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Is Russia Building Too Many Pipelines? Explaining Russia's Oil and Gas Export Strategy

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Article title: Is Russia Building Too Many Pipelines? Explaining Russia's Oil and Gas Export Strategy

Highlights:

- Russia has developed a major surplus capacity in its oil and gas export pipelines.
- The surplus is likely to remain in the foreseeable future.
- The surplus capacity appears central to Russia's energy security policy.
- It presents Russia with an expanded room for manoeuvring in its exports to Europe.

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Gas Export Strategy

Revised Manuscript

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.

Keywords

Russian energy policy;
Energy security;
Pipelines;
Transit;
Natural gas exports;
Oil exports

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 Larys, 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.

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, p. 6

1 Second, while most studies looking at Russia's energy strategy and Moscow's
2 pipeline diplomacy have focused on either oil or gas, this paper adopts a
3 comprehensive approach by investigating both. As it looks at how Russia's oil and
4 gas sectors compare in terms of developing new pipeline capacity for exports, the
5 paper aims to highlight the prevalent patterns and differences between the two sectors.
6
7 The approach provides significant insights about Russia's evolving energy strategy
8 and its strategic options with regard to oil and gas exports.
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11 Third, it has been common for discussions on energy security to focus on
12 energy-importing countries, while the perspective of net energy exporters has
13 received less attention (Smeets 2014, pp. 107-109). A few more recent studies have
14 aimed to fill the gap, namely through their emphasis on the security of demand for
15 energy exporting countries (Boussena and Locatelli, 2013; Lee, 2014; Umbach,
16 2011). Yet, the instruments available to large energy exporters in ensuring their
17 energy security still constitute an area necessitating further analysis. This study aims
18 to bring "surplus capacity" as part of a discussion on the energy security of the
19 Russian Federation—the world's largest hydrocarbon exporter.
20

21
22 The paper starts with a definition of surplus capacity in a country's oil/gas
23 export network, and elaborates on how to estimate it in Russia's case. Next, it
24 presents the results regarding the presence of such a surplus capacity in Russia's oil
25 and gas export pipelines. It distinguishes between present and future surplus capacity
26 by taking into account expected changes in Russia's exports, and its ongoing and
27 planned new pipelines. The fourth section provides a detailed discussion on Russia's
28 surplus capacity offering three main explanations. The final section concludes and
29 explains key policy implications.
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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 of factors such as ambient temperature, the grade of the resource (in case of oil) and the duration of periodic maintenance (National Energy Board, 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

1 pipelines unusable. A number of pipelines connecting FSU with Russia's network on
2 the other side of the border have been idle for over a decade.²
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5 For practical purposes, the paper defines surplus capacity as the difference
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7 between the proclaimed capacities of export pipelines at Russia's border³ and total
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9 pipeline throughput for export in a given year.⁴ Surplus capacity is assumed to be
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11 present if throughput is below proclaimed capacity.
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15 As pipelines are generally built to operate for many years, typically several
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17 decades, the paper distinguishes between "current" and "long-term" surplus capacity.
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19 It defines "long-term" as the period beyond 2020.
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22 For estimating *current* surplus capacity the paper tallies the information on the
23
24 proclaimed capacity of individual oil/gas export pipelines from Russia. The total
25
26 capacity is compared to the actual export throughput via pipelines in 2014. For a more
27
28 accurate estimate of surplus capacity, the paper also takes into account transit of non-
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30 Russian oil/gas, and provides conservative estimates on additional export pipelines to
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32 non-FSU markets that are available for use, but have remained underutilised or
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34 dormant.
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39 Assessing long-term surplus capacity necessitates looking mainly at two inter-
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41 related trends: future growth in oil/gas exports and planned additions of new export
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46 ² For example, Ukraine's Naftogaz reports the import (including transit) capacity of the oil
47 network at 114 mta. But it imported no Russian crude oil in 2014. It has multiple connections
48 with Russia, and some of them have remained idle for many years. Naftogaz Website, 2016.

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

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

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.

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 per cent 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 capacity. In 2014, 22.5 mt—about 10 per cent of Russia's total crude oil exports—bypassed Transneft's network (the five major pipelines in Table 1).⁶ This figure does not represent the upper limit for such shipments.⁷ However, in the context of Russia's surplus capacity for oil exports, these shipments

⁶ Though it is not clear whether a portion of these volumes ended up in the FSU market, these were overwhelmingly non-FSU shipments. The "bypass" volumes were mainly from oil producers in Sakhalin, but also involved shipments through rivers and railcars in other parts of Russia, including several Arctic ports. Limited volumes (about 3.1 mt) were dispatched through the Caspian Pipeline Consortium's (CPC) pipeline, which does not belong to Transneft's network, though the Russian company is a major shareholder. (Vinogradova, 2015)

⁷ In the early 2000s, when Russia still suffered from bottlenecks in exports, "bypass" shipments were much more pronounced, and generally required oil companies to pay a premium.

highlight the availability of an export alternative that is economically viable. Thus, 22.5 mt are added to Russia's overall oil export capacity.

Additional export capacity for Russian oil is found in the form of transit routes to non-FSU markets via Ukraine, Kazakhstan and the Baltics. This is in addition to the Druzhba pipeline that is a fairly well utilised transit pipeline going through Belarus and Ukraine. There is a legacy of routes that connect Transneft's network to transit routes through these former Soviet republics. Many of these transit routes have remained dormant or are severely underutilized due to political reason. In order to provide a cautious estimate about the usable portion of this extra capacity, the paper discounts pipelines that have remained dormant for about a decade or more.

Routes through Ukraine offer significant additional surplus capacity for Russian oil. Transneft's network has multiple connections across the border with Ukraine's oil pipeline network. Ukrtransnafta, Ukraine's oil pipeline operator and a subsidiary of Naftogaz, reports its network's export/transit capacity at 56 mta. Actual volumes transiting Ukraine stood at only 15 mt in 2014, shipped through the Southern branch of the Druzhba pipeline (Naftogaz 2016). Much of the resulting spare capacity is related to routes other than the Druzhba pipeline crossing Ukraine. For instance, Russian companies have recently abandoned Ukraine's Odessa and Yuzhnyi ports as destinations for their crude, redirecting exports to the Baltics.⁸ In total, based on a conservative estimate, at least 20 mt of additional spare capacity appears available through Ukraine to destinations outside the FSU.

Routes through Kazakhstan also offer additional export capacity for Russian oil. The Omsk-Pavlodar pipeline connects Russia and Kazakhstan,⁹ and links to the

⁸ The peak year was 2007 when the two ports collectively handled 12.7 mt of Russian crude exports. (Sagers et al, 2011, p. 90)

⁹ The Omsk-Pavlodar pipeline operated by Transneft has an estimated capacity of 25 mta. (*Trend Oil & Gas*, 2015)

1 Kazakhstan-China oil pipeline for further shipments. In 2014, Russia shipped 7 mt of
2 oil to China through this route, thanks to a swap arrangement with Kazakhstan.¹⁰
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4 KazTransOil, Kazakhstan's oil pipeline operator has reportedly allocated 10 mta of its
5 network capacity for shipments of Russian oil to China (Oil.Ekspert Electronic
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7 Journal, 2014).
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11 Pipelines through the Baltic republics offer additional potential export
12 capacity. The North-Western Pipeline System branches off the Druzhba pipeline near
13 the Russia-Belarus border, crosses Belarus and reaches Butinge and Ventspils—Baltic
14 ports belonging to Lithuania and Latvia, respectively. The pipeline has an estimated
15 capacity of 15 mta. However, as the pipeline has been dormant since 2006 (US EIA,
16 2015), with no Russian company expressing its intention to use it, the paper assumes
17 its usable capacity as nil.¹¹
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21 An additional adjustment is needed for transit shipments of Caspian (mainly
22 Kazakh) oil through Transneft's network. Total oil transit for Kazakh, Azeri and
23 Turkmen oil stood at about 18 mt in 2014, providing a modest contribution to the
24 utilization rate of Russia's export network (Vinogradova, 2015). The shipments were
25 done primarily through the BPS-2 pipeline and the Druzhba pipeline (Sagers, 2015).
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29 Overall, the paper estimates that Russia's oil export network had the capacity
30 to ship 323 mt of crude oil to non-FSU markets in 2014. Pipeline export capacity
31 (after excluding routes bypassing Transneft's network) stood at about 300.5 mt, which
32 was more than enough to handle 194.5 mt of Russian and Caspian oil shipments.
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55 ¹⁰ The swap arrangement was with Kazakhstan's refineries, which received 7 mt of Russian
56 crude, while the same amount of Kazakh crude was shipped to China. Officially, Russia exported
57 only 62,000 tons to Kazakhstan. (Vesti.Ru, 2015).
58

59 ¹¹ Oil shipments through these ports, partly delivered via rail, had peaked at 20.2 mt in 2001.
60 This was the year when Russia launched the Baltic Pipeline System, which aimed to bypass these
61 two Baltic countries. (Sagers et al, 2011, p. 90)
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Capacity utilization of Russia's pipeline network for oil exports was equivalent to 65 per cent.

Russia's Ministry of Energy has recognized the presence of a substantial surplus capacity for oil exports. In its annual summary for Russia's oil sector in 2014, it has highlighted the growing surplus capacity of Transneft's Europe-bound pipelines. Exports through the Black Sea in particular have been in decline. Shipments through the Baltic pipelines, especially the BPS-1, have also dropped below their peak.¹² By contrast, exports to Asia through the ESPO pipeline have grown rapidly, and the pipeline is been operating nearly at full capacity (Ministry of Energy, 2015d).

3.2. Long-term surplus capacity for crude oil exports

Russia's hefty surplus capacity for crude oil exports may well be a phenomenon extending well into the longer-run. How this surplus capacity evolves will depend on a number of factors, such as planned pipeline additions, prospects for Russia's oil sector, and transit of foreign (mainly Kazakh) oil.

Importantly, the era of building *new* pipelines for oil export appears to be over. No new export pipeline is on Transneft's investment agenda through 2020. However, Transneft continues to expand the ESPO pipeline with the purpose of

¹² Russia exported 64.2 mt of its crude oil through the Black Sea route in 2003—the peak year for this route. The peak year for the Baltic Sea route was 2007 when 79.3 mt of Russian crude oil was dispatched through Baltic ports. In case of the Druzhba pipeline, 58.6 mt of Russian oil was delivered through this route in 2006—the peak year. (Sagers et al, 2011, p. 90)

bringing its maximum capacity to 80 mta by 2019.¹³ This would bring Russia's total pipeline export capacity to 335.5 mt—an increase by 35 mt a year.

In the meantime, a significant growth in oil exports does not appear on the horizon. Forecasts on Russia's oil production do not warrant a notable surge in export of crude oil. The government's draft Energy Strategy through 2035, launched for public discussion in September 2015, assumes oil production will stay at 525 mta through 2035 in its baseline scenario.¹⁴ The Energy Strategy includes a conservative scenario that predicts a decline in the oil output to 476 mt in 2035. Forecasts by other agencies also highlight Russia's difficulty in securing further growth in its oil output (Table 2). Even under the government's baseline scenario, which forecasts an increase in oil exports to 276 mt in 2035, Russia still maintains a substantial surplus capacity in its oil export network.

Three additional areas that could also affect actual oil exports in the future are refining, domestic consumption and oil transit. Energy Strategy 2035 predicts a drop in refined product volumes, which would allow a modest growth in crude oil exports. But this outcome depends on whether the Russian government will decisively end its traditional emphasis on refined product exports. Owing to a policy prioritising refining, Russia doubled the export of petroleum products between 2004 and 2014,

¹³ Reaching this capacity necessitates investments by China on doubling the capacity of the Skovorodino-Mohe pipeline to allow the intake of 30 mt a year Russian crude. Russia and China signed an intergovernmental agreement for this purpose in 2013. Meanwhile, the ESPO-2 pipeline from Skovorodino to Russia's Pacific port Kozmino is projected to be expanded from 30 mt to 50 mta by 2019 for onward shipments, bringing ESPO's total capacity to 80 mta. (Transneft website, 2016b; Rossiyskaya Gazeta, 2015)

¹⁴ Projections include growth in unconventional oil production, which will be modest but will help replenish dwindling output from conventional fields. The Ministry of Energy's forecasts for unconventional oil do not appear ambitious: production from Russia's main unconventional field, the Bazhenov basin, is expected to reach merely 400 thousand barrels a day by 2030 (Farchy, 2017).

1 while crude oil exports actually declined.¹⁵ Furthermore, Transneft's most recent
2 investment plans prioritize spending on new petroleum product pipelines till 2020,
3 partly to facilitate such product exports (Neftegazovaya Vertikal, 2015). Meanwhile, a
4 drop in domestic oil consumption, which could allow more exports, appears less
5 likely, as Russia's vehicle ownership keeps growing (Fernandez, 2009, pp. 1451-3).
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11 Russia's surplus capacity in its oil export network opens the opportunity for
12 increasing transit shipments of Caspian oil. This is in addition to volumes going
13 through the CPC pipeline, which crosses Russian territory but is not part of
14 Transneft's network, and is used mainly for Kazakh crude exports.
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21 Yet, such an outcome hinges primarily on Kazakhstan's willingness to use
22 Transneft's network. Kazakhstan benefits from multiple alternative options for transit.
23 Apart from the CPC pipeline, which capacity is being increased to 67 mt, Kazakhstan
24 has been expanding direct shipments to China. Additionally, the Baku-Tbilisi-Ceyhan
25 pipeline also offers ample capacity to accommodate future Kazakh crude.
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34 While the vast surplus capacity in Russia's oil export network is likely to
35 remain, its individual export routes will be affected differently. Geographic
36 differences are likely to become more pronounced. There is already a stark contrast
37 between the Asia-bound routes operating at full capacity and the underutilised
38 westbound routes. As Asian-bound exports continue to surge, the expansion of the
39 ESPO pipeline will aim to meet this growing need for a new capacity. But as oil gets
40 redirected towards Asia, amidst prospects for modest growth in total oil exports, the
41 western routes may witness a further surge in surplus capacity.¹⁶
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56 ¹⁵ Accordingly, Russia's total crude oil exports dropped from 260 mt to 223 mt between 2004
57 and 2014. By contrast, petroleum product exports rose nearly consistently throughout this
58 period, surging from 82 mt in 2004 to 165 mt in 2014. (Central Bank of the Russian Federation)

59 ¹⁶ Transneft's investments plan for 2014-2020 calls for significant investments in internal
60 pipelines in order to connect new fields and/or redirect oil flows from West Siberia towards
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1 The surplus in the westbound oil export routes offers Russia significant
2 strategic choices. In 2014, Russia's non-FSU oil exports through its four West-bound
3 pipelines stood at only 134 mt—well below their combined capacity of 225.5 mt.
4 Shipments in this direction are likely to fall further.¹⁷ But even if they did not, Russia
5 appears in a very convenient spot. In theory, Russia could abandon entirely a route of
6 its choice: the Druzhba pipeline or the Black Sea route. It could accommodate its
7 westbound oil exports through a combination of its Baltic pipelines and *one* of these
8 two routes.

9 The surplus on the West-bound routes also opens the possibility to convert
10 some strings of select pipelines to ship petroleum products.¹⁸ While such a
11 conversion, if permanent, would be indicative that Russia built too many West-bound
12 oil pipelines, it might be more economically justified compared to having
13 underutilized, and eventually degraded pipelines.¹⁹

34 3.3. *Current surplus capacity for natural gas exports*

35 As in the case of oil, a comparison between Russia's pipeline capacity and
36 actual volumes for exporting gas reveals a substantial surplus. In 2014, Russia's gas
37 exports through its pipeline network stood at 191.5 billion cubic meters (bcm). The

51 ESPO pipeline. Major projects include Zapolyarnoe-Purpe-Samotlor pipeline (45 mta capacity),
52 Kyumba-Taishet pipeline (15 mta capacity). (Transneft Website, 2014)

53 ¹⁷ Russia's Energy Research Institute forecasts Europe-bound non-FSU exports to drop to 124 mt
54 by 2025 and to 90 mt by 2035 (Energy Research Institute, 2014, p. 138).

55 ¹⁸ The first example of this is the conversion of a string of the BPS-1 pipeline in 2014 to carry
56 diesel instead of crude. While the measure may not be a permanent one, it is likely to help with
57 keeping the pipeline utilized.

58 ¹⁹ If a pipeline, or a string of it, remains unutilized and degrades over time, the actual usable
59 capacity of Russia's pipeline export network would fall. Such a development would confirm that
60 Russia built excessive capacity.

1 non-FSU market accounted for 146.6 bcm of Russia's piped gas exports, while the
2 rest, 44.9 bcm was sold in the former Soviet republics.²⁰
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4 Russia's non-FSU gas exports occur through five pipeline routes, all leading
5 to various parts of Europe. Their cumulative capacity was about 254 bcm in 2014
6 (Table 3). Compared to actual volumes exported in this market, the overall capacity
7 utilization of Russia's gas export network remained at 57 per cent. There is
8 substantial additional capacity for delivering gas to FSU markets, which this study
9 does not aim to examine.²¹ The actual extent of this additional capacity available for
10 immediate use is not certain, as some of the pipeline links have been severely
11 underutilized for years.²²
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24 Gazprom's utilization of its major export pipelines appears highly uneven
25 (Table 3). The major trend in the past years has been the declining use of the route
26 through Ukraine: gas transit has consistently dropped from 137.1 bcm in 2004 to 62.4
27 bcm in 2014.²³ The Nord Stream pipeline, launched in 2011, has also remained fairly
28 underutilized, due to disagreements on access to onshore pipelines (OPAL and NEL)
29 in Germany (Pipeline and Gas Journal, 2012). The relatively small pipeline to Finland
30 has also been operating with substantial spare capacity. By contrast, Gazprom has
31 been shipping through the Yamal-Europe pipeline via Belarus at its maximum
32 capacity. Another major export route, the Blue Stream pipeline to Turkey, has also
33 approached its full capacity.
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54 ²⁰ Additionally, Russia exported 14.4 bcm of LNG from Sakhalin in the Far East.

55 ²¹ For instance, Naftogaz reports its network's import capacity from Russia at 288 bcm a year.
56 Naftogaz Website, (2016a)

57 ²² For instance, Ukraine's imports of gas for domestic use from Russia declined from 89.1 bcm in
58 1992 to 14.5 bcm in 2014, leaving vast underused capacity. Naftogaz Website, (2016b)

59 ²³ The destination of the transit gas was 59.3 bcm for the non-FSU markets and 3 bcm for the FSU
60 markets. Naftogaz Website, (2016a)
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3.4. Long-term surplus capacity for natural gas exports

In stark contrast to the oil sector, the era of constructing new major export routes does not appear to be over for Russian gas. In fact, announcements by Russian officials and Gazprom about new pipeline projects might give the impression that such an era is just starting.

As of 2016, there are four major new pipelines on Gazprom's agenda. Two of these are projected to provide new capacity for gas exports to Europe: the Nord Stream 2 pipeline which aims to double the capacity of the Nord Stream route to 110 bcm, and the Turkish Stream with a projected capacity downgraded to 31.5 bcm at the end of 2016.²⁴ Gazprom claims initial shipments through both pipelines will start before the end of the decade, and progressively reach full capacity (Mazneva, 2016).

In Asia, Gazprom has announced plans to construct two pipelines for the Chinese market: the Power of Siberia with a capacity of 38 bcm and the Altai Pipeline (also known as the Power of Siberia 2) that would bring additional 30 bcm to Western China (Table 4). While construction of the Power of Siberia is underway, negotiations on the second pipeline route are yet to be finalized.

Altogether, if realized, these four new pipelines will bring Russia's pipeline export capacity to 408.5 bcm: 340.5 bcm for Europe and 68 bcm for China. Russia

²⁴ In case of the Turkish Stream, the precise capacity of the planned pipeline is not yet clear. Since December 2014 when Russia proposed the pipeline, Ankara and Moscow have provided mixed signals about the potential design capacity. The original plan envisaged four parallel strings, each with capacity to ship 15.75 bcm a year. Following bilateral negotiations, the initial capacity of the pipeline has been downgraded from 63 bcm to 31.5 bcm. While reviving the original design is not out of question, the study assumes the projected capacity of the pipeline to stand at 31.5 bcm.

could bring on line additional export capacity through expanding LNG sales.

Reportedly, there are five planned LNG projects and one under construction.

Targeting primarily the Asian market, these proposed projects have an estimated capacity of about 90 bcm (US EIA, 2015).

Unlike the oil sector, Russian gas does not face a significant upstream challenge, which makes it possible to expand production and exports in the longer-term. In fact, there is a vast excess production capacity already. Gazprom reports that it produced only 444 bcm in 2014, and it claims it could have easily ramped up production to 617 bcm, had there been an available market to ship the extra volumes (Reuters, 2015). Other sources confirm the presence of a massive excess production capacity for gas in Russia (Sberbank, 2014a).

Russia's Energy Strategy 2035 forecasts gas output growing to 723 bcm in 2020, and going further up to 885 bcm by 2035. The strategy document projects gas exports growing to 244 bcm in 2020 and 317 bcm by 2035. Its conservative scenario is less ambitious, predicting exports reaching 282 bcm by 2035 (Table 5). These figures represent a major downward revision compared to the initial version of Energy Strategy 2035, launched in January 2014, and the Energy Strategy 2030, which was approved in 2009²⁵. Forecasts by the IEA are noticeably more conservative. The IEA predicts that gas output and exports in 2035 will go up to only 699 bcm and 244 bcm, respectively (IEA, 2015).

The energy strategy draft of the Russian government provides further breakdown of gas exports in terms of delivery method and destination. Accordingly, the Russian government expects a major growth in gas exports to Asia, as well as in

²⁵ Energy Strategy 2030 had forecasted gas exports to go up to 349-368 bcm by 2030 (Energy Strategy of Russia for the Period Up to 2030, p. 139) The initial version proposed at the beginning of 2014 forecasted gas exports growing to 262 bcm in 2020 and to 360 bcm by 2035 (Ministry of Energy, 2014)

1 overall LNG shipments (mostly to Asia). This growth, if realized, would justify the
2 projected two new pipelines for bringing gas to China, though a large part of the
3 growth in gas exports to Asia is to be accomplished through LNG.
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7 The implications for European exports are quite striking. By 2025, the
8 government's energy strategy draft anticipates a meagre (only 7 bcm) increase in gas
9 exports to Europe and FSU (Table 5). Export volumes in this direction are expected to
10 decline afterwards. This implies that the current surplus in the gas export network to
11 Europe is not temporary.
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15 The extent of the surplus capacity to Europe will depend largely on whether
16 Russia decides to completely bypass Ukraine as a transit country, and on how
17 Gazprom proceeds with the proposed new pipelines—the Turkish Stream and the
18 Nord Stream-2. With both pipelines built, Russia will end up with a capacity to export
19 340.5 bcm to Europe. If sales to the FSU are kept at around 40 bcm, the upper limit
20 for Russia's gas exports to Europe will be about 161 bcm in 2025, under the baseline
21 scenario. This signifies a surplus of about 179.5 bcm of export capacity to the
22 European markets. If Ukraine is bypassed completely, Russia would still face a
23 surplus capacity of 37.5 bcm a year.
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27 Some of this projected surplus capacity might turn out beneficial due to
28 seasonality of demand for gas in Europe, securing Gazprom the flexibility to
29 accommodate requests for peak supply.²⁶ However, Russia's major pipeline projects,
30 such as Nord Stream 2 and Turk Stream, were not born out of any reported
31 bottlenecks in the export network. Also, European consumers have tended to rely
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²⁶ Gazprom officials note that the size of the seasonal swing in the demand for Russian gas in Europe has more than doubled in the previous fifteen years. Thus, the seasonal swing has increased from the average of 80-100 million cubic meters (mcm) per day in the 1998-2005 period to the new average of 150-220 mcm/day in the 2005-2013 period. (, 2014)

1 primarily on underground storage and LNG for peak demand in the past few years.²⁷
2 Continuous use of Russia's spare capacity in winters is not assured, as Europe's
3 experience indicates that relative price have turned out to be the decisive factor in
4 meeting peak demand.²⁸ Furthermore, Gazprom has been also investing in storage
5 capacity within the EU to smooth out seasonal demand swings.²⁹
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17 ***4. Discussion: Russia's surplus capacity conundrum—three explanations***

18 *4.1. An institutional setting conducive for surplus capacity*

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27 An actor-centred institutionalist approach suggests that policy decisions are
28 shaped by their institutional framework. Applying this approach to Russia's
29 pipelines, Chuvychkina (2014, p. 92) suggests that the institutional setting has
30 affected the preferences of the players in Russia's energy sector. As Russian leaders
31 have perceived energy as an instrument of state power, players in the energy sector
32 have had to operate within this context.
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41 A central feature of the oil and gas sectors of post-Soviet Russia has been state
42 control over the pipeline network. Transneft, majority-owned by the state, has owned
43 and operated the oil pipeline network, whereas state-owned Gazprom has performed
44 this function for the gas sector. In the oil sector, Russian legislation has allowed
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52 ²⁷ European Commission quarterly reports on gas consumption within the EU indicate that the
53 impact of seasonal swings in demand on net imports has varied across years. Yet, it has been
54 accommodated primarily through withdrawals from underground storages. (European
55 Commission DG Energy, 2016)

56 ²⁸ For instance, EU's imports of Russian gas in the first quarter of 2015 dropped by 22 percent,
57 whereas they rose by 26 percent in the summer (the third quarter), as Gazprom's oil-indexed gas
58 sales became relatively less expensive during the warmer months of the year. *Ibid*

59 ²⁹ Gazprom's annual underground storage capacity in the EU increased from 1.4 bcm in 2006 to
60 4.9 bcm in 2015. (Gazprom website)
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1 building pipelines to companies other than Transneft. However, the government has
2 fiercely resisted such attempts (Belyi, p. 170). Ultimately, private pipelines not owned
3 by Transneft, have remained the exception³⁰. For the gas sector, Gazprom's monopoly
4 in pipeline exports has remained firm. Only recently, the export of LNG has been
5 liberalised for the purpose of promoting this segment of Russian gas development.
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7
8 As control over transport routes and export outlets has been a key instrument
9 for the Russian state to maintain its grip on the oil and gas sectors, this has also
10 accorded a dominant role for the state in Russia's pipeline politics. State control over
11 the pipeline networks has meant more than majority state ownership. It has also
12 implied that key decisions about building a new pipeline have been ultimately taken at
13 the highest political level. As a result, the oil and gas industry has not been
14 autonomous in deciding about building new export pipeline routes. (Orekhin, 2006).
15

16 Since the state, rather than the industry, has been the ultimate decision-maker
17 about building new pipelines, a true economic justification for such projects has not
18 been a requirement (Chuvychkina, p. 106). Furthermore, pipeline construction has
19 helped the Russian pipe manufacturing and steel sectors to flourish, and has
20 contributed to new jobs.³¹ One may regard this development in the context of Gaddy
21 and Icke's (2005) interpretation of how Russia has managed its oil and gas rents. In
22 their view, various sectors of Russian economy have been allowed to flourish on the
23 back of such rents. However, there is no sufficient evidence to claim that
24 beneficiaries, such as the pipe and steel industry, known to be well-connected with
25 Kremlin, have driven Russia towards surplus export capacity.
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28 Importantly, Russia's oil and gas pipelines networks evolved under different
29 models, yet both ended up with a major surplus export capacity. Transneft, the owner
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31 A main example is a pipeline for oil exports from Sakhalin.

32 For instance, Head of Transneft claimed that ESPO helped to create 8,000 jobs in Russia's
33 eastern regions. Rossiyskaya Gazeta, (2015)
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1 and the operator of the oil pipeline network, has had some advantages over Gazprom
2 which owns and operates the gas network. Accordingly, Transneft does not assume a
3 direct price risk for crude oil, as it can keep earning tariff revenues as long as oil is
4 shipped. Typically, Transneft has laid new pipes only when throughput volumes are
5 guaranteed. However, there have been occasional exceptions, such as the BPS-2
6 pipeline.³² In such instances, the Federal Tariff Service has let Transneft to finance
7 such projects through setting higher tariffs across the entire network, while enticing
8 oil companies to use the select pipeline via designated lower tariffs (Troika Dialog,
9 2012). In essence, oil producers have subsidized Transneft's new projects. For
10 Gazprom, on the other hand, the gas network is an integrated segment of its larger gas
11 business. This necessitates Gazprom to bear gas price and market risks associated
12 with laying new pipelines. Due to its monopoly status on export pipelines, no
13 equivalent subsidization of new export routes by other gas players has been possible.

14
15 Transneft's advantage could explain to an extent why Russia's oil sector
16 developed a major surplus capacity earlier than the gas sector. In essence, it was
17 relatively easier for Transneft than Gazprom to fund such an endeavour.³³ By the
18 same token, the oil sector established a pipeline connection with China earlier than
19 the gas sector. The paper attempt to provide an additional explanation on oil's
20 relatively earlier "pivot to Asia" below.

21
22 Overall, the institutional setting of Russia's energy sector and its pipeline
23 network may help to understand what facilitated the emergence of a major surplus
24 capacity. It set the stage for building pipelines that may remain highly underutilized,

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26 ³² The BPS-2 pipeline has diverted part of the oil flows from Transneft's other Western routes.

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28 ³³ Additionally, Russia's oil exports have typically generated more revenues than natural gas
29 exports. Overall gross export revenues from the oil sector have been particularly higher than in
30 the case of gas exports, as much larger share of oil is exported compared to gas. This has
31 provided an additional advantage for the oil sector in funding large-scale export pipelines.

as due consideration for costs has not been a priority for the ultimate decision-makers—the government.

The institutional setting, however, is less helpful in grasping the precise causes of the vast surplus in Russia's oil and gas export networks. Two broad explanations below aim to fill this gap.

4.2. Shifting geography of energy demand

Russia's pipeline ventures could partly be explained through geographic shifts in demand for energy. Both for oil and gas, Asian markets have offered new opportunities for global energy suppliers. Though with some delay, Russia has responded to these opportunities by considering new routes for its oil and gas exports.

New pipelines to Asia are inevitably bound to contribute to growing spare capacity as long as the growth in Russia's total oil and gas exports is not commensurate. In the oil sector, new pipelines to Asia have already been contributing to Russia's oil export surplus capacity. In the context of lacking growth in exports, which peaked in 2004, oil volumes going to Asia have led to a growing surplus pipeline capacity on Russia's Europe-bound routes.

Building new pipelines to Asian markets, China in particular, has been justified by energy demand patterns and is also in line with Moscow's intensified economic ties with this continent. Accordingly, the biggest growth in recent years in Russia's international freight turnover has been in its Far East ports. Thus, for the first time, in 2014, the Kozmino port on the Pacific coast handled more Russian crude oil than Black Sea ports (Vinogradova, 2015).

Shifting oil exports to Asia have provided Russian companies new commercial opportunities. Diverting oil from West Siberia to Asian markets has generally brought higher netbacks than European shipments (Rudnitsky, 2013). Russia is still years away from piped gas exports to Asia. Yet, in the midst of Europe's relatively stagnant gas demand, Gazprom has viewed China as a major new market to conquer. Also, if Russia builds the Altai pipeline, it will make it possible to shift some of West Siberia's gas supplies to China, securing Russia opportunities for arbitrage between its European and Asian markets.

What has also helped to justify building new pipelines to Asia has been the hope that they would turn into catalyst for development of East Siberia and Russia's Far East. Historically, Russia has resorted to major infrastructure projects for this purpose. The Trans-Siberian railway remains as a vivid example. Meanwhile, the pipeline projects have already catalysed investment in energy upstream projects, and new fields in Russia's East Siberia and the Far East regions have been driving the modest growth in Russia's oil output (Sberbank, 2014b).

Remarkably, the oil sector has preceded the gas sector in responding to the rising market opportunities in Asia. In fact, Russia's oil sector appears about a decade ahead of the gas sector in building a pipeline to China. While, the ESPO pipeline started pumping Russian oil to China already in 2010 (Platts, 2010), Gazprom anticipates first gas flowing through the Power of Siberia towards the end of this decade. Until then, Russian gas shipments to Asia will remain restricted to LNG.

Oil maintains various advantages compared to gas, which explain its relative success in Russia's race to reach Asian markets. First, oil exports have traditionally brought more revenues than gas, hence an oil pipeline has been more likely to be lucrative. Second, the nature of oil as a commodity makes it easier to ship. Thus, rail

1 shipments to Asia had been gathering speed since the mid-1990s, reaching 10 mt by
2 2006 (Sagers at al, p.91). Building the ESPO pipeline allowed a more cost-effective
3 means for such shipments. Third, the pricing of oil benefits from clearer international
4 benchmarks, which are absent in case of gas. While China has paid world prices for
5 Russian oil, disagreements over the price of gas constituted a major stumbling block
6 between Russia and China. It took nearly a decade for Beijing and Moscow to agree
7 on the price of gas in 2014, as low-cost coal set some limits on how high China could
8 pay for gas.

19 And yet, it remains surprising that Gazprom, the world's leading exporter of
20 natural gas, has yet to build a pipeline to China. The company was notoriously late in
21 entering the LNG business as well. In 2014, Russia's share in global LNG trade was
22 merely 4 per cent. Russia ranked 8th in the world, behind countries such as Trinidad
23 and Tobago and Algeria (BP, 2015).

31 Gazprom's historic delay could probably be explained through its traditional
32 focus on European markets, which still constitutes the core of its business profits.
33 Russia's gas market structure could provide an additional explanation. Until recently
34 Gazprom maintained export monopoly for all gas exports. This limited the scope of
35 competition to reach new markets, including in Asia. By contrast, Russia's vibrant oil
36 sector with multiple players competing for export routes discovered Asia as an export
37 destination much earlier. It was Yukos, the largest oil company at the time, which
38 launched negotiations for a pipeline deal with China in the early 2000s. While the
39 deal failed following Yukos's nationalization, it set the stage for the ESPO pipeline
40 (Peterson and Barysch, pp. 16-17).

56 Overall, Russia's reasons for building new export capacity to Asia appear
57 rather straightforward. But as pipeline capacity expands in this direction and some of

1 the oil and gas gets diverted away from Western routes, this raises the question about
2 why Russia built and continues to build a vast surplus capacity towards Europe. The
3 following section aims to address this puzzle.
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10 11 12 4.3. *A nexus between surplus capacity and energy security* 13 14 15 16

17 The surplus capacity in Russia's oil and gas export network could be better
18 understood in terms of its role in enhancing the country's energy security. Energy
19 exporting countries enhance their energy security by seeking to ensure stable export
20 volumes at high prices, and consequently, stable inflow of energy export revenues
21 (Smeets, p. 108). This is applicable to post-Soviet Russia as well, as the country has
22 heavily depended on continuous flow of oil and gas export revenues.
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31 Russia's drive towards new, and eventually surplus capacity could also be
32 viewed as a means serving Russia's foreign policy objectives. Stegen (2011) has
33 provided an excellent model analysing countries using energy as a foreign policy
34 weapon. Based on the model, surplus capacity can be considered as a potential energy
35 weapon, for instance against transit countries which could be under threat to suffer
36 financial losses if bypassed by a new pipeline. However, determining the actual
37 impact of this weapon would necessitate finding conclusive evidence about a direct
38 link between surplus capacity as a policy tool and a target country's "acquiescence
39 and concessions" in relation to Russian policy preferences. As "acquiescence and
40 concessions" are typically an outcome of multiple policy levers utilized against the
41 target country, this creates a methodological challenge necessitating detailed case
42 studies. Thus, the study's focus remains on the underlying drivers behind Russia's
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1 surplus capacity, and on the potential role of this surplus in enhancing the country's
2 energy security.
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5 Several energy security objectives appear intertwined with Russia's decision
6 to build new pipelines and the ensuing surplus capacity. Minimising transit risks for
7 Russian oil and gas exports appears an objective that is most evidently linked to the
8 growth in the surplus capacity of Russia's pipelines. Its underlying assumption is that
9 by building a new pipeline and acquiring additional capacity, the exporting country
10 reduces its dependence on a transit country. Additional energy security objectives
11 have also helped to reinforce Russia's drive towards new pipeline projects, though
12 they probably did not prompt such an outcome. Thus, securing a role for Russia in the
13 export of oil and gas from the Caspian region and ensuring the long-term
14 competitiveness of its gas in the European market are objectives that have been
15 facilitated through the construction of new pipeline routes (Gorst, 2004). Finally,
16 building pipelines to redirect exports to Asia has also served to enhance Russia's
17 energy security (as examined above).
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36 The origin of Kremlin's policy of bypassing transit countries goes back to well
37 before the well-known gas crises with Ukraine in 2005 and 2009. Following the
38 collapse of the USSR, the Russian Federation was suddenly faced with a new reality:
39 most of its energy exports had to transit territories that were no longer under Russian
40 sovereignty. Western former Soviet republics inherited not only the major oil and gas
41 export pipelines, but also key ports that handled oil exports.³⁴
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51 Already in the 1990s, Russia responded to the challenge through constructing
52 new pipelines that would bypass transit countries, particularly those with more
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59 ³⁴ For example, in 1992, the only direct major outlet for Russian oil was the Novorossiysk port on
60 the Black Sea, as key ports on the Baltics—Butinge and Ventspils—no longer belonged to Russia.
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difficult relations with Moscow. This policy has remained consistent, though with varying level of success.

In the oil sector, Russia's first major step towards new export capacity was the construction of the Baltic Pipeline System (BPS-1). Initiated in 1997 and launched in 2001, the pipeline allowed for the first time to ship major volumes of Russian oil through a Russian-owned port on the Baltic Sea—Primorsk (Izvestia, 2001). The Baltic republics, bypassed by this pipeline, turned out to be the first casualty of Russia's new oil pipeline policy, suffering financial losses.

Expanding the oil export capacity gained further urgency as Russia's oil production exhibited nearly double-digit growths in 1999-2004. Bottlenecks in the export network rather than surplus was the dominant concern within this brief period of rapid growth in the oil output. Russia's initial solution was investing in the further expansion of the capacity of BPS-1.³⁵

By 2007, Transneft's head Semyon Vainshtok proclaimed that his company had already achieved significant surplus capacity for Russian oil exports. But, he maintained that it would remain a priority for Russia to keep expanding the surplus capacity, projecting it to reach up to 20 per cent of Russian oil exports by 2020. He perceived this as a necessary measure for country's leverage abroad (Belorusskiy Partizan, 2007).

A further step for minimising transit risks was taken in 2008, when the Russian government approved the construction of a new Baltic pipeline, Baltic Pipeline System 2 (BPS-2) (Transneft, 2016). The new pipeline helped to bypass not only the Baltic republics, but also Belarus. This was a response to mounting disagreements between Belarus and Russia due to the reluctance of the latter to

³⁵ The initial capacity of BPS-1 was 12 mt. In several phases, it was eventually brought up to 76 mt.

1 continue subsidising Minsk. In the meantime, shipments through Ukraine's ports were
2 reduced until they dried up completely in the aftermath of the Crimea crisis.³⁶
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4 Nikolay Tokarev, Transneft's President, has succinctly summed up the
5 importance of Russia's surplus capacity for oil exports. He noted:
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11 "We are proud that the results of our efforts make Russia stronger. We have
12 succeeded in diversifying our export routes and in establishing a surplus in our
13 oil export pipelines. Today from the Baltics to the Far East there is one
14 integrated pipeline network. The government has the ability to manoeuvre the
15 oil flows. This makes our system unique. And it is of principle importance that
16 Russia no longer depends on transit countries" (Rossiyskaya Gazeta, 2015).
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29 In the gas sector, acquiring new routes for the European market has been a
30 priority since the early 1990s. Overall, one objective appears common in all of
31 Russia's new West-bound pipeline ventures—bypassing Ukraine and securing new,
32 preferably direct routes to European markets.
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39 The Yamal-Europe pipeline, approved in 1993 and launched in 1997, was the
40 first undertaking that aimed to secure a new route, bypassing Ukraine. The next major
41 step was the Blue Stream pipeline. Crossing the Black Sea, it helped Gazprom
42 establish a direct link with the rapidly growing Turkish market in 2003. The Nord
43 Stream, opened in 2011, provided a similar undersea link that bypassed Ukraine,
44 along with any other transit countries, and brought Russian gas directly to Germany.
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53 In 2007, Russia proposed an additional pipeline bypassing Ukraine—the South
54 Stream. However, the project stalled as it necessitated bringing it in line with the
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58 ³⁶ This included the Odessa-Brody pipeline, which Russian oil majors had used as an outlet.
59 Originally it had been built to ship Caspian crude to Ukraine and beyond. Moscow had managed
60 to convince Kyiv to reverse the flow, and forestall Caspian crude arriving through this direction.
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1 EU's energy legislation. At the end of 2014, Russia suspended the project and
2 replaced it with the so-called Turkish Stream. The pipeline would provide another
3 direct link between Russia and Turkey, while also making onward shipments to
4 Eastern Europe possible.
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10 Russia's investments in new pipelines have significantly reduced its
11 dependence on transit countries. In the case of oil, crude is no longer shipped through
12 the Baltic republics, while deliveries through Ukraine have been substantially reduced
13 in the past decade. By comparison, Russia's success in cutting its reliance on gas
14 transit countries has been more modest. Yet, transit through Ukraine has also been
15 notably on a downward trend: from 137.1 bcm in 2004 to 62.2 bcm in 2014.³⁷
16 Shipments through Belarus remain significant. However, unlike in Ukraine, Gazprom
17 owns Belarus' gas transit network, including the section of the Yamal-Europe
18 pipeline.
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31 While Russia has not achieved a complete bypass of transit countries, thanks
32 to its surplus capacity key export routes have become no longer indispensable. The
33 surplus capacity has provided new opportunities for redirecting energy flows in case
34 of difficulties with transit countries. Thus, while the Druzhba pipeline continues to
35 serve as an important outlet for Russian oil, Russia's surplus capacity makes it
36 possible to abandon it altogether. Gas transit through Ukraine remains important.
37 However, Ukraine's role in Russian gas exports has declined significantly. In the
38 future, if both Nord Stream 2 and Turkish Stream are realised, Ukraine's transit
39 network would lose its potentially indispensable role for Russian gas exports.
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53 Furthermore, surplus capacity has proven to bring benefits without the need
54 for a complete bypass of transit countries. In case of oil, Russian companies have
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59 ³⁷ The number refers to total transit, including gas flow to FSU republics. Naftogaz Website
60 (2016c)
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1 found it commercially attractive to use the Druzhba route, as it connects directly with
2 east European refineries. However, new export routes have allowed Moscow to secure
3 lower transit fees on the Druzhba pipeline, and bargain for a reduction of oil subsidies
4 abroad (namely to Belarus) (Interfax Belarus, 2014). They have also provided a
5 safeguard against a possible congestion at the Turkish Straits, as Russia maintains the
6 option to divert its crude shipments to other directions.
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14 Likewise, the surplus capacity for gas exports secures Moscow a more
15 powerful bargaining position. New routes, such as the Blue Stream and Nord Stream
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19 1 have strengthened Moscow's hand when negotiating with Kyiv on gas prices, transit
20 fees and overdue payments. Stagnant gas demand in Europe has contributed to the
21 surplus pipeline capacity, enhancing Moscow's ability to exercise some discretion
22 when selecting gas export routes. Further "bypass" projects, if realised, can only
23 augment this outcome, though rearranging trade relationships with partners may take
24 some time. The ultimate fate of the Ukraine route, however, is likely to depend on
25 Russia's commercial and foreign policy interests. Depending how Kyiv responds to
26 these interests, Russia has the incentive to keep the Ukraine gas route as an option
27 even if it acquires the capability for a complete bypass. President Putin has already
28 hinted that a portion of Russian gas may keep flowing through Ukraine even after the
29 expiration of the existing transit contract in 2019 (Kyiv Post, 2015).
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46 As additional measures to enhance its energy security, Russia has strived to
47 secure itself a key role in the export of oil and gas from the Caspian region, and
48 ensure the long-term competitiveness of its gas in Europe. These became significant
49 objective by the mid-1990s, when the region's resource started attracting the interests
50 of foreign investors and governments. At the time, the future destination for Caspian
51 oil and gas exports started to emerge as a key question. Caspian gas, in particular,
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1 suddenly appeared as a potential competitor for Gazprom in Europe. This period
2 coincided with Moscow's growing attention to the so-called "near abroad" region,
3 following the initial honeymoon with the West in the early 1990s. In this context,
4 Russian leaders considered it was important to maintain a certain degree of control
5 over the future destination of (non-Russian) Caspian energy exports (Gorst, 2004).
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11 New pipelines have served a significant role for Russia in its attempts to
12 benefit from new opportunities and address new threats emanating from the growing
13 role of the Caspian region in international energy. For instance, the construction of the
14 Blue Stream pipeline substantially weakened the market prospects for Turkmen gas
15 reaching Europe through an undersea pipeline across the Caspian Sea. Additionally,
16 Gazprom successfully utilised the surplus in its export network to resell Turkmen gas,
17 instead of letting Ashgabat independently determine the term of its trade with
18 European clients.³⁸ In the case of oil, by constructing the BPS-1 and BPS-2, along
19 with maintaining a key role in the Caspian Pipeline Consortium (CPC), Russia
20 succeeded in acquiring a significant role in the export of Kazakh crude to world
21 markets.
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39 Yet, Russia has faced setbacks as well, which may be indicative of the
40 limitations inherent to surplus capacity in meeting energy security objectives other
41 than bypassing transit countries. For instance, instead of Transneft's vast oil export
42 network, it was the CPC pipeline³⁹, which crosses Russia, but is not part of Russia's
43 own network that emerged as the key route for Kazakh crude exports. While timing
44 might have played a role in this outcome,⁴⁰ Kazakhstan has gradually managed to
45 diversify its export outlets, reducing its dependence on Transneft for oil shipments.
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56 ³⁸ This policy ended in the aftermath of the Great Recession, when Russia no longer needed
57 Turkmen gas to meet its commitments.

58 ³⁹ With 31 per cent ownership, Transneft is the largest shareholder in the pipeline.

59 ⁴⁰ Russia developed a surplus capacity for oil exports as late as mid-2000s, whereas growth in
60 Kazakh oil exports started in the 1990s, necessitating new export outlets.
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1 Regarding Azerbaijan, oil shipments via Russia have all but dried up. In case of gas,
2 Gazprom has only been partially successful in limiting competition from Caspian and
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4 other sources of new gas targeting Europe. Its proposal to build the South Stream
5 pipeline may have contributed to a delay and reconfiguration of pipeline proposals
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7 linking Caspian gas to European markets. Yet, growing volumes of Caspian gas
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9 exports to Europe appear on the horizon.⁴¹
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16 **Conclusions and policy implications**

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22 Examining Russia's entire oil and gas export network, the paper reveals that
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24 Russia has developed a substantial surplus pipeline capacity, which is likely to remain
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26 in the foreseeable future. The study brings to attention "surplus capacity" as a concept
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28 that could enrich understanding of what drives Moscow's energy policy abroad and
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30 how Russia enhances its energy security. By looking at both oil and gas sectors, it
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32 provides insights about Russia's energy strategy and its strategic options.
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37 The paper provides three explanations for Russia's surplus capacity. First, the
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39 institutional setting, characterised by the state's dominant role in decisions on
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41 pipelines, provided a conducive setting for a surge in new pipeline capacity. Second,
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43 Russia's energy "pivot to Asia" has already been contributing to a widening surplus in
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45 pipeline capacity for Europe-bound oil exports, as growing volumes of Russian oil
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47 have changed direction. Third, for two decades, Russia has maintained a policy of
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49 minimising transit risks and reducing its dependence on transit countries. Aimed at
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51 enhancing Russia's energy security, this policy has emerged as a key driver behind its
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53 surplus export capacity on its Western routes. Additional elements, such as
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58 ⁴¹ Significant steps have already been taken to bring Caspian gas to Europe. Two pipelines, the
59 Trans Adriatic Pipeline and the Trans Anatolian Pipeline, are already moving forward, providing
60 a potential outlet for Azeri and potentially other non-Russian gas exports to Europe.
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1 developing a response to the growing energy prospects of the Caspian region and
2 ensuring the long-term competitiveness of Russian gas in Europe have also helped to
3 reinforce Kremlin's active pipeline diplomacy and its new pipeline ventures.
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7 The implications of Russia's surplus capacity are significant. For both oil and
8 gas exports, the surplus has secured Russia a substantial room for manoeuvring with
9 regard to its Europe-bound routes. This room may get even larger as Russia keeps
10 expanding its pipeline network. In case of oil, Russia remains in a position to abandon
11 entirely either the Druzhba pipeline or the Black Sea export route. As it has not
12 already done so, this might be indicative that Russia might favour multiple export
13 routes provided this is in line with its commercial and foreign policy interests. With
14 new Europe-bound gas export pipelines on the horizon, Moscow is likely to acquire
15 an even stronger bargaining position when negotiating the terms of gas trade and
16 transit with Ukraine. Russia is also likely to acquire additional flexibility when
17 dealing with its European clients. Gazprom would enhance its ability to bring gas
18 from multiple directions to major clients such as Germany and Turkey, including for
19 seasonal swings in demand. This, in the context of Europe's transforming gas market,
20 widens the possibility for rearrangement of commercial deals.
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**Table 1: Capacity of Russia's Oil Export Network to non-FSU Markets
(million tonnes a year - mta)**

	Reported/Estimated capacity (2014)	Actual flow of Russian crude for export (2014)
Transneft's main export pipeline network		
Druzhba pipeline ¹	69.5	50.3
Novorossiysk pipeline	50	26.9
Baltic Pipeline System – 1 (BPS-1) ²	76	41.9
Baltic Pipeline System – 2 (BPS-2)	30	14.8
Eastern Siberia Pacific Ocean pipeline (ESPO) ³	45	40.5
Total for five major export pipelines	270.5	174.4
Additional export capacity		
Underutilized transit routes through FSU countries (Ukraine and Kazakhstan)	30	7
Oil exported through routes bypassing Transneft's network in 2014	22.5 (not upper limit)	22.5
Total pipeline export capacity	300.5	
Total export capacity of oil export network including volumes bypassing Transneft	323	
<i>Including transit of non-Russian oil (2014)</i>		
Total oil exports from Russia to non-FSU markets, including transit volumes		217
<i>Russian crude oil</i>		199
<i>Transit of non-Russian crude oil</i>		18
Total Russian and Caspian oil exports via pipelines connected to Transneft		194.5

Sources: Transneft, International Energy Agency, IHS CERA, Naftogaz, Gomeltransneft Druzhba; Ministry of Energy of the Russian Federation.

¹ Following the Unecha junction at the Russian-Belarusian border, the entry capacity of the pipeline is 81 mta, according to Gomeltransneft Druzhba, Belarus' national oil pipeline operator. The pipeline has two arms. The northern arm, going to Poland and Germany, had an estimated capacity of 52 mta. The southern arm of the Druzhba going through Ukraine and Slovakia, had the capacity of 17.5 mta. In total, Druzhba's capacity is estimated at 69.5 mta. (Gomeltransneft Druzhba website; Ministry of Energy website, 2015d; IHS CERA)

² BPS-1's original capacity has been recorded as 76 mta. In 2014, one string of the pipeline was converted to carry diesel, reducing the total capacity for crude exports to 55 mta. As BPS-1 was built with the purpose to export crude oil only, the conversion is evidence for the surplus reached in the capacity for such exports. The paper's estimate for the pipeline's capacity is maintained at its original level, which is indicative of the potential volumes of crude oil BPS-1 could carry, even if one of the strings would need to be converted back.

³ As Russia continued to expand ESPO's capacity, it reached 58 mta in 2014. But due to limitations for intake across China's border, the actual usable capacity was 45 mta: 15 mta through the Skovorodino-Mohe pipeline, and 30 mta through the ESPO's extension to the Kozmino port on the Pacific Coast. (Oil and Gas Journal Russia, 2014)

Table 2: Crude Oil Forecasts for Russia through 2035 (million tonnes - mt)

	2020		2025		2035	
	Baseline	Risk Scenario	Baseline	Risk Scenario	Baseline	Risk Scenario
Draft Energy Strategy for Russia 2035						
Production	525	525	525	516	525	476
Export (crude only)	252	239	266	257	276	242
International Energy Agency – World Energy Outlook 2015, New Policy Scenario						
Production	525		510		465	
Energy Research Institute – Russian Academy of Sciences – Baseline scenario						
Production	513		505		476	
Export (crude only)	244		227		195	

Sources: Ministry of Energy of the Russian Federation, 2015c, 2015d; IEA World Energy Outlook 2015; Energy Research Institute, 2014

Table 3: Russia's Gas Pipeline Export Network to non-FSU Markets—Capacity and Actual Flows (billion cubic meters – bcm)

	Reported capacity (2014)	Actual gas flow (2014)
Existing gas pipelines		
Ukraine transit route (Soyuz and Brotherhood)	142	59.4
Pipeline to Finland	8	3.1
Yamal-Europe	33	33
Blue Stream	16	14.4
Nord Stream	55	36.5
Total existing capacity and gas flow	254	146.6

Sources: Gazprom, IEA, Naftogaz

Table 4: Potential Expansion in Russia's Gas Pipeline Export Network to non-FSU Markets (billion cubic meters – bcm)

	Projected capacity
Planned/proposed gas export pipelines	
Power of Siberia	38
Altai (Power of Siberia 2)	30
Turkish Stream	31.5
Nord Stream 2	55
Total planned/proposed new capacity	154.5
Existing Europe-bound export capacity	254
Planned Europe-bound export capacity	86.5
Total Europe-bound potential export capacity	340.5
Europe-bound potential export capacity bypassing Ukraine	198.5
Total future gas export capacity	408.5

Sources: Gazprom, IEA

Table 5: Russia's Gas Prospects According to Draft Energy Strategy 2035

	2020		2025		2035	
	Baseline	Risk Scenario	Baseline	Risk Scenario	Baseline	Risk Scenario
Gas production	723	650	853	743	885	821
Gas exports	244	184	324	240	317	282
<i>Piped gas</i>	203	170	250	198	243	214
<i>LNG</i>	41	14	74	42	74	68
By destination						
<i>to Europe and FSU</i>	198	169	201	163	178	164
<i>to Asia</i>	46	15	123	77	139	118

Source: Ministry of Energy, 2015c

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