Russian LNG facilities: an emerging Baltic infrastructure

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Proliferation of liquefied natural gas (LNG) in the Baltic Sea region (BSR) has recently been celebrated for two reasons. Firstly, its flexible logistics allows diversification of gas supply sources, and what with the escalation of political tensions between the EU and Russia – prompted by the Ukrainian crisis – the issue of energy independency has become particular relevant, as has the desire for gas supply diversification in the BSR. Since LNG takes up only about 1/600th the volume of natural gas, greater volumes can be stored at smaller facilities and delivered on-demand by ship, truck or train. Therefore LNG is conceived as an 'ideal candidate' to improve European energy security.

Secondly, used as a bunker fuel, LNG significantly reduces SOx, NOx and PM emissions in shipping exhaust fumes, making it an attractive compliance option for operating in the Baltic sulphur emission control area (SECA). Due to a diversity of potential uses (including maritime) and environmental characteristics superior to oil-based energy sources, natural gas has been envisaged as a primary means to succeed in one of the most prominent contemporary challenges: energy transition.

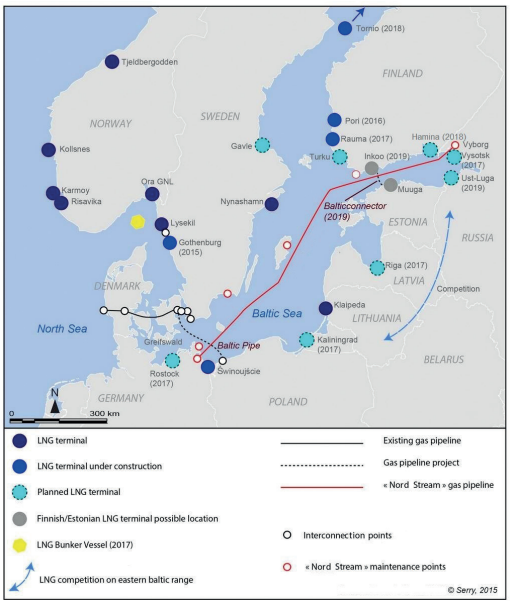

Figure 1. Emerging Baltic LNG infrastructure (as of 1.1.2015). Source: Serry and Gritsenko, 2015.

LNG facilities in the BSR

The availability of LNG in the BSR has been limited due to the absence of adequate import infrastructure. Sweden's (and the Baltic's) first LNG terminal in Nynäshamn was opened in 2011, and in Autumn, 2014 import terminals in Klaipeda (Lithuania) and Lysekil (Sweden) followed. Now we observe a boom in LNG facility construction around the BSR. If current plans are realised, by 2020 the BSR will have a dozen import facilities with total regasification capacity exceeding 15 million metric tonnes per annum (MTpa) (see Figure 1).

The new terminals are mostly planned as mid-sized (up to 100,000 MTpa) import facilities that will serve three purposes: diversify gas supply, assist energy transition, and supply LNG for bunkering. In light of Russia's ambitious plans to significantly increase its share in the global LNG trade in the coming decade, it seems relevant to provide an overview of the upcoming Russian LNG facilities as a part of Baltic LNG infrastructure development.

Russia in the LNG market

Natural gas is Russia's major energy asset. Yet in the LNG market Russia was a latecomer when production started in 2009 in Sakhalin (see Figure 2). Lack of LNG was identified as one of the central problems of Russian energy policy as it signifies "insufficient development of production of energy products with high added value" (Russian Energy Strategy 2030), which causes large-scale export of un–or only slightly–processed gas and as a consequence lower incomes from sales.

Currently, six large-scale production facilities are scheduled for construction: Yamal, Gydan and Pechora in the Arctic, the Vladivostok and Sakhalin projects in the Far East, and a Baltic LNG plant in the Leningrad region (Figure 3). According to the Russian Ministry of Energy, Russia is to increase its production capacity to 50-60 million MTpa by 2025. Therefore, The Russian Energy Strategy up to 2030 emphasises that development of seaport and transport infrastructure for liquid hydrocarbon transportation is among the most important strategic energy infrastructure projects with the potential to enhance Russia's position on foreign markets. Due to political and economic reasons, Russia is also trying to diversify away from Europe and sees its sales potential primarily in Asian markets.

Baltic LNG plans

A plan for an LNG liquefaction facility along the Baltic shore commenced in 2004 with the registering of a joint venture between Gazprom and Sovcomflot, however it was frozen at the planning stage. The facility, planned together with PetroCanda, Mitsubishi and Eni was supposed to supply ca. 5 MTpa by 2010. The reason the project was cancelled was the existence of a commercially attractive alternative – an underwater gas pipeline, 'Nord Stream', eventually launched in 2011. Yet in autumn 2013, Gazprom announced its plans to revive the Baltic LNG project in a new form and with new partners.

Ust Luga

The multi-purpose port Ust Luga was selected as a future site due to favorable climatic conditions (ice coverage during

Project	Capacity (MTpa)	Schedule	Partners
Yamal	10 (16.5)	2017	Novatek, Total, Cnpc
Sakhalin I	5	2018	Rosneft, Exxon
Sakhalin II	5	2022	Gazprom, Shell, Mitsui, Mitsubishi
Vladivostok	10	2018	Gazprom, Gazprombank
Pechora	2.6	2018	Alltech, Rosneft
Gydan (Arctic 1, 2, 3)	10 (15)	2018	Novatek
Baltic	10 (15)	2020	Gazprom, Gazprombank
Kaliningrad	9	2017	Gazprom
Vysotsk	0.66	2017	Gazprombank, Gasum

Source: author

Country	Supply to market	Supply to EU in 2013 (of total 447 TWh)
Qatar	77.4 MT	51%
Malaysia	23.1 MT	< 0,1%
Australia	20.8 MT	< 0,1%
Nigeria	20 MT	12%
Indonesia	18.1 MT	< 0,1%
Trinidad	14.4 MT	5%
Algeria	11 MT	22%
Russia	10.9 MT	< 0,1%
Oman	8.1 MT	1%
Brunei	6.8 MT	< 0,1%

Source: IGU, 2013

Figure 2 (right): Top-10 LNG producers in 2012;
Figure 3 (top): Russia's plans for LNG facilities development

winter constitutes on average only 40 days) and promptly growing volumes. That same autumn Gazprom announced a gas pipeline construction capable of supplying 7 billion cubic metres of natural gas per year to the Port of Ust Luga, an important logistical connection between the remote gas fields and the future liquefaction plant.

In autumn 2014, a preliminary investment decision was made that confirmed Ust Luga as a terminal location and expanded the planned capacity to 15 MTpa. It was anticipated to be realised by 2019 at an overall cost of around US$10 billion. However, in February 2015 the project was postponed until 2020, which is most likely attributable to limited funding and the absence of the required technology under the conditions of ongoing Western sanctions.

New projects

Besides the Baltic LNG plant in Ust Luga, Gazprom has planned two other facilities in the BSR in Kaliningrad and Vysotsk. Both are expected to be operational in 2017. The Kaliningrad LNG import terminal is supposed to provide an alternative to onshore gas transportation to the Russian enclave Kaliningrad. A small-scale production facility in Vysotsk has been positioned as a plant to supply LNG for maritime bunkering and regional industrial consumption.

The promise of LNG bunkering

Interest in supplying bunker LNG has been one of the reasons for renewed motivation from Gazprom to the Baltic projects. Gazprom expects the growth in the use of LNG for bunker fuel in the Baltic and North Seas to be up to 8-10 billion m3 annually by 2030. For Gazprom, building supply infrastructure is a crucial step to capturing the emerging LNG bunkering market, as Gazprom has long pursued a strategy of maintaining control over the entire supply chain – from production to end sales, which according to Gazprom's Head of Foreign Economic Activities, Pavel Odervo, will remain the case with its LNG strategy.

Conclusion

Gazprom's plans to promptly increase its supply capacity in the BSR have been challenged, however realistic the timetables and availability of investment and technology. Yet, several considerations shall be brought to light:

- Though LNG facilities planned for the Baltic are rather modest compared to other regions, they are significant at the regional scale. The Baltic LNG plant is mainly meant to serve the European markets, providing an alternative to LNG from Norway or Qatar and covering the demand for LNG bunker in Baltic and North Sea areas. Instead, Russian Arctic and Far East facilities are meant to supply Asian markets
- Russian LNG terminals shall be understood in terms of politics as much as in terms of economics. Even when commercial viability may seem weak, projects may get subsidies as the Russian government seeks to gain momentum in the growing Asian and emerging European local LNG markets
- The port competition in the eastern Baltic range has been tightening ever since commercial operations commenced in Ust Luga. Due to its dynamic development and growing diversified facilities, Ust Luga is considered as the main competitor to ports in Estonia and Latvia. With the development of LNG facilities, it will gain a unique competitive advantage and may become Russia's major transshipment hub

About the author

Daria Gritsenko (PhD) specialises in the fields of Maritime Policy and Governance, Quality Shipping, Corporate Social Responsibility in Shipping and Energy Transition. She studied in St. Petersburg, Hamburg, Turku and Helsinki and holds a Doctoral Degree in Social Sciences. She is a postdoctoral fellow at the Aleksanteri Institute (University of Helsinki) conducting research on environmental dimensions of Arctic energy development and transportation. She is a partner at the Finnish Center of Excellence 'Choices of Russian Modernization'.

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