is being laid out by Novatek even at a time of low oil and gas prices.

In contrast, Gazprom's LNG projects have been undermined by delay and indecision. Even the seemingly most obvious scheme, a third train at Sakhalin 2, has been pushed back beyond 2020, while the timing of Baltic LNG remains uncertain. Indeed, Gazprom, for all its monolithic size, seems more likely to develop small-scale LNG schemes in the Baltic and on the Chinese border, and even here is it being challenged by much smaller independent competitors. While it would be wrong to dismiss Gazprom's LNG plans altogether, it would nevertheless seem that its focus will, and probably should, remain on its core pipeline business, where it has enjoyed success in 2016 in Europe, has plans to grow in Asia but still faces significant challenges from domestic and international competitors.

Not the least of its domestic concerns emanate from its state-owned rival Rosneft, whose own LNG plans appear to be a useful bargaining chip in wider negotiations on gas market access. The company's plans for a Far East LNG project based around Sakhalin 1 could go ahead, but a much more logical and likely outcome is the sale of Sakhalin gas to Gazprom in return for some form of export-related price. Furthermore, Rosneft could use an agreement on Sakhalin as a lever to gain access to pipeline exports in East Siberia and perhaps eventually even to Europe, as it is applying pressure in both areas. Meanwhile, the Pechora LNG project seems to have stalled as Gazprom has grabbed key gas assets nearby, underlining the competition that is taking place between the two companies.

Overall, then, it would seem that only one Russia energy company, Novatek, has LNG as a core business, and indeed the company's entire future is becoming increasingly dependent on the success of its export business. Its ability to lead Russia's LNG expansion, and to create a domestic value chain allied to it, is attracting government support, with the likely outcome that Novatek will be granted the right to complete other LNG "tasks" and to become increasingly dominant within a Russian context. Meanwhile, the two state companies will continue to debate the future of Sakhalin gas, the possibility of third party access to export pipelines and the leadership role in Russian energy relations with China. LNG projects will be part of the negotiating process, but may slip down the priority list of both companies

Figure 5: Possible Russian LNG capacity over the next 20 years



Source: Author's estimates, based on assumptions concerning all of Russia's currently discussed major LNG project

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