
Russian LNG: The Long Road to Export



Tatiana Mitrova

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Related Previous Publications

- “Russia Pays High Price for Export Prize”, *Petroleum Economist LNG*, 25 September 2012.
- “Global and Russian Energy Outlook up to 2040”, with A. Makarov, L. Grigoriev, T. Mitrova (eds), ERI RAS, Moscow, 2013.
- “Changing prospects for Russian Oil and Gas”, *World Energy Insight 2013*, WEC, Daegu, 2013.

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Executive Summary

On 1st December 2013 a law on liquefied natural gas (LNG) export liberalization came into legal force in Russia. The law grants two categories of companies other than Russia's state gas giant Gazprom and its subsidiary companies the right to export LNG: (1) users of mineral resources that have a license to construct an LNG plant or to send their gas production for liquefaction, and (2) companies that are more than 50% owned by the Russian government, for gas produced from Russian offshore fields or under production-sharing agreements.

This is—without exaggeration—a historic decision for the Russian gas industry, the path to which was certainly not easy. Recent years have seen a radical change in the global economic climate, which has changed the dynamics of the European gas market (gas demand decline and Russian gas import reduction, changing pricing mechanism for a much higher share of spot indexation, European Commission anti-trust investigations against Gazprom, etc) and is increasingly pushing Russia to diversify its gas exports. However, diversifying exports through the development of LNG has proven to be not so simple. Over the past 20 years, with the exception of the Sakhalin-2 project, structured under a project-sharing agreement (PSA) rather than in the framework of national legislation, all other projects failed to come close to completion. The Kharasavey and Baltic LNG projects were abandoned in the early stages of project evaluation, while the Shtokman project progressed to the point of the operating company being created, but in the end was postponed indefinitely. The first stage of LNG development in Russia ended in failure.

However, the Russian government considers the development of LNG exports to be a priority, which can be evidenced in all official policy papers. It is believed that LNG will help in achieving a set of objectives, namely: increasing the absolute volume of exports, allowing the country to enter into previously inaccessible markets, promoting the uptake of new technologies, enabling the development of related industries, supporting the development of critical regions such as the Arctic and the Far East, restoring the strategic importance of the Northern Sea Route, and strengthening Russia's geopolitical influence in the Asia-Pacific region.

Under intense pressure from the government, which has called for swift delivery of its LNG strategy, Gazprom began to rework its strategy and pursue new options: the expansion of the Sakhalin-2 project; the Vladivostok LNG project, and the new Baltic LNG project. At the same time, independent gas producers started making their move in the market in anticipation of amendments to the institutional framework. Indeed, the desire to gain strategic position on the global LNG market works wonders: the liberalization of LNG export, which seemed practically unfeasible not so long ago, became a reality with the adoption of the recent bill. However,

this liberalization will affect only companies that have special status— e.g. Rosneft with its Sakhalin-1 project and Novatek with the Yamal LNG project. For all the remaining participants, entry to the export market is still blocked. Moreover, the new law stipulates that “in order to avoid competition between Russian exporters on the external markets, a special mechanism of LNG export coordination is envisaged. In particular, gas exporters are obliged to provide the Energy Ministry with information according to the procedure established by the Russian government”.

Nevertheless, even such a limited change in the institutional framework is breeding new competition between market participants. For Gazprom, LNG exports offer a chance not only to compensate for the slowdown in Europe, but also to restore its reputation as an industry leader in the eyes of the country’s leadership. For Novatek, Yamal LNG is the company’s largest project; it has placed all its bets on it, and is its only chance to obtain an export margin. For Rosneft, the Sakhalin-1 project is an opportunity to gain a competitive edge on Gazprom and develop export capacity for future gas projects. In fact, the fierce competition developing between projects is a struggle to obtain the status of the “most efficient and high-tech player” in the Russian gas market. Winning is evidently highly dependent on a number of key decisions by the country’s leadership—who serve as a sort of ultimate arbitrator in this battle.

Russian leadership is actively campaigning for the launch of LNG projects, and, despite all the obstacles and high costs, some will be completed by the end of this decade. Delivery times and costs, though significant, are not critical. While the return-on-investment for these projects, worth tens of billions of dollars, may be delayed, there is no doubt that sooner or later—in 15 to 20 years—they will pay off. Moreover, their strategic value in the eyes of the government is immense.

Given the typical completion times for such projects globally, one can say with high certainty that full capacity utilization by these projects should not be expected before 2020. Until then, therefore, any attempts to diversify exports with LNG will be unsuccessful. In the longer term, between 2020 and 2030, Russia has considerable potential to strengthen its influence on the LNG market. However, despite future possibilities, the government’s current intention to achieve 10% of the global LNG market by 2020 and 20% by 2030 is unrealistic. There is a long and winding road ahead. Russian LNG success will strongly depend on the ability of Russian market players to build up relations with the different groups of foreign partners. In seeking to gain a strong position in the global LNG market, Russia will have to change more and more its gas industry regulatory framework, opening it up for competition and international cooperation.

Introduction

On 22 November 2013, Russia's State Duma gave its final backing to liberalizing the export of LNG,¹ and President Putin signed the law, which came into legal force on 1 December 2013.² The legislation allows two categories of companies other than state gas giant Gazprom and its subsidiary companies to have LNG export rights: (1) users of mineral resources that have a license as of 1 January 2013 to construct an LNG plant or a license to send their gas production for liquefaction at another plant, and (2) companies that are more than 50% owned by the Russian government, and their subsidiaries, in which the state has a share of at least 50%, which are liquefying and exporting only gas produced from Russian offshore fields, including on the continental shelf and the Black and Azov seas, or gas produced under production-sharing agreements.

This may be considered as a historic decision for the Russian gas industry. The current institutional structure and decision-making systems in Russia have up to now failed to be conducive to the development of the LNG industry. Over the past 20 years, with the exception of the Sakhalin-2 project, which was structured under a project-sharing agreement rather than in the framework of national legislation, all projects failed to come close to realization. Kharasavey and Baltic LNG were abandoned in the early stages of cost-benefit evaluation, while the Shtokman project progressed to the point of the operating company being created, but in the end was postponed indefinitely. The first stage of LNG development in Russia ended in failure.

The LNG industry requires not only new technologies, but also an institutional environment that allows these technologies to develop quickly and effectively. The oversight and regulatory systems play no small role in determining the success or failure of such projects.

The past few years have seen radical change in the external environment, including the deep stagnation of the European market and subsequent radical changes to its pricing system, the rapid development of LNG supplies from other producers, and the "shale revolution", which has raised the likely prospect of large volumes of LNG supplies entering the market from new producers like the United States and Canada. Amid these high-risk conditions and increased competition, the development of flexible LNG deliveries not tied to a particular market has become a priority for Russia.

Translated from Russian by Katerina Pembroo.

¹ RIA Novosti, 22 November 2013, <<http://ria.ru/economy/20131122/979049654.html>>.

² RBK, 2 November 2013, <<http://top.rbc.ru/economics/02/12/2013/892174.shtml>>.

For the Russian government, LNG export will help achieve a set of objectives: not only will it increase the absolute volume of exports and allow the country to enter previously inaccessible markets, it will also support the development of regions (particularly ones of critical importance like the Arctic and the Far East), promote the uptake of new technologies and the development of related industries (including priority ones like shipbuilding), restore the strategic importance of the Northern Sea Route and strengthen Russia's geopolitical influence in the Asia-Pacific region. The country's leadership is keenly aware of the need to advance the development of LNG, a goal that is expressed in all official policy papers. In particular, according to the Energy Strategy of Russia up to 2030, the share of LNG in Russia's gas exports should reach 15% (i.e. about 50-60 bcm), while the Energy Ministry announced its desire to reach a 10% share of the global LNG market by 2020 (i.e. about 35-40 bcm) and a 20% share—by 2030 (again, 50-60 bcm).³ Currently the Russian share is just 3.6%.

Under intense pressure from the government, which insisted on the swift implementation of its LNG strategy, the state-owned gas company Gazprom began to rework its strategy and pursue new options, namely: the expansion of the Sakhalin-2 project; the Vladivostok LNG project, and the new Baltic LNG project. Given the unfavorable external environment, Gazprom will have to demonstrate at least one successful LNG project to strengthen its position. While the most effective and quick solution for the company would be to expand the Sakhalin-2 project and add to it a third line of LNG, the fact that the country's leadership wants to focus particularly on Russian projects (i.e. not initiated by the foreign participants) clearly keeps Sakhalin-2 off the list of priorities (as this project is mainly associated with Shell).

The delays and complications that have come to plague LNG projects are pushing the country's leaders to take action to change the regulatory framework, given that not one project has managed to reach completion under the old system. Moreover, from a purely legal standpoint, new projects by independent producers became possible only through changes to the regulatory framework. That said, the rush to get on the train before it leaves the station works wonders; the liberalizing of LNG exports, which seemed unfeasible not so long ago, is already within reach. But make no mistake: this liberalization will affect only companies that have special status—e.g. Rosneft and Novatek. For others (for example, Alltech Group with its Pechora LNG project and Lukoil), free entry to the export market is still blocked as long as Gazprom and Rosneft are not involved in the project. Moreover, the new law stipulates that “in order to avoid competition between Russian exporters on the external markets, a special mechanism of LNG export coordination is envisaged. In particular, gas exporters are obliged to provide the Energy Ministry with information according to the procedure established by the Russian government”.⁴ The

³ “A. Novak: Rossiya mozhet vdvoe uvelichit dolyu na mirovom rynke SPG” [Russia May Double its Share in the Global LNG Market], 30 October 2013, <<http://top.rbc.ru/economics/30/10/2013/885822.shtml>>.

⁴ RIA Novosti, 22 November 2013, *op. cit.* [1].

goal of the state is to protect price stability and to avoid dumping among Russian LNG producers.

At the same time even such a limited change in the regulatory framework is already breeding competition between market participants. The fight for the right to become Russia's first LNG project is much more than just a desire to get ahead. For Gazprom, LNG exports offer a chance not only to compensate for the slowdown in Europe, but also to restore its reputation as an industry leader in the eyes of the government. For Novatek, Yamal LNG is the company's largest project on which it has placed all its bets and is its only chance to obtain an export margin. For Rosneft, Sakhalin-1 is not just another project in the company's portfolio, but an opportunity to gain a competitive edge on Gazprom and develop export capacity for future gas projects. This last point is especially important when it comes to future Arctic discoveries, which, in the opinion of most experts, will mostly be of gas rather than oil.

The fierce competition developing between projects is really a struggle to obtain the status of "most efficient and high-tech player" in the Russian gas market. Winner takes all. Of course, ultimately, winning is highly dependent on key decisions taken by the country's leadership—who serve as a sort of ultimate arbitrator in this battle.

The Russian leadership is actively campaigning for the launch of LNG projects. Despite all the problems and high costs, some projects should still be completed by the end of this decade. However, given the typical completion times for such projects globally—at least five years following final investment decision (FID)—as well as the particularly difficult climate and environmental conditions for Russian projects, one can say with high certainty that a significant increase in the volume of Russian LNG deliveries to foreign markets should not be expected before 2020. Until then, any attempt to diversify export markets with LNG will likely be unsuccessful.

However, in the period 2020-2030, there is reason to expect a considerable yield of Russian LNG. It is unlikely that, by the end of this decade, the supply of Russian LNG could achieve 10% of the global LNG market share and 20% by 2030 (as Russia's Energy Minister predicts); however, LNG should provide Russia with greater exports flexibility and, most importantly, an active presence in Asian markets. The two main competitive advantages of the Russian LNG projects are the country's huge resource base, which in many cases is provided by conventional gas fields located inland (which is not the case with many of the new projects outside Russia, whose only sources are either offshore production or unconventional gas), and, for several projects, short transportation routes to Asian consumers.

There is a long and winding road ahead. Successful LNG projects will be those able to provide the following critical components:

- Export permission
- Resource base sufficient for the full load of the project, and “economy of scale” to supply gas to the LNG plant at reasonable cost
- Availability of local infrastructure for project development, or of state support for its creation
- Technological solutions providing for upstream, transportation and liquefaction costs reduction as well as minimization of environmental risks
- Flexible marketing policy, availability of guaranteed demand

The success of Russian LNG will strongly depend on the ability of Russian market players to build up relations with the different groups of foreign partners. In seeking to gain a strong position in the global LNG market, Russia will have to change its gas industry regulatory framework, opening it up for competition and international cooperation: with the partners in consortia, potential buyers, and subcontractors.

Development of the LNG Industry in Russia from 1990 to 2010: A Period of Disappointment

Russia (and before that the Soviet Union) has historically been the largest supplier of pipeline gas and for many years did not pay much attention to the constantly evolving LNG industry. The profitability of pipeline supplies was so high that there was no incentive to develop complex and costly LNG. In the 1970s, US companies proposed building LNG facilities in Murmansk and Magadan to export gas to the United States,⁵ but Russia's lack of proprietary technology and reluctance to enter into deep cooperation with US companies for the sake of their supply procurement thwarted the development of these projects.

Conditions for LNG in Russia were initially considered unfavorable given the country's geographical location and challenging climate. Despite the length of maritime borders, much of it is blocked by ice, and the only all-year-round ice-free points of access are the Barents Sea in the northwest and the Sea of Okhotsk and the Sea of Japan in southeast. This is in fact the main problem for Russian LNG projects—the need for complex and costly technical solutions for operating in extreme conditions, which in turn raises costs and limits the competitiveness of Russian LNG, at least in comparison with traditional suppliers like Algeria and Qatar.

By the end of 1990s, it became apparent that LNG was becoming an increasingly popular way of delivering gas to consumers. The possibility of easily redirecting supplies, the lack of dependence on a single buyer and, not least, the ability to reach new markets not accessible by pipeline (such as Japan) gradually increased the interest of the government and Gazprom in LNG technology.

Already in 2005-2006, Gazprom began to make swap agreements with non-Russian companies, exchanging its pipeline gas with LNG in order to gain key operational competencies. In parallel, preparations were under way for a number of Gazprom's own LNG projects.

The growing importance of LNG in Russia finally came to a head with the inception of the first LNG project on Russian territory (initiated by Shell and therefore not usually considered to be "Russian"): Sakhalin-2. This project has demonstrated the profound differences in approach to project development between foreign oil majors and Russian players. The

⁵ A. Chernyaev, *Sovmestny iskhod. Dnevnik dvukh epoch. 1972-1991*. [The Joint Outcome. Diary of Two Eras. 1972-1991], Moscow, ROSSPEN, 2008.

Russian side's rejection of the idea of equal partnership and cooperation was a serious blocker for the development of LNG projects, most of which are implemented globally on the basis of consortia and multilateral cooperation.

Sakhalin-2

The Sakhalin-2 project, under which the first Russian LNG plant was built and put into operation, is the only successful example of an integrated LNG project. Much of the success can be attributed to the fact that the initial phase of project management was in the hands of Shell, which had the experience and technological know-how for such projects.

The idea of developing Sakhalin's fields in order to open new oil and gas maritime supplies to the global market first arose in 1991, when Marathon, McDermott and Mitsui formed the MMM consortium and bid to develop the Piltun-Astokhskoye and Lunskeye deposits. In 1993, the feasibility study was completed, and the project approved by the Russian regulatory authorities. The Sakhalin Energy Investment Company Ltd was subsequently created, in 1994. This was the first project in Russia under a production sharing agreement, which was negotiated back then on the basis of the low world energy prices and the painful transitional period in the Russian oil and gas industry, with huge underinvestment. The production-sharing agreement (PSA) was formalized in 1996 after corresponding federal legislation was passed. In 2000, Shell bought Marathon's share, and as a result the shareholders of Sakhalin Energy became Shell Sakhalin Holdings BV (55%), Mitsui Sakhalin Holdings BV (25%), and Diamond Gas Sakhalin, a Mitsubishi subsidiary (20%).

This project is a perfect illustration of the difficulties that foreign companies face when doing business in Russia. The integrated project, including production, gas transport and liquefaction plant with capacity of 9.6 million tons, experienced significant delays, while the budget nearly doubled due to cost overruns (the operator sees this as the result of a sharp increase in equipment prices on the global market, and almost a year's delay in project implementation due to numerous administrative barriers and permissions required in Russia). On top of that, once the project had been finished, there was a barrage of environmental complaints, and as a result, to be able to operate normally, Shell opted at the end of 2006 to sell 50% of the project to Gazprom, keeping only 27.5% (the shares of Japan's Mitsui and Mitsubishi remained 12.5% and 10%, respectively).

Gazprom's entry into the project ensured the full support of the Russian government and made it possible to complete the project work and market LNG to the Pacific market. Moreover, in an ironic twist on the part of the Russian authorities, Sakhalin Energy was awarded "Best Environmental Project of the Year" in December 2008.

The Sakhalin-2 LNG plant was launched in 2009. In 2012, the volume of LNG production from the project reached 10.8 million tons,⁶ exceeding the design capacity by 1.2 million tons. Even before construction was completed, all future production was sold under long-term contracts: around 65% of Sakhalin LNG was intended for Japan, with the rest for South Korea and North America. This project was initially considered to be one of the most expensive in the Asia-Pacific region; however, in the years since, the changing global business climate, in combination with the Fukushima nuclear disaster, have led to a sharp rise in both demand and energy prices in the region, making Sakhalin a very lucrative endeavor.

The key determining factors contributing to the success of Sakhalin-2 were its geographic proximity to markets in northeast Asia and the fact that the project was seen by consumer countries as an opportunity to diversify the supply of LNG and avoid overdependence on gas supplies from the Persian Gulf. The involvement of such established players in the Asia-Pacific gas market as Shell, Mitsui and Mitsubishi was the second important factor that enabled Sakhalin Energy to secure legally binding agreements with buyers.

Kharasavey

In the mid-1990s, the Kharasavey field on the Yamal Peninsula was the first facility with the potential to provide Gazprom with the capacity for standalone LNG production for sale in the Atlantic basin.

After the first feasibility study was conducted in 1995, Gazprom approved the project. However, several factors prevented its final implementation, including low global gas prices, the crisis of payment arrears for gas supplies in Russia, and a deficit of funds for more important and less capital-intensive projects aimed at maintaining the stability of Russia's Unified Gas Supply System (UGSS).

In the late 1990s, Gazprom revived the project and announced that it had a clear vision for its development. Concrete calculations were made; the LNG capacity at Cape Kharasavey was to be 20 million tons, while the tankers for transporting gas were to be escorted by icebreakers. The first phase of the LNG plant was expected to be operational in 2005.

The main (and perhaps only) competitive advantage of the Kharasavey project was its massive resource base. Total capital expenditures were estimated at 13 billion USD (which in those days was a tremendous amount); by the end of the project negotiations, this number already topped 20.9 billion USD. The trading outlets for the project were to be northwest Russia (with the construction of a receiving terminal in the Leningrad region), and Germany, where Gazprom offered its German partner company Wingas that it would build a terminal on the coast of the North Sea or the Baltic Sea. While priority was given to the European market, this

⁶ "Gazprom announces a new LNG project on the Gulf of Finland," 8 April 2012, <OilCapital.ru>.

project stood out for the fact that the LNG supplies were also marked for Russian customers. Of course in reality, since a specific site for the construction of the regasification terminal in the Leningrad region was never determined, the project did not come to fruition.

The project was fraught with high commercial and technological risks from the start. To begin with, calculations warned of a very long payback period due to the need for a complete infrastructure overhaul in the High North, as well as the complexities associated with constructing the plant, the long distances to non-freezing waters, the lack of tax incentives, and a clear underestimation of the amount of investment required. The situation was further exacerbated by the lack of experience in Russia and in the world generally in developing such Arctic projects, as well as the distance from high-demand profitable markets. Furthermore, the difficult conditions for the construction and operation of the plant, as well as icy conditions for transport across the Kara Sea, created extreme technological risks.

With the arrival in 2002 to Gazprom of Alexey Miller (since 2002 Deputy Chairman of the Board of Directors and Chairman of the Management Committee of Gazprom, who was working in the 1990s in the St Petersburg mayor's office with Vladimir Putin), the Yamal development, having received the status of "mega-project", moved to the top of the list of priorities. Work began on developing deposits on the peninsula, with two options for transporting the gas from the Kharasavey deposit under consideration; in addition to LNG, Gazprom also considered the option of delivering gas via the main gas pipeline network alongside gas from the adjacent Bovanenkovskoye field.

An analysis of alternative transportation possibilities was conducted based on the innovative technical solutions used in the construction of the Bovanenkovskoye-Ukhta gas pipeline; it was subsequently concluded that the transport of gas supplies to Central Russia and Europe was most efficiently done through pipelines. The lack of a decision on the development of the Kharasavey deposits at the end of the 1990s proved to be fatal for the development of the LNG project. Market conditions were not favorable, and the German side preferred the Yamal-Europe pipeline, which provided additional gas supplies to the country at a much lower capital cost. The Kharasavey LNG project came to be considered as commercially unattractive and it was decided that the gas field would be used for main gaslines. Priority in the development of LNG production was given to the Shtokman field, which was considered to be most promising in terms of production volume and estimated delivery times for commercial operation.

In 2005-2006, amid uncertainty surrounding the talks with foreign partners in the Shtokman field, there was a last attempt to revive the LNG project for the Kharasavey field. The initiator of the rehabilitated project was Sevmorneftegaz, which owned the license for the Shtokman field. The company conducted additional capital cost estimations for developing the infrastructure needed in the LNG project. It also renewed talks about the design of the plant and began exploring partnership opportunities with Germany's E.ON. However, after the agreements with Total and Statoil to develop the Shtokman project were had been signed and the economic feasibility of using the Kharasavey field to supply main gaslines to Ukhta and later Central Russia (in the second stage after entering the Bovanenkovskoye field) had been confirmed, the Kharasavey development

of the Yamal project was for all intents and purposes called off. The economics of this Arctic LNG project were simply unviable.⁷

Baltic LNG—first attempt

The project to build an LNG facility in the Leningrad region (“Baltic LNG”) with a capacity of up to 7 million tons per year⁸ was under consideration for a decade and eventually rejected. Gazprom first proposed the idea in 1997, undertaking a feasibility study for the smaller project, involving the construction of a plant with a production capacity of just 2 million tons in one of the Leningrad region's ports. Low gas prices in Europe and the USA, as well as the high estimated cost of gas on entering the plant, discouraged investment, and the project was shelved.

In mid-2004, Gazprom rehashed the idea of the project, increasing considerably its liquefaction capacity. Difficulties with the choice of partners for the Shtokman field and the lack of investment solutions for fields on the Yamal Peninsula, along with the desire to secure a place in the global LNG market, prompted the Russian company to reopen project negotiations. The port of Ust-Luga was announced as the construction site for the plant. Gazprom's main partner in the negotiations became the Canadian company Petro-Canada, which offered Gazprom a part in the construction of the Gros-Cacouna terminal in Quebec and subsequent import rights. The short-haul transport distance made this option rather cost-effective. Furthermore, for Gazprom, it meant independent access to the North American market.

In 2005, without even waiting for the close of negotiations with Petro-Canada, Gazprom created a joint venture company for the project. The company's shareholders were Gazexport (now Gazprom Export) and the state transport company Sovcomflot (25%), whose participation as a shareholder was to assist with transport issues. The Russians considered the main advantage of this project to be the absence of specific capital investments in gas production. Gas was to be supplied from the commercial portfolio of Gazprom and not tied to a particular field. This time the port of Primorsk was selected as the site for construction, and Gazprom planned for the LNG facility to be put into operation by the end of 2012. Meeting LNG production targets required 7.5 to 11 bcm of gas, which could be supplied from the UGSS via the Volkhov-Vyborg-Primorsk corridor of the planned Nord Stream line.

Investment in the project solely for the development of the LNG plant, taking into account market prices in 2007 for design and engineering services, was estimated at 3.5 billion USD for a project output of 5 million tons, and about 4 billion USD for a project output of 7.2 million tons. In addition to these capital investments, another 2 billion USD investment would be needed to expand the UGSS.

⁷ S. Roginsky, “Future Development of LNG in Russia”, CEMS, 2011.

⁸ The technical design of the project entails the construction of one line of the LNG facility with a total capacity of 5 million tons, or two lines with a capacity of 3.6 million tons each.

Wanting to maximize gains, Gazprom began talks with various foreign companies to form a pool of business proposals for the project. Some potential partners, such as BP and Itera, were hoping to use the project to sell the gas they produced in Russia, while other companies (ENI, GDF and Sonatrach) tried to use it to gain access to upstream assets in Russia. In turn, Gazprom used the companies' interest in the Baltic project as a major bargaining chip to secure its access to the LNG spot market, as evidenced by the fact that all of Gazprom's spot transactions in 2005-2006 took place with the participation of GDF, Sonatrach, Mitsubishi, Mitsui and BP.

The Baltic LNG project was positioned by Gazprom as the first project in the Atlantic basin that involved Russia's resource base. A key element in the project's marketing strategy was positioning Gazprom as a completely independent actor in terms of LNG marketing and distribution. In these circumstances, foreign investors could not expect to receive a substantial share of LNG for independent sale. In fact, this marketing strategy more or less formed the basis for the strategy that Gazprom later proposed for the Shtokman project. Gazprom Export would buy LNG on a free-on-board (FOB)⁹ basis and independently transport it to import markets. One of the options under consideration for supplying customers was based on delivered-ex-ship (DES)¹⁰ conditions, which would allow Gazprom to retain full control over supply, thereby reducing the potential threat of LNG redirection by consumers. The second option was for Gazprom to buy partial capacity in regasification terminals (for example, in the Canadian Gros-Cacouna) and lease gas transmission capacity on the territory of the consuming country in order to enter the end-user market. This option would also achieve one of the basic strategic objectives of Gazprom—participation in all elements of the value chain.

Feasibility studies and pre-FEED (preliminary Front-End Engineering and Design) were completed in the second half of 2007. This analysis identified a need to expand the gas transmission system to the port of Primorsk, where it was decided to locate the plant, as well as the fact that the option of supplying gas through the production and export of LNG through the Baltic was still the worst alternative. At the same time, the Russian government announced a plan to ensure equal profitability of gas supplies for export and the domestic market on a "netback" from the European market. Calculations showed that risk-free supplies on the domestic market would be more attractive to Gazprom than an LNG export project.

The negative evaluation of the project was exacerbated by the arduous conditions for shipping in the Baltic Sea, which requires both a medium-capacity fleet and icebreakers for the ice-prone port, thereby increasing transportation costs.

Against this negative background, the agreement between Gazprom and Total in the summer of 2007 to develop the first phase of the Shtokman field, which Statoil subsequently joined that autumn, was the deciding factor

⁹ FOB means that the buyer pays for transporting the goods.

¹⁰ DES means that the passing-on of risk does not occur until the ship has arrived at the named port of destination and the goods made available for unloading to the buyer.

in cancellation of the project. In February 2008, Gazprom officially announced the cancellation of the project due to weak economics and competition from the Shtokman project. Shtokman in turn was recognized as the center of Gazprom's effort to develop an LNG facility.

The question of resuming the project arose in the winter of 2009, when, amid declining demand for Russian gas in Europe during the crisis, the head of the International Business Department of Gazprom, Stanislav Tsigankov, announced the need to revisit the project. However, in April 2009, the Board of Directors decided not to resume work on the project.

The project has demonstrated the difficulty of LNG production in Russia given the large distances of pipeline transportation, the high costs of transport, the ambition of Gazprom to independently market its LNG, and the lack of access to production for foreign partners.

Shtokman

The ill-fated Shtokman project in the Barents Sea has become perhaps the most famous episode in the history of Russian LNG projects. This deposit, with reserves of 3.9 tcm of natural gas and 56 mln tonnes of gas condensate, was discovered in 1988 (initial reserve estimation was 2.4 tcm). Shtokman's unrivalled size proved to be a key advantage and obstacle at the same time. On the one hand, the scale of the project enabled a significant reduction in the cost per unit of production. On the other hand, it dramatically increased the project's financial risk. Achieving a return on investment would require operating at maximum load capacity; only then would production reach economy of scale, though the enormous size of the project would still be liable to significant financial risks.

The first international consortium to develop the field, known as the "Arctic Star", was formed already in the early 1990s. However, in 1993, the license for Shtokman was transferred to the company Rosshelf, founded by a group of Russian defense enterprises that planned to convert their business to the construction of offshore platforms.

In 1995, control of Rosshelf went to Gazprom, which promised to finance the Shtokman project. Gazprom had attracted a pool of foreign companies, including Norsk Hydro, Total, Neste and later Conoco, to develop the fields. However, the 1990s were an unfavorable time for organizing the large-scale development of Shtokman. This opened the debate on the need to implement projects only through PSA agreements. In November 1999, the Interdepartmental Commission for Project-Sharing Agreements decided to include Shtokman on a list of fields to be offered for development through a PSA. At the same time, the project's marketing strategy called for the supply of gas via pipeline to Europe, without any mention of LNG. However negotiations between Gazprom and foreign partners to develop the project failed on account of differences in positions regarding the export of gas and the construction of a gas transmission system to supply gas to the Unified Gas Supply System.

At the beginning of 2002, taking advantage of the lack of progress in talks between Gazprom and foreign investors, Rosneft began to show interest in the Shtokman project. At the end of 2002, the Ministry of Natural

Resources of the Russian Federation issued a license for the development of the Prirazlomnoye and Shtokman fields to Sevmorneftegaz, a joint venture between Gazprom and Rosneft.

In 2003, Gazprom's leadership announced that it would be ready to begin supplying LNG from Shtokman to the US in 2010. At that point, nobody thought that the active development of shale gas in the US would have an impact not only on North America's natural gas market but also on the entire global energy market.

Towards the end of 2006, Gazprom acquired 50% of shares in Sevmorneftegaz, as well as 26% of shares in Rosshelf, from Rosneft, and began selecting foreign partners. Because Gazprom lacked experience implementing projects in the Arctic shelf, and had limited experience with such large-scale LNG projects, attracting foreign partners was critical for success. However, the round of talks conducted from 2004-2006 with nine foreign companies, including the four companies shortlisted by Gazprom, brought no real results.

At first Gazprom invited partners to participate only in the first phase of the project—the construction of the LNG plant and the production of 22 bcm of gas. However, the difficulties of structuring this type of limited foreign participation (due to the complexity of processing licenses), the lack of a clear mechanism for regulating the stocks, which were to be handed over to investors, and what Gazprom considered to be an insufficient number of bids led the company to reconsider its strategy and instead offer foreign bidders the opportunity to participate in the entire field development in all its phases. When reviewing the bids, Gazprom considered opportunities to receive not only financial resources as payment from foreign partners, but also shares in their existing gas assets, primarily in terms of LNG production. By receiving such assets at an early stage, Gazprom could gain access to LNG in the short term. Throughout the negotiations with foreign companies, Gazprom became known for its inflated appetite, its constantly changing requirements of partners, and a desire to “squeeze” as much as possible from foreign partners.

In 2006, on account of the growth of global gas prices, Gazprom decided to abandon the idea of developing Shtokman through a PSA agreement and to instead develop the project under the current tax regime. Gazprom lobbied the customs authority to assign a zero tax rate on LNG exports from Russia, namely for Shtokman. The fact that the prices for oil and gas were skyrocketing at the time enabled Gazprom to make a case for the project's value under the current tax regime – that is, the payment of mineral extraction tax and other related taxes.

In October 2006, Gazprom announced that, as a result of exploration activities, proven gas reserves had risen to 3.9 tcm, and, because not one bid from short-listed companies was enticing, the company itself would develop the field.

However, by the beginning of 2007, Gazprom realized the impossibility of independently developing the Shtokman field. In the second half of 2007, it finally signed two framework agreements for cooperation, with France's Total and Norway's StatoilHydro (now Statoil) to develop the first phase of Shtokman. Nevertheless, the license for the deposit remained under Gazprom, as did the rights to market saleable output. Furthermore,

Gazprom announced that the second and third phases of the project would be developed independently by Sevmorneftegaz, later renamed Gazprom Dobycha Shelf. In 2008, in the Swiss canton of Zug, Gazprom, Total and Statoil established the joint venture company Shtokman Development AG to implement the first phase of the project, in which Gazprom controlled 51%, Total 25% and Statoil 24%.

In the period 2008-2011, an integrated development project was prepared for the entire process chain, from drilling to final products delivery to the license owner Gazprom Dobycha Shelf for marketing. It was assumed that the natural gas produced in the Shtokman project would be transported over the Baltic Sea via Nord Stream. To do this, Gazprom would have to build the Teriberka-Volhov gas pipeline through Murmansk Oblast and the Republic of Karelia. Deliveries of pipeline gas were planned to begin in 2013, while the LNG plant was to be put into commercial operation in 2014. However, in 2009, the project's shareholders decided to postpone the start of gas deliveries through the pipeline until 2016, while LNG production was delayed to 2017.

However, over the course of the project, the North American market underwent substantial changes due to the large-scale development of shale gas production. In February 2011, the Russian Ministry of Natural Resources announced the potential postponement of the first phase of the project to 2018 due to the situation on the world gas markets. Given the field's reserves (the latest exploratory drilling had increased estimates to 4.1 tcm), the forecasted production levels (which various estimates put from 67.5 to 90 bcm), and, most importantly, the volume of required investment (expected capital expenditures of 30 billion USD were much higher than originally intended¹¹), postponement seemed the only reasonable solution. Three major issues that caused the investment decision for Shtokman to be repeatedly postponed were the marketing of gas from the field, the lack of tax incentives and clear configuration of the project, as the disagreements between the project partners on the split between LNG and pipeline supply volumes, as well as on the optimal technological scheme for field development, increased.

First of all, the Shtokman project lacked a clear market. The "shale revolution" closed the North America import market, which Shtokman had hoped to capture. At the same time, delivering Russian LNG to Europe would create competition for Gazprom's own pipeline gas, and, in the next 7-10 years, it was unlikely that Europe would produce enough demand for additional gas from the Shtokman field. Deliveries from the Shtokman field to Europe (as LNG or via pipeline), therefore, would either lack a market niche or lead to "cannibalism" vis-à-vis the new Yamal gas development. According to the deputy chairman of Gazprom, Alexander Medvedev, southeast Asia also offered a potential new market, though the costs associated with such long-haul transport could be problematic.

¹¹ According to a Gazprom announcement, the gas production cost for Shtokman is \$50 per 1,000 cubic meters (2-3 times higher than for the Western Siberia deposit).

The second issue that caused the repeated postponement of the project was the high costs of implementation and the lack of tax incentives. In November 2011, the Russian authorities made changes to the tax code, significantly raising the mineral extraction tax for gas. Stockman's shareholders asked the government to reduce this tax (even to make it zero for the initial stage), as well as abolish export duties on pipeline gas and grant certain exemptions for the import of equipment, property taxes and various other regional benefits. In April 2012, the government approved a number of tax exemptions for offshore projects, but Stockman did not make the list.

In addition, since the project company Shtokman Development AG was formed, constant disagreements had arisen among the project shareholders over a number of technological issues, particularly the transport of marketable products (i.e. natural gas and stabilized condensate) to shore. Such differences even led to a change of leadership in 2010, as many thought that the former head Yury Komarov favored too heavily the technical solutions proposed by Total. The foreign partners refused to support costly and risky schemes proposed by their Russian counterparts.

In 2012, the term of partnership agreement for Shtokman expired. Urgent attempts to review the strategy for the field's development and to enter into a new shareholders agreement failed. In July 2012, Gazprom announced that the investment decision for the project would be postponed to 2013-14. In reality, the delay is indefinite. A realistic date for commissioning the field would not be before 2022-2025. According to a representative of Gazprom, the project will go forward when technical solutions are found or when a change in market dynamics raises the rate of return to an acceptable level.¹²

¹² E. Khodyakova, P Tretyakov, "Gazprom poidet v obkhod svoikh trub" [Gazprom Bypasses its Own Pipelines], *Vedomosti*, 11 June 2013, <www.vedomosti.ru/newspaper/article/467861/gazprom_pojdet_v_obhod_svoih_trub>.

Catching the Last Train

The advent of the global economic crisis in 2008-2009 coincided with substantial shifts in the global energy map, namely: a sharp drop in demand for gas in Europe and subsequent reduction in the volumes of Russian imports; a radical change to Europe's pricing system; the rapid development of LNG supplies from other producers, and the "shale revolution", which has raised the prospect of large volumes of LNG supplies entering the market from new producers like the United States and Canada. As a result, it has become absolutely clear that Russia needs to quickly diversify supply routes and access new export markets (primarily in northeast Asia). High prices for LNG in Asia (both long-term contracts linked to oil and spot contracts) and the rapidly growing consumption of gas in the region (especially following the Fukushima nuclear disaster, which dramatically increased LNG demand in Japan) are the main drivers of Russia's new interest in this market. There are also geopolitical factors to take into consideration, given the arduous negotiations under way with China for the supply of a gas pipeline; LNG can strengthen Russia's bargaining chip with China, given that the country is quickly becoming a major importer of LNG to meet its growing energy demand. All in all, amid these high-risk conditions and increased competition, the development of flexible LNG deliveries not tied to a particular market has become a priority for the development of the gas industry in Russia.

According to the "Energy Strategy of the Russian Federation for the period up to 2030", which was adopted in late 2009, the share of LNG in Russia's gas exports should reach 15% (i.e. 50-60 bcm).¹³ The system-wide preconditions for the production development of LNG are:

- the desire of the Russian authorities and Russian companies to diversify markets and modes of supplying gas to markets
- the presence of a significant albeit remote resource base on the Yamal Peninsula, the offshore shelf of the Barents Sea and the offshore shelf of Sakhalin Island
- the innovative nature of LNG production, which provides an opportunity to introduce new technologies to Russia and could lead to a demultiplier effect for the economy

Moreover, the government sees the development of LNG as a way to not only increase the absolute volume of exports and allow the country to enter previously inaccessible markets, but also to support the development of regions (particularly ones of critical importance like the Arctic and the Far

¹³ See "Energy Strategy of the Russian Federation for the period up to 2030", 13 November 2009, <<http://minenergo.gov.ru/aboutminen/energostrategy/>>.

East), promote related industries (including priority ones like shipbuilding), restore the strategic importance of the Northern Sea Route, and strengthen Russia's geopolitical influence in the Asia-Pacific region.

Russia's leadership, which is insisting on an expedited uptake of LNG projects, is becoming increasingly determined. For example, in his speech in spring 2013, President Vladimir Putin emphasized the growing importance of LNG for Russia, noting that Russia's share in the global LNG market was currently only 3.6%, and "if we do not pursue an active policy, we risk completely surrendering this market to competitors". He further noted that, in the past year, the Russian budget had lost tens of billions of rubles of revenue due to shrinking demand for gas exports, making LNG a "very important issue for Russia".¹⁴

While the desire to develop the LNG industry is evident, realizing this desire has proved more difficult than originally thought. This is primarily due to the limited market niches and increasing competition in the market. For example, the North American market, which had been considered the most favorable for LNG supplies, has lost its attractiveness for LNG suppliers due to the growth in shale gas production. The opportunity for Russia to supply LNG to North America has crumbled. Furthermore, there are doubts about demand for Russian LNG in the overheated European market. The prospects for increasing LNG deliveries to northeast Asia are mainly linked with Japan and South Korea. These two countries see the development of Russian supplies as a way to diversify their LNG imports, given their heavy dependence on supplies from the Persian Gulf and the anticipated reduction in supply from southeast Asia. India is also showing interest in Russian LNG supplies. However, in the last 1.5-2 years, the attention of Asian buyers has increasingly turned to the widely discussed LNG projects from North America, where the United States and Canada until recently were still experiencing a gas deficit. Supply contracts with North American producers have already been signed, and the fact that the contract prices are linked to spot prices makes the gas much more attractive to consumers in the Asia-Pacific region, undermining the economic attractiveness of Russian projects.

In addition to external challenges, there are serious internal problems. It is necessary to emphasize once again that all Russian LNG projects are technically very difficult and costly. This situation is further compounded by the ongoing changes in the Russian tax system. LNG enjoys zero export duty (as opposed to pipeline gas, where the duty is 30%), and, according to rules from the World Trade Organization (WTO), which Russia finally entered, this tax level cannot be changed. But the mineral extraction tax (MET), which in the coming years is likely to be significantly increased, in practice applies to the rate of return of all projects currently under consideration. Also, receiving MET exemptions is a key factor for the implementation of each project.

In the past two years, while Gazprom began to rethink its strategy and find new projects to replace failed ones, a number of LNG projects were

¹⁴ Hearing of the Commission for Strategic Development of the Fuel and Energy Sector and Environmental Security, Novo-Ogaryevo, 13 February 2013.

developed by independent producers, but they all involved high technological, economic and regulatory risks.

Vladivostok LNG

The first announcement of LNG production in the Far East near Vladivostok (the key Russian port in the Far East with access to Asian markets) came in 2002, when Gazprom had just been given oversight as “coordinator” of the gas reserves in Eastern Siberia and the Far East. At that time, Gazprom considered the Far East idea to be in clear opposition to the Sakhalin-2 project, which was implemented without the participation of Gazprom. But, since the project lacked a resource base, the idea was left aside for many years.

In 2009, Gazprom announced that it was reconsidering the idea of developing an LNG plant in Vladivostok based on gas supplies from Eastern Siberia. One might assume that the active construction of the Eastern Siberia–Pacific Ocean oil pipeline (ESPO) demonstrated to Gazprom the potential of transporting gas from deep within Russia’s territory to the ports on the Pacific Ocean. However, it was clear that Gazprom, in its renewed determination, had forgotten about its own negative experiences with the Baltic LNG project, which had a similar scheme but had been terminated the year before.

In 2009-2010, Gazprom, in cooperation with Japanese companies Itochu and Japex and the Japanese Agency for Natural Resources and Energy, conducted a preliminary evaluation on the feasibility of building such a plant. In January 2011, Gazprom signed an agreement with the Agency to prepare a joint pre-feasibility study for the plant. The agreement provided that the Japanese consortium of private companies would participate in the construction of the plant with capacity of up to 15 million tons (two production lines, each with a capacity of 5m tons per year, with the possibility of adding a third line in the future), with a total value of 12.4 billion USD. It was assumed that gas would be supplied to the plant from Sakhalin and Eastern Siberia by pipeline. The target markets for the project were primarily Japan and South Korea, where Russian LNG had a good competitive position due to the short transportation arm. Talks were also held for possible deliveries to China, India, Pakistan, Taiwan and Vietnam, but no binding agreement with potential buyers has so far been concluded.

In March 2011, after the earthquake in Japan and the accident at the Fukushima nuclear power plant, the Russian government announced the need to increase LNG supplies to Japan, and gave Gazprom an executive order to that effect. However, Gazprom found that it did not have any additional volumes of LNG on Sakhalin, and the execution of this order required the procurement of LNG from third countries. This experience, in combination with the expectation of further growth in LNG demand from Japan, prompted Gazprom to become more active in developing plans for an LNG plant in Vladivostok. By the end of 2011 Gazprom, in cooperation with

the Japanese Agency for Natural Resources and Energy, as well as a Japanese consortium called the Japan Far East Gas Company, completed a pre-feasibility study for the project.¹⁵

In the spring of 2013, being under strong governmental pressure to speed up the entrance to the Asian LNG market, Gazprom started the design stage of the plant. The first line is planned to be operational in 2018, the second in 2020.¹⁶ It was announced that Itochu and JGC will partner with Gazprom for the project,¹⁷ and that other Japanese companies could also join it.

The main problem the project is already facing is the lack of a sufficient resource base. Officially, the feed gas for the LNG production will be supplied from the Sakhalin, Yakutia and Irkutsk gas production centers. However, the competition for Sakhalin gas is high.

At Sakhalin Island gas is produced in three projects: Sakhalin-1 and Sakhalin-2 (developed under PSA agreements with the foreign participants) and Sakhalin-3, developed by Gazprom Dobycha Shelf. Apart from Gazprom there are many claimants for the Sakhalin gas: the working Sakhalin-2 LNG plant, the new Rosneft project Sakhalin-1, and Russian domestic consumers in the Far East region. Gazprom's own production in Sakhalin is concentrated in the Sakhalin-3 project. The bulk of the production is supposed to come from the Kirinskoe offshore field in the Okhotsk Sea, which started production in October 2013, and which will reach plateau at 5.5 bcm per annum, and Yuzhno-Kirinskoe field nearby, discovered in 2010, where Gazprom plans to reach annual production of 16.5 bcm. The start of production on this field is scheduled in 2018,¹⁸ which means that it will take several more years before it will reach its plateau. Thus, Sakhalin-3 gas will come too late for the first line of Vladivostok LNG and at the same time will not be sufficient for supplies of both liquefaction lines (taking into account also Gazprom's obligations on gas supplies for the Far Eastern domestic consumption).

As a result, the main source of gas for the project will be the Chayandinskoye field in Yakutia. First gas production there is expected in 2017. The transcontinental gas trunkline Power of Siberia (Yakutia-Khabarovsk-Vladivostok) is planned to be built by the end of 2017. The problem is that at this point it is unlikely that all necessary infrastructure for full-scale gas production from the Chayandinskoye field can start working, which is particularly problematic vis-à-vis the extraction of helium produced

¹⁵ "Gazprom and Japan's METI consider investment feasibility in the Vladivostok LNG project", 16 April 2011, <OilCapital.ru>.

¹⁶ I. Drobysheva, "Gazprom nachal proektirovat zavod SPG v Primorie" [Gazprom Begins Work on the LNG Plant in Primorye], *Rossiyskaya Gazeta*, 8 April 2013, <www.rg.ru/2013/04/08/reg-dfo/zavod-anons.html>.

¹⁷ E. Khodyakova, "Gazprom nashel partnerov v Yaponii dlia SPG zavoda" [Gazprom Finds Partners in Japan for the LNG Plant], *Vedomosti*, 15 April 2013, <www.vedomosti.ru/companies/news/11130261/gazprom_ischet_partnerov_v_yaponii>.

¹⁸ "Yuzhno-Kirinskoe mestorozhdenie obespechit gazom Sakhalin i Primor'e" [South-Kirinskoe Field will Supply Gas to Sakhalin and Primorye], <SakhalinMedia>, 6 November 2013, <<http://sakhalinmedia.ru/news/economics/06.11.2013/313357/yuzhno-kirinskoe-mestorozhdenie-obespechit-gazom-sahalin-i-primore.html>>.

at the field. Doubts thus remain over the project's timeline given that it will require not only the development of field infrastructure, but also the construction of the gas processing plant in the Khabarovsk region, with only five years remaining to fulfill all this.

In addition, the use of Chayanda as a resource base significantly reduces the competitiveness of LNG from Vladivostok. Field construction will cost 13 billion USD, the gas pipeline construction will cost 23 billion USD, while the cost of constructing the first two stages of the LNG plant will top 13.5 billion USD. Thus, the cost of the whole integrated project will reach nearly 50 billion USD. As a comparison, the total size of Gazprom's investment budget in 2012 was 1.5 times less.¹⁹ In economic terms, this project will be unique—there is no precedent in the world where gas is transported by pipeline over a distance of three thousand kilometers for liquefaction. The pipe might be partially repaid by supplying part of the gas to China (similar to the ESPO), but the agreement to export gas to China has not yet been signed. Thus, as long as there is no clarity concerning the Chayanda gas, the question of how much Sakhalin gas Gazprom can get is critical for the Vladivostok LNG plant.

In February 2013, despite the uncertainty over the resource base and the lack of signed contracts with customers, Gazprom announced that it had taken a final investment decision on the project. The company board approved the project's investment rationale, and in mid-March 2013 approved the strategy for its implementation. The company is certainly in a hurry to show its progress in the development of LNG.

Expansion of the Sakhalin-2 project

The prospect of expanding the Sakhalin-2 project arose as a “back-up” idea. Initially, a few years after the launch of the first two lines of the Sakhalin-2 plant, Gazprom strongly opposed its expansion, citing insufficient reserves from the Lunkoye and Piltun-Astokhskoye fields developed within the project's framework. However, in 2012, the company changed its position in favor of expanding Sakhalin-2 in response to two key factors: (1) the favorable conditions on the Asia-Pacific market, for which the expansion of Sakhalin-2 offered the most rapid and effective way to increase sales and profits, and (2) pressure from the Russian government, which was determined to launch new LNG projects—and a third line of Sakhalin-2 was the most likely candidate to achieve this in the near-term.

According to the head of Gazprom Export Alexander Medvedev, the third line of the Sakhalin-2 LNG project should come online in 2017 (ahead of any additional capacity from competing LNG production in Australia). The operator of the project, Sakhalin Energy, has already estimated that the cost of constructing the plant's third line will be 5-7 billion USD. According to Gazprom, current partners Shell, Mitsui and Mitsubishi will be given priority for participating in the project.

¹⁹ E. Khodyakova, “Gazprom Finds Partners...” *op. cit.* [17].

The project also faced challenges in securing a supply base. Sakhalin Energy carried out an assessment of the geological prospects for gas production growth in the Lunskoye and Piltun-Astokhskoye fields, but the main expectations are with the Sakhalin-3 project.

However, in the opinion of Gazprom, expanding the Sakhalin plant would require the third line of LNG to receive gas from other suppliers, including Sakhalin-1. In September 2011, Gazprom informed officials that it was ready to buy gas from Sakhalin-1 and suggested that the government mediate negotiations with the operator of the project, Exxon Neftegaz (subsidiary of US company ExxonMobil). However, the Sakhalin-1 consortium strongly opposed such plans; it intended rather to develop its own LNG production. Thus, considering the company's obligations to supply gas to Russian consumers in the Far East, providing enough gas for the plant's expansion and at the same time satisfying the gas needs of Vladivostok LNG would be possible only through the further appraisal of Gazprom's Sakhalin-3 reserves.

Baltic LNG—second attempt

In the spring of 2013, Gazprom announced a new project to build an LNG plant on the coast of the Gulf of Finland, with a capacity of up to 10 million tons per year. Within a month, the company hinted at a new mega-LNG project, and eventually surprised the market by revising the idea of a Baltic LNG project, which had been abandoned several years earlier.

The project, according to the company, is primarily targeting the European market, but also aims to supply LNG to countries in Latin America. In addition, the plant's output can supply the bunkering and small-scale shipping in the Baltic. This new market segment is developing rapidly now, as in 2015 new regulations will be implemented in the Baltics, with much stricter requirements on emissions. There will thus be a clear rationale to switch to LNG as a fuel for maritime transportation. Moreover, in November 2013 Gazprom announced a new plan to build a 3 bcm LNG regasification terminal in Kaliningrad in order to secure gas supplies to the region after the company loses control over the Lithuanian gas transportation system. Baltic LNG will be supplying this terminal.²⁰

The company has already started developing an investment rationale and selecting a construction site.²¹ The plant is scheduled to start in late 2018, with costs estimated at 5-7 billion USD.²²

All the doubts and risks that plagued the first attempt at a Baltic LNG project remain, however, and this second attempt has to face the critical challenge of limited import markets. Supplying LNG to the same European

²⁰ Yu. Barsukov, "Gazprom voz'met Kaliningrad s morya" [Gazprom will Get to Kaliningrad by Sea], *Kommersant*, 25 November 2013, <<http://www.kommersant.ru/Doc/2351889>>.

²¹ Gazprom press release, 21 June 2013.

²² O. Mordyushenko, A. Zibrova, "Gazpromu ponravilos v Ust-Luge" [Gazprom Liked Ust-Lug], *Kommersant*, 24 September 2013, <www.kommersant.ru/doc/2303401>.

markets that import expensive pipeline gas is unprofitable; rather, Gazprom is targeting the United Kingdom and the Iberian Peninsula, which do not have access to Russian pipelines. The company thus looks to occupy a niche that was vacated following the reorientation of Qatar away from Europe and to the Asia-Pacific region. However, it is unclear whether European buyers will want to make new oil-indexed contracts, or, on the contrary, if Gazprom will be ready to sell expensive gas from Western Siberia on the spot index.

The Competition Heats Up

Changes in the market environment have made LNG a national priority for Russia, but there is still a long way to go. The state's aspiration to launch at least one or two Russian LNG project in the near future has been curbed by the inability to quickly deliver on such projects.

The fact that the LNG industry is not associated with natural monopolies like the gas pipeline networks provokes and encourages change in the institutional structure of the industry. Since the old institutional framework was not conducive to the development of LNG projects, achieving progress will effectively require a dismantling of the existing framework. The idea of liberalizing LNG exports, which not so long ago seemed practically unfeasible, has already been realized.

Until recently, the “daughter company” of Gazprom, Gazprom Export, in accordance with the law on the export of gas from 18 July 2006, was the official “single export channel”. This law granted Gazprom exclusive right to export natural gas, with the exception of gas produced from the Sakhalin-1 and Sakhalin-2 PSAs (these projects predated the signing of the law and therefore did not fall under its scope because of its special legal status). Other producers had to negotiate with Gazprom’s monopoly on LNG marketing and conclude special-agent agreements, despite the fact that such agreements had never proven successful in the past.

In 2010, to export its gas, Novatek signed such an agent agreement with Gazprom Export according to which Gazprom Export would buy gas from Yamal LNG and resell it, taking a fee of 1% of the contract value (these terms were similar to the agreement between Gazprom Export and Gazprom). However, over the duration of the agreement, Gazprom made absolutely no progress on marketing Novatek gas. As a result, at the end of 2012, Novatek started lobbying for the abolishment of Gazprom’s monopoly rights on LNG exports. By the beginning of 2013, Rosneft, which had unexpectedly declared its own interest in the LNG market, supported Novatek’s position, and the two companies joined forces to actively lobby for this legislative change.

By February 2013, in response to this campaigning, President Putin openly spoke about “the need to think over the possible gradual liberalization of LNG exports.”²³ The government’s primary concern was whether LNG exports from independent producers would create competition for Gazprom’s pipeline gas in foreign markets. To avoid this, it was suggested that the

²³ Hearing of the Commission for Strategic Development of the Fuel and Energy Sector and Environmental Security, Novo-Ogaryevo, 13 February 2013.

Department of Energy function as a coordinator for gas and LNG exports in the event that the government did indeed decide to grant independent producers the right to export LNG. It was further suggested by some that Novatek be banned from supplying LNG to European markets.

In May 2013, Deputy Prime Minister Arkady Dvorkovich announced that changes to the regulatory framework for the liberalization of LNG exports would be made only after Rosneft and Novatek had concluded agreements with potential buyers.²⁴ The companies responded immediately and by September 2013 had signed agreements with potential buyers (an amazing result, which Gazprom could not deliver on any of its projects). China and Japan made preliminary agreements to purchase LNG from Russian non-Gazprom producers.

As a result, in early September 2013, Russian Minister of Energy Alexander Novak introduced a draft law to liberalize the export of LNG upon ministerial approval, and on 30 October 2013 the government reviewed and approved this law.²⁵ It grants LNG export rights to projects that have a license to construct an LNG plant, as well as to companies that are more than 50% owned by the Russian government and are liquefying and exporting only gas produced from Russian offshore fields or gas produced under production-sharing agreements. On 22 November 2013, Russia's State Duma gave its final backing to liberalizing the export of LNG,²⁶ and President Putin signed the law, which came into force on 1 December 2013.²⁷

The final version approved does not limit non-Gazprom producers in LNG supplies to Europe. But the document introduces a responsibility for them to provide the Ministry of Energy (which will be empowered by the Ministry of Industry to license hydrocarbon exports) with information on gas exports, according to the procedure established by the Russian government. The list of this information is to be prepared by the ministry, up to the end of 2013. So far it is totally unclear how exactly the ministry is going to coordinate LNG exports and protect Gazprom's market niche in Europe, but it is obvious already that there will be no legal ban on LNG exports to Europe by non-Gazprom producers: just a few days before the law's approval, Novatek announced a 25-year contract with the Spanish Gas Natural Fenosa for 2.5 mln tons of LNG supplies per annum.²⁸

The initial version of the law, submitted to the Russian parliament, allowed more market participants to claim access to the LNG export markets, but in the final version only Rosneft and Novatek will be able to apply for a license to export LNG, and move forward with developing two new projects—

²⁴ "Rosneft and Novatek Expand their LNG Exports after Signing Supply Contracts with Buyers," 22 May 2013, <OilCapital.ru>.

²⁵ <http://minenergo.gov.ru/press/min_news/16759.html>.

²⁶ RIA Novosti, 22 November 2013, *op. cit.* [1].

²⁷ "V. Putin podpisal zakon, razrushayuschij monopoliyu Gazproma" [V. Putin Signs Law that Ends Gazprom's Monopoly], *RBK*, 2 November 2013, <<http://top.rbc.ru/economics/02/12/2013/892174.shtml>>.

²⁸ "Gazprom poteryal monopoliyu na eksport gaza" [Gazprom Lost the Monopoly on Gas Exports], *Vedomosti*, 3 December 2013, <www.vedomosti.ru/companies/news/19537411/u-gazproma-otobrali-monopoliyu#ixzz2mPjhgYdO>.

Yamal LNG and Sakhalin-1. In contrast, the independent Pechora LNG project being developed by Alltech will not be able to obtain free access to the export market, since it does not have a license for the construction of an LNG plant (unless, of course, Gazprom or Rosneft join the project). Theoretically, according to the new law, Gazpromneft and Zarubezhneft could also claim LNG export licenses if they start working offshore.

Thus it can hardly be regarded as a real liberalization—in fact, the law merely legalized exemption from Gazprom`s export monopoly for two companies. Curiously, at the time of the debates in parliament, Rosneft, which has just challenged Gazprom`s monopoly, started to try to close this window of opportunity for the other market participants. The company proposed to limit the number of companies having the right to export LNG to those users of mineral resources that have a license for gas production only in capital-intensive projects (read—“offshore”), while access to offshore in Russia is allowed to only two companies—Gazprom and Rosneft.²⁹

Yamal-LNG

The Yamal LNG project, which has been discussed since 2006, was originally under the ownership of businessman Nikolay Bogachev, and was subject to considerable concern regarding its marketability. However, with its transfer to Novatek and the trader Gennady Timchenko, the project began to gain momentum, despite the extremely difficult natural conditions. The Yamal LNG project includes the construction of an LNG plant with a production capacity of 16.5 million tons of LNG per year (three lines of 5.5 million tons per year each) drawing from the resource base of the South Tambey field on the Yamal Peninsula. The project further involves the construction of transport infrastructure, including a seaport and airport near the village of Sabetta. The project total cost is estimated at 30 billion USD. The start of the first line operation is scheduled in 2017, but most likely will be delayed.

The structure for the project took quite a long time to shape, and this process is not completed. Novatek, which owns 51% of the project, in 2010-2011 approached virtually all the leading LNG producers and traders with a proposal to co-invest (among the contenders for a stake in the project were Shell, ExxonMobil and ConocoPhillips, Total, EDF and GDF SUEZ, Mitsui and Mitsubishi, Repsol, ONGC and Qatar Petroleum). Novatek proposed structuring the project as follows: 51% owned by the Russian side, and 49% by three or four foreign partners, providing technological and financial support for the project. Novatek aimed to shortlist two majors and one or two second-tier partners who could ensure export markets. Attracting more international oil companies obviously would facilitate Novatek in the challenge of marketing. Out of the 20 billion USD needed for the project, Novatek had planned to invest a little more than 2 billion USD, while another 8 billion USD would be raised through project financing, another 2 billion

²⁹ “V. Putin podpisał zakon o liberalizatsii eksporta SPG” [V. Putin Signs Law that Liberalizes LNG Exports], <Neftegaz>, 2 December 2013, <<http://neftegaz.ru/news/view/116803>>.

USD from revenue, with the rest will be provided by partners, given their participation.

Novatek found two partners; in 2011 French Total acquired 20% for 425 million USD, and in September 2013 CNPC agreed to buy the same share at 1 billion USD.³⁰ The agreement entails a 15-year supply contract for a minimum of 3 million metric tons of LNG supplies from Yamal to China per year. The deal therefore provides Novatek not only with the new investment, but also with access to the Chinese market. CNPC will help also in attracting external funding for the project from Chinese financial institutions.³¹

Novatek decided to leave the control stake for its own, and the last 10% minus one share it plans to sell to one more investor. Two consortiums are competing for this share: Japanese (Mitsui and Mitsubishi) and Indian (ONGC, Indian Oil and Petronet LNG). Novatek is open to sharing this package between two consortiums.³²

Novatek has already begun work on the project, although the investment decision is still pending, as foreign investors have been waiting for a decision on the liberalization of LNG exports. For now, the company is working in cooperation with the government to develop the port infrastructure via a public-private partnership. This stems from the fact that the authorities consider the port to have a strategic purpose beyond just the LNG project, as it contributes to the development of Yamal and provides year-round navigation along the Northern Sea Route.³³ The federal budget for 2012-2016 allocated around 1.5 billion USD to the project (the money will be spent on the construction of the port, a 50km canal and ice barrier leading into the port, as well as navigational equipment), while Novatek is also investing 0.8 billion USD. LNG shipments via the new port are expected to reach 5 million tons per year by 2016 and by 2018 will reach a full capacity of 15-16 million tons.

The project's main challenges are severe climate conditions and navigation through the Arctic waters. In the region's warm half of the year (July to November), Novatek plans to supply LNG from the Yamal Peninsula to Asia-Pacific countries via the eastern route of the Bering Strait (the Northern Sea Route). For the remaining seven months, shipments will go via the western route (over the Atlantic Ocean). The window to send cargo on the Northern Sea Route opens in July and closes at the end of November, when the concentration of ice makes navigation impossible. Convoying LNG tankers with nuclear icebreakers in Arctic is very expensive, but navigation of

³⁰ E. Khodyakova, "Mikhelson nashel soyuznika" [Mikhelson Finds his Ally], *Vedomosti*, 26 April 2013, <www.vedomosti.ru/newspaper/article/442311/mihelson_nashel_soyuznika#ixzz2RZQxw52B>.

³¹ M. Grebennikov, Yu. Kogtev, "Arkticheskie okna rosta" [The Arctic Windows of Growth], *Kommersant*, supplement "Neft i Gaz" [Oil and Gas], 30 August 2013, <www.kommersant.ru/doc/2266623>.

³² M. Serov, M. Chelpanova, E. Khodyakova, "Novatek mozhet privlech' v proekt Yamal SPG esche dvukh partnerov" [Novatek May Involve two More Partners in the Yamal LNG Project], *Vedomosti*, 28 November 2013, <www.vedomosti.ru/companies/news/19335561/yamal-spg-vyneset-dvoih#ixzz2lvky2pG1>.

³³ E. Khodyakova, *op. cit.* [17].

the ice-class LNG tankers without ice-breakers is very risky. Moreover, at the entrance to Ob Bay there is shallow water, which demands huge work on bottom dredging, but operations cannot be organized year-round. Challenging conditions for navigation in Ob Bay and Kara Sea aggravate the situation.

Novatek has completed a number of test tanker deliveries on the Northern Sea Route. However, even if regular supply through the Northern Sea Route will be feasible and thereby saves approximately 3 million USD on transportation compared with shipping via the Suez Canal, the total cost must take icebreaking into consideration, for which the cost has yet to be determined by the Russian government.³⁴

The situation regarding the export markets for the Yamal LNG project is also not straightforward, but, in contrast to Gazprom, Novatek is not “cannibalistic” – i.e. it would be exporting LNG to a market where it already has pipeline deliveries. In addition, to date, the attractiveness of LNG to markets in the Asia-Pacific region has increased. However, the main challenge of marketing to the Asian markets is ensuring continuity of supply; with the limited navigation on the Northern Sea Route, the project can physically provide only seasonal delivery.

It is also difficult to factor in Gazprom’s role in the project. In April 2012, Gazprom and Novatek signed a memorandum of cooperation for the possible establishment of two joint ventures that could increase the capacity of the Yamal LNG complex by leveraging the resource base of Gazprom’s Tambey fields in the Yamal-Nenets Autonomous District. The agreement defines the stages and terms of the joint venture. According to the provisional arrangement, Gazprom would own 75% of the joint venture, while Novatek would take 25%. The resulting exchange would allow Novatek to expand the resource base for the Yamal LNG project, while Gazprom would be able to process gas from the Tambeyskoye fields. The companies agreed to develop the financial feasibility study by the beginning of July 2013 and determine the size of investment and allocated shares for each company by August. Leonid Mikhelson, CEO, chairman and major shareholder of Novatek, also at the time announced that Novatek did not intend to independently sell the LNG for this project. Despite all this, the companies have been unable to agree on a joint venture to work on Yamal. The term of the cooperation agreement expired in February 2013, and the two sides did not sign new papers.³⁵

In economic terms, what made Yamal LNG distinct was its simple process chain, especially in comparison with that of Shtokman. However, from a technological point of view, there are unique challenges still to be addressed, concerning the difficulties of servicing an LNG plant in the harsh conditions of the Far North, maintaining a constant level of production, and, most importantly, delivering LNG to the Asia-Pacific region through the Northern Sea Route with the aid of icebreakers.

³⁴ M. Grebennikov, Yu. Kogtev, *op. cit.* [31].

³⁵ “Gazprom and Novatek’s joint venture on Yamal and Gydan freezes”, 26 April 2013, <OilCapital.ru>.

The most important advantage of Yamal LNG is that Novatek managed to land a fantastic deal with the government: the company has promised the lowest cost for the project in exchange for the construction of infrastructure, exemption from almost all taxes, as well as state aid in financing all project infrastructure and creating a tanker fleet. In addition, the project will use cheap onshore conventional gas reserves as a resource base; thus, despite the high cost of transport, production costs will be much lower here than in most new foreign projects that use either offshore deposits or unconventional gas.

Now that the decision to liberalize the export of LNG has given the project new impetus, all the complicated technical aspects of the project, which in fact present the greatest risks, can begin to be worked out.

Pechora LNG

In December 2009, the private Russian investment company Alltech submitted a proposal to build an LNG facility in the Nenets Autonomous District (village of Indiga). The company has a diversified business in which oil and gas assets represent an important part, and had been looking for ways to “monetize” its gas reserves. The project involves the development of two gas condensate fields, the Kumshinskoye and Korovinskoe, with total reserves of 160 bcm under the Russian classification, as well as the creation of pipeline infrastructure and an LNG plant with a capacity of 4 million tons per year. The volume of capital investment in the project is estimated at 5.5-6.6 billion USD, about half of which must go to the construction of the LNG plant. There are currently three proposals on the table for how the LNG platform will be built: onshore, offshore or gravity-based; however, without permission for LNG export the company cannot make an investment decision.

The project has a number of competitive advantages, including adequate gas reserves for production and transportation from continental deposits, and less icy conditions, making it possible to provide year-round LNG export. However, despite the promise of LNG liberalization, such an endeavor of private capital in Russia’s gas sector can only achieve success if one of the major players—Gazprom, Rosneft or Novatek—provides the “umbrella” of political support. There is an additional concern related to this project; in 1981 a fire at the Kumshinskoye field was halted by the detonation underground of a nuclear device, which creates additional environmental and marketing risks around the project.

Sakhalin-1

For a long time, no-one could decide what to do with the gas produced at Sakhalin-1, another PSA project of the 1990s. Participants in Sakhalin-1 initially wanted to export it to China (as the project is implemented under a production-sharing agreement, a revocation of Gazprom’s monopoly was not required), but the government did not allocate in its budget any funds for a gas pipeline to China. As a result, the core production at Sakhalin-1 is of oil, while

smaller volumes of gas are mainly reinjected into reservoirs to enhance oil recovery.

Since 2012, Rosneft has been actively positioning itself in the gas market. At first the company's maneuvering did not bring it into direct conflict with Gazprom, as it initially supported the preservation of Gazprom's monopoly on gas exports and instead snatched up the market from independent producers. The two state-owned companies even joined forces to successfully block private investors from entering the country's offshore sites. However, in February 2013, the situation changed. Rosneft began siding with Novatek and supporting the idea of liberalizing LNG exports. It also openly applied for licenses to offshore shelf sites that Gazprom was bidding for. Then it emerged that the company planned to build an LNG plant on Sakhalin-1 as part of its alliance with ExxonMobil.³⁶ Rosneft and Exxon also agreed on the construction of an LNG plant in Alaska.

Rosneft announced that in 2013-2014, together with its strategic partner ExxonMobil, it will complete work on the design of the LNG plant on Sakhalin Island, with a target production of 5 million tons of LNG per year (expandable to 15 million tons). According to the statement by Rosneft management, they might recruit another two partners for the construction of the LNG plant on Sakhalin – Sodeco and India's ONGC, who already have interests in Sakhalin-1 (30% and 20%, respectively). The required investment is 15 billion USD (for the first two lines). Rosneft officially launched the process of selecting a contractor for the design and engineering work. The plant is scheduled for commissioning in 2018-2019.

The project can provide attractive returns on investment, taking into account its proximity to a resource base, the already existing infrastructure on Sakhalin Island, and the short-haul distance to major markets. The competitive advantage of the plant at cost of production is particularly important in light of the large number of LNG projects to be launched in the second half of the 2010s: for instance, the project is projected at 10-12 per million BTU, compared to the average of \$15 per million BTU in Australia.³⁷

It is assumed that the new LNG plant will receive raw materials from the second phase of Sakhalin-1 as well as from other Rosneft's offshore fields in the Far East. Furthermore, Rosneft and China's Sinopec own the Veninskaya block of the Sakhalin-3 project (Sinopec has 25.1%), while Rosneft and BP jointly own the license to the Kaigansko-Vasyukansky block of Sakhalin-5, where they are conducting geological exploration. As a fallback, Rosneft will also consider two sites in the Sea of Okhotsk, in particular Magadan-2 and Magadan-3. The Magadan-1, -2 and -3 blocks are poorly explored,³⁸ so production can begin there only in 5-7 years; they are thus more likely to be considered as sources for the second and third lines of the plant.

³⁶ M. Serov, A. Solodovnikov, "Gazprom poluchit gaz Rosnefti" [Gazprom will Receive Gas from Rosneft], *Kommersant*, 12 April 2013, <www.kommersant.ru/doc/2168203?isSearch=True>.

³⁷ M. Grebennikov, Yu. Kogtev, *op. cit.* [31].

³⁸ I. Kezik, "Sakhalinskaya propiska" [Sakhalin Registration], *Vedomosti*, 17 June 2013, <www.vedomosti.ru/companies/news/14256961/sahalinskaya-propiska#ixzz2gHPmQyBK>.

Moreover, Rosneft regards Sakhalin-1 as just the first step in its LNG strategy build-up. In the longer term the company plans to “form new huge centers of large-scale LNG production”, as “after the beginning of the Okhotsk Sea gas reserves development, including blocks Magadan-1, -2, -3, Rosneft will have the resource base for even more large-scale projects”.³⁹

At the 2013 St. Petersburg International Economic Forum, Rosneft signed preliminary agreements for LNG supplies from this plant with the Japanese companies Marubeni and Sodeco (1.25 million tons and 1 million tons per year, respectively), as well as with the trader Vitol (2.75 million tons). However, until the law on the liberalization of LNG exports was officially approved, all these deals remained in limbo.

In April 2013, President Putin mandated Rosneft to coordinate its plans to build an LNG plant on Sakhalin with other companies, as well as with the Ministry of Energy and the government, “so that everyone works under a single plan and understands what will happen and how this will impact the Asia-Pacific markets”.⁴⁰ Thus, the project still faces the threat of its resource base being transferred for use by Gazprom. Indeed, in the end, everything depends on the decisions of the country’s leaders, who serve as a sort of ultimate arbitrator in this intensifying battle between two state companies.

³⁹ Gazprom Lost the Monopoly on Gas Exports, *op. cit.* [28].

⁴⁰ *Ibidem.*

Conclusion

The fascinating story of the struggle for power, markets and resources that accompanies the painful and complex development of the Russian LNG industry is not over. The results of this struggle and the order in which projects are delivered in many ways will be determined by the level of influence exerted by each player.

However, it should be understood that, for the Russian leadership, the timing and costs for delivering projects are important but not critical. While the return-on-investment for these projects, worth tens of billions of dollars, may be delayed for several decades, there is no doubt that sooner or later—not in 15 years, but perhaps after 20—they will pay off. Moreover, their strategic value in the eyes of the government is immense. All the projects on the table are very long-term and large-scale, so a few extra years or a few extra billion dollars of investment does not make much difference to the decision-makers. What is paramount is the opportunity to increase the volume of LNG exports with an eye to diversifying Russia's trading partners and reducing the industry's dependence on gas export pipelines.

LNG has been declared a priority at all levels, so in one way or another all the necessary support for these projects will be provided. The question is rather which company delivers which project and when.

Despite the numerous problems—technical, economic, marketing and organizational—LNG in Russia will grow and has the potential, at least as far as Asia is concerned, to form the basis of the country's export strategy in the gas sector. However, given the long investment cycle of any LNG project, Russia should begin delivering large-scale LNG supplies only after 2020. In the longer term, after 2025, Russia has considerable potential to increase its influence on the market, although the government's current intention to achieve 20% of the global LNG market is highly unrealistic.