



Is Russia building too many pipelines? Explaining Russia's oil and gas export strategy



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ABSTRACT

The article examines Russia's entire oil and gas export network and reveals that there is a considerable surplus pipeline capacity, which is likely to endure in the future. It brings to attention surplus capacity as a concept that could enrich discussions on what drivers Russia's energy policy abroad and how Moscow enhances its energy security. The article provides three explanations on Russia's surplus capacity for oil and gas exports. First, Russia's institutional setting has been conducive for a surge in new pipelines, as economic considerations have played a less significant role. Second, Russia's energy "pivot to Asia" has already contributed to a widening surplus capacity in westbound oil pipelines, and it is likely to have a similar impact on gas once it starts flowing to China. Third, Russia's energy security concerns, namely about minimising transit risks, have played a key role in its active pipeline diplomacy and new pipeline ventures. The implications of Russia's surplus capacity can be significant. For oil, the room for manoeuvring is wide enough to allow Russia abandon an entire route of its choice. For gas, Moscow is likely to enhance its bargaining position with Ukraine, while Gazprom acquires more flexibility to deliver gas abroad.

1. Introduction

For over two decades Russia has been investing in a number of new pipelines for exporting its oil and gas. A large set of literature has emerged examining Russia's pipeline diplomacy and its growing number of oil and gas pipeline ventures in its neighbourhood (Abdelal and Tarontsi, 2010; Baev and Overland, 2010; Fernandez, 2011; Franza, 2015; Goldthau, 2016; Henderson, 2011; Mares and Martin, 2012; Schaffer, 2008; Shadrina, 2014; Tarasov, 2011). A few studies have questioned whether Russia's new pipelines are justified by its oil or gas export potential (Henderson and Mitrova, 2015; Vatansever, 2010).

This study aims to contribute to the ongoing discourse on Russia's energy export strategy in three ways. First, it contends that understanding Russia's energy strategy abroad would benefit from looking at Russia's *entire export network* for oil and gas rather than its individual export pipelines. Namely, the study brings to attention that Russia has developed a substantial *surplus capacity* for both oil and gas exports. Furthermore, this surplus capacity does not appear as a temporary phenomenon. Hence, it is important to explain this conundrum and the role it might be playing in Russia's energy export strategy.

The underlying assumption of the paper is that surplus capacity can

be important both for economic and political reasons. In theory, pipeline operators prefer to see their network operate close to full capacity, as underutilization implies lost potential revenues. But the oil/gas industry would generally benefit from surplus capacity, as it provides greater flexibility in choosing an optimal export route, and can secure them potentially lower tariffs.¹ From a political standpoint, surplus export capacity may have implications on a country's relations with its neighbours. Typically, surplus capacity, if secured through the availability of alternative export routes, would imply less reliance on a particular transit country. This could ultimately affect the bargaining position of the supplier and the transit country.

Second, while most studies looking at Russia's energy strategy and Moscow's pipeline diplomacy have focused on either oil or gas, this paper adopts a comprehensive approach by investigating both. As it looks at how Russia's oil and gas sectors compare in terms of developing new pipeline capacity for exports, the paper aims to highlight the prevalent patterns and differences between the two sectors. The approach provides significant insights about Russia's evolving energy strategy and its strategic options with regard to oil and gas exports.

Third, it has been common for discussions on energy security to focus on energy-importing countries, while the perspective of net

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¹ The opposite of surplus capacity is tight pipeline capacity or bottlenecks. Companies faced with bottlenecks may need to deliver the oil/gas at below market prices. For instance, North American crude oil prices in the past few years have generally remained discounted to global prices due to bottlenecks in pipelines. See *National Energy Board, 2014*, p. 6.

energy exporters has received less attention (Smeets, 2014, pp. 107–109). A few more recent studies have aimed to fill the gap, namely through their emphasis on the security of demand for energy exporting countries (Boussena and Locatelli, 2013; Lee, 2014; Umbach, 2011). Yet, the instruments available to large energy exporters in ensuring their energy security still constitute an area necessitating further analysis. This study aims to bring “surplus capacity” as part of a discussion on the energy security of the Russian Federation—the world’s largest hydrocarbon exporter.

The paper starts with a definition of surplus capacity in a country’s oil/gas export network, and elaborates on how to estimate it in Russia’s case. Next, it presents the results regarding the presence of such a surplus capacity in Russia’s oil and gas export pipelines. It distinguishes between present and future surplus capacity by taking into account expected changes in Russia’s exports, and its ongoing and planned new pipelines. The fourth section provides a detailed discussion on Russia’s surplus capacity offering three main explanations. The final section concludes and explains key policy implications.

2. Methods

2.1. Defining and assessing surplus capacity

Defining surplus capacity of an entire pipeline network is a complex matter. Even in the case of a single pipeline, the precise capacity may vary based on a range factors such as ambient temperature, the grade of the resource (in case of oil) and the duration of periodic maintenance (National Energy Board, 2014, p. 4). Measuring the surplus capacity is a formidable task for regulators as well, as they try to ensure that pipeline operators allocate access to producers of oil or gas.

Acknowledging that a precise estimate of the surplus capacity in Russia’s oil and gas export network may not be possible, this paper aims to shed a light on the overall extent and the nature of this problem. The focus is only on the surplus capacity in the export of crude oil and natural gas. The export of petroleum products and LNG is examined only to the extent they affect crude oil and piped natural gas export capacity, respectively.

To get a better sense of the surplus in Russia’s export network, this paper focuses on capacity and shipments to markets only outside the former Soviet republics—the so-called non-FSU markets. There is a risk of overestimating actual usable surplus capacity for Russian oil and gas exports if FSU markets are included. Gas and oil consumption in key markets such as Ukraine and Belarus has shrunk in the past two decades, yielding their full import capacity unnecessary, and some pipelines unusable. A number of pipelines connecting FSU with Russia’s network on the other side of the border have been idle for over a decade.²

For practical purposes, the paper defines surplus capacity as the difference between the proclaimed capacities of export pipelines at Russia’s border³ and total pipeline throughput for export in a given year.⁴ Surplus capacity is assumed to be present if throughput is below

² For example, Ukraine’s Naftogaz reports the import (including transit) capacity of the oil network at 114 mta. But it imported no Russian crude oil in 2014. It has multiple connections with Russia, and some of them have remained idle for many years (Naftogaz Website, 2016a).

³ Some of Russia’s crude oil is exported directly through a pipeline connection with other countries. In other cases, there is a pipeline bringing the oil to a maritime port for further shipment. In either case, the paper looks at the proclaimed capacity at the last stretch of a pipeline crossing a border or terminating at a maritime port. In the case of natural gas, save for one LNG facility, all Russian gas is currently exported through pipelines. Thus, the paper gives consideration only to capacity at the point where a pipeline exits Russia.

⁴ The focus is on annual capacity, instead of daily or seasonal peak capacity. Measuring the latter necessitates a further level of detail on each relevant pipeline, which is not available. Meanwhile, accommodating seasonal peak volumes in oil/gas exports may necessitate some additional capacity, though whether this is an optimal choice would depend on the balance between the revenues for extra volumes to be shipped versus additional costs for building and maintaining such a surplus.

proclaimed capacity.

As pipelines are generally built to operate for many years, typically several decades, the paper distinguishes between “current” and “long-term” surplus capacity. It defines “long-term” as the period beyond 2020.

For estimating current surplus capacity the paper tallies the information on the proclaimed capacity of individual oil/gas export pipelines from Russia. The total capacity is compared to the actual export throughput via pipelines in 2014. For a more accurate estimate of surplus capacity, the paper also takes into account transit of non-Russian oil/gas, and provides conservative estimates on additional export pipelines to non-FSU markets that are available for use, but have remained underutilised or dormant.

Assessing long-term surplus capacity necessitates looking mainly at two inter-related trends: future growth in oil/gas exports and planned additions of new export (pipeline) capacity. Changes in transit volumes for non-Russian oil/gas also need to be taken into account.

Future oil exports could be derived by looking at forecasts on domestic production, domestic consumption of petroleum products, export of petroleum products, and changes in transit volumes. For the gas sector, export is simply the difference between domestic production and consumption, plus any transit volumes for non-Russian gas.⁵

Regarding future projections that could affect Russian oil and gas exports, the paper relies on multiple sources such as Russia’s official energy strategy, the International Energy Agency (IEA) and the Energy Research Institute of the Russian Academy of Sciences. The paper looks at their projections through 2035.

On planned additions to pipeline capacity, the paper takes into account pipelines projects that have been approved by investors/Russian government or are nearing approval. Acknowledging that not every pipeline announced by its proponents ends up being constructed, or it may be constructed at a capacity that varies from the initial plan, the paper provides additional estimates. New pipelines that are not currently planned may also appear on the horizon in the future. However, the paper does not attempt to predict them.

3. Results

3.1. Current surplus capacity for crude oil exports

In 2014, Russia exported 223.4 million tonnes (mt) of crude oil, about 199 mt of that to the non-FSU market (Vinogradova, 2015). Roughly 90% of the exports were handled through Transneft, the national oil pipeline operator. Oil was exported principally through five pipelines in four main destinations: the Druzhba pipeline for direct oil sales to European refineries; the two pipelines of the Baltic Pipeline System (BPS-1 and BPS-2) for exports via Russian ports on the Baltic coast; the Novorossiysk pipeline for exports through the Black Sea port of Novorossiysk; and the ESPO pipeline for sales to Asian markets.

The reported usable capacity of these five main export pipelines, which takes into account any extents of degradation, exceeded substantially Russia’s oil shipments abroad. The five pipelines altogether had an estimated capacity of 270.5 mt—more than enough to handle all Russian oil crude exports to non-FSU markets in 2014.

With the consideration of additional export outlets for Russian crude, it appears that the surplus capacity in Russia’s oil export network is even higher. First, a portion of Russian oil exports bypasses Transneft’s pipeline network. This adds to Russia’s overall oil export

⁵ Overall, the level of oil exports in the future (e.g. 2020) can be formulated as: $Ox = Oq - Rc - Rx + Ot$, where Ox is exports of oil, Oq is the country’s oil output, Rc is domestic consumption of refined petroleum products, Rx is export of refined petroleum products, and Ot is the volume of foreign oil transit. For the gas sector, future exports could be formulated as: $Gx = Gq - Gc + Gt$, where Gx stands for gas exports, Gq is the volume of gas produced in a given year, Gc is the amount of gas consumed domestically, and Gt is the volume of foreign gas transit.

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