

FUTURE OPTIONS FOR RUSSIAN GAS EXPORTS

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Russia's invasion of Ukraine, reduction of gas supplies to European Union (EU) countries,¹ and disruption of the Nord Stream pipeline have not only led to a dramatic reduction in Russian pipeline gas exports but also have seriously damaged the country's reputation as a reliable gas supplier and its long-term prospects for remaining a significant player in global gas markets. The conclusion of any new long-term contracts (LTCs) or the renewal of existing ones between Gazprom and key European importers now seems exceedingly unlikely.

Nevertheless, Russia is likely to play a role in global gas markets once the war ends; when and how the war ends will determine what that role will be. Finding a market for 140 billion cubic meters (bcm) of Russian pipeline gas exports that, in 2021,² flowed to EU countries will not be easy, even if Russia manages to find its way back into the EU gas market. Russia has five main options for doing so:

- Restart exports to Europe in reduced volume
- Increase pipeline sales to Asia
- Increase liquefied natural gas (LNG) exports
- Increase domestic use and exports to Central Asia
- Export through intermediaries (e.g., Turkey)

This commentary considers each of these options in terms of the following five scenarios for how the geopolitical standoff between Europe and Russia might play out by 2030:

1. Further intensification of hostilities, which could include the use of tactical nuclear or chemical weapons and a Russian embargo on all fossil fuel exports to EU countries

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2. Continuation of the status quo (i.e., large-scale military conflict), with EU sanctions on Russian energy and Russian sanctions on EuRoPol Gaz, which owns the Polish part of the Yamal-Europe pipeline connecting Russia to Europe, still in place
3. De-escalation toward limited military action along the line of contact, with EU sanctions on Russian energy and Russian sanctions on EuRoPol Gaz still in place
4. Stabilization of the conflict and the transition to a frozen conflict where sanctions are lifted on both sides, albeit with security of supply restrictions
5. The conclusion of a peace agreement that allows for the use of undamaged pipeline infrastructure connecting Russia and Europe, though with security of supply restrictions on the EU side

Although scenarios 2 and 3 seem the most likely, all five remain possible and therefore deserve the attention of policymakers and other gas industry stakeholders wishing to be prepared for what may lie ahead. Toward the latter end, the matrix in the appendix provides estimates of the maximum flows of Russian gas by 2030 for each scenario based on capacity of export outlets, though in practice flows could be lower due to constraints caused by logistics, continued military operations that impact pipeline connections to Europe, or security of supply restrictions put in place by EU countries on maximum volumes of Russian gas. Whichever scenario ultimately prevails, the global energy crisis precipitated by Russia's invasion of Ukraine is sure to rewrite the book on global gas trade.

Restart Gas Exports to Europe

Until February 2022, Russia was the world's largest gas exporter, far above the US and Qatar.³ Unlike its competitors, three-quarters of Russia's gas exports were concentrated in a single market: Europe.⁴ Now this 60-year relationship seems irrevocably changed. While Russia is still exporting the equivalent of 26 bcm per year (bcm/y) to EU countries by pipeline through Ukraine and TurkStream,⁵ the trust that long undergirded that relationship has been broken, and the prospects that volumes will ever return to prewar levels seem dim. Only Russian LNG continues to flow to EU countries as before.⁶

The return of Russian pipeline gas to Europe depends on major changes to the relationship between the two sides. Before the war, Russian network gas was supplied to Europe along six main routes: Finland, the Baltic states, Poland via the Yamal-Europe gas pipeline, Nord Stream, Ukraine, and Turkey.⁷ In April and May 2022, Russia demanded payment for its gas in rubles and, after some European customers refused, cut off gas to Bulgaria, Poland, Finland, Denmark and the Netherlands. It also announced a reduction of flows through Nord Stream 1 due to sanctions put on turbines and subsequently a leak. Given the geopolitical nature of these measures, their termination is possible only after the war ends (even the transition to a frozen conflict is unlikely to change the situation). The Nord Stream pipelines, which were damaged in September, also cannot be restored before the end of the war, if ever.

Surprisingly, despite Russia's constant attacks on the Ukrainian energy infrastructure, gas transit through Ukraine has been maintained throughout the war, albeit at reduced rates.



However, unintentional military incidents or commercial disputes between Russia and Ukraine, neither of which can be ruled out, could lead to a further reduction in transit at any time. Meanwhile, any increase in transit before the normalization of relations between Russia and Ukraine is unlikely. Deliveries to Europe via TurkStream remain close to the maximum—47 million cubic meters per day (Mcm/d; 16.5 bcm/y)—and therefore cannot be increased using the existing infrastructure. As long as the conflict endures, Russian pipeline gas exports can reasonably be expected to remain at current levels or decrease.

One legal question for the post-war period is, what will happen to Gazprom's long-term contracts? Prior to the invasion, Russia maintained at least 40 separate long-term gas contracts with European buyers, in addition to a sizable trading arm in Gazprom Marketing & Trading, which signed internal European contracts on Russia's behalf.⁸ While Gazprom is likely to invoke force majeure due to alleged technical issues with Nord Stream and subsequent sabotage, it is Russia, the party that terminated the contracts with European companies, that in turn could seek arbitration. In the event they take that step, it is unclear who will compensate the losses.

It is worth mentioning that Uniper⁹ and RWE¹⁰ have both initiated arbitration proceedings against Gazprom over missing gas deliveries. Uniper's arbitration aims to recover financial damages it incurred due to undelivered gas since June 2022. The company claimed that the replacement costs have already amounted to at least €11.6 billion and will grow through the end of 2024.¹¹ The outcome of these arbitration cases is extremely uncertain. One could have assumed that Russia would be held responsible for cutting gas supplies. But in the recent arbitration between Finnish gas company Gasum and Gazprom Export, the Stockholm arbitration court recognized the Decree of the President of the Russian Federation No. 172 on the special procedure to allow foreign buyers to meet their commitments to Russian gas suppliers as per the force majeure clause in the contract, thereby allowing Gazprom Export to cut gas supplies to Gasum (while also allowing Gasum not to pay in rubles).¹² The court ordered Gasum to pay Gazprom Export more than €300 million for Russian gas supplies. On December 30, President Putin signed an amendment to decree No. 172, allowing Gazprom to receive gas debt payments from companies in "unfriendly countries" in a foreign currency. As a result, settlements with a foreign buyer related to debt collection or repaying a debt for undelivered contracted gas can now be made in a foreign currency. The amendment is not a basis for resuming gas supplies to a buyer from an "unfriendly country," however.

One potential policy response for Europe is to put a limit on its import dependence on Russia. The European Commission (EC) raised this option in its REPowerEU strategy published in May 2022, which states that it will consider legislative measures that require EU member states to diversify their natural gas supply.¹³ At the peak in 2021, Russia accounted for 45 percent of the EU's gas imports,¹⁴ a level it was able to reach due to heavy declines in Dutch and UK gas production coupled with Europe's growing import dependency.

The resumption of Gazprom's pipeline deliveries to Europe is largely a question of geopolitics, namely, if, when, and how the war in Ukraine will end. It will also depend on whether Putin remains in power. Notwithstanding the many uncertainties surrounding the conflict, there is little chance of any new long-term contracts or the renewal of existing ones between



Gazprom and key European importers. That said, if more European countries elect far-right governments, the prospect of a “united Europe” against Russian aggression will become more distant. Indicatively, the far-right government of Viktor Orbán in Hungary signed a new gas contract with Gazprom as the whole of Europe was trying to wean itself off Russian gas.¹⁵

Even if the REPowerEU objectives are partly met, EU gas demand will be reduced from 2021 levels. The remaining import gap will likely be covered by newly signed contracts, meaning that Russian contracts should be reduced at least by those volumes. When the conflict ends, pipeline capacity to EU countries will be around 77 bcm (33 bcm via the Yamal-Europe pipeline, 16.5 bcm via TurkStream, and 27.5 bcm via the undamaged pipeline of the Nord Stream 2 project), on top of any agreed volumes transited through Ukraine and small volumes delivered to Finland and the Baltic countries. The fate of the damaged Nord Stream pipelines is a complex mix of both technical and geopolitical factors.¹⁶

Scenario 1 would see no more pipeline gas supplies to Europe, as well as the interruption of Russian LNG to Europe. If pipeline gas supplies to Europe are to be resumed at around current levels, which would be in line with scenario 2, this would most likely occur under a set of conditions unpalatable to Russian stakeholders. Based on the pipeline capacity available and free from sanctions, potential volumes delivered to the EU could amount to between 31.5 bcm in scenario 3 to a maximum of 143 bcm in scenario 5, though the security of supply restrictions may de facto limit that volume, especially if European gas demand is lower than it is today. It is worth mentioning that despite similar levels of potential exports in scenarios 2 and 3, transit through Ukraine is significantly more at risk in scenario 2, with likely periods of substantially reduced deliveries.

EU-level contracting is one road the EU might consider for restarting Russian exports to Europe at reduced volumes.

- This would involve agreeing to a set amount of Russian gas delivered to various EU border points in Poland, Germany, or Slovakia. The amount delivered would be limited to a predetermined threshold for Russian gas reliance in Europe. Whether this threshold would be 10 percent, 20 percent, or 30 percent of EU gas imports would depend on the extent to which diversity of supply is prioritized. It also depends on timing. If the war ends soon, limiting Russian gas imports would be a more costly endeavor, as the world is currently short 115 bcm,¹⁷ and annual average Title Transfer Facility (TTF) prices in 2022 were more than twice than in the previous year as a result. The situation changes dramatically after 2025 with the introduction of vast volumes of new LNG supply from Qatar, the US, and other sources.
- The gas bought by the EU would then either be released to the spot market at the EU border or be contracted with specific buyers. The EC and/or European national authorities would most likely not permit any EU buyers to lift more than 5 percent or 10 percent of the total. They could also require that Russia offer gas from more than one or two sellers (i.e., Gazprom and Novatek), thereby increasing competition.
- The EC would likely put in place a security of supply obligation. For example, X percent



of annual deliveries from Russia would need to be stored in Europe and/or Ukraine (strategic storage obligation) to help avoid additional seasonal price volatility during peak demand periods. In addition to the strategic storage obligation, Europe will likely need to reform its gas market regulations by, for instance, introducing a pan-European auction platform for nonresidential customers to offer demand-side response (i.e., voluntarily reduce demand in exchange for a payment). This option can ensure that the EU has a coherent plan for gas rationing based on commercial rationale in the event Russian gas is again curtailed for any reason.

- There will likely be a need for a grand bargain between Europe and Ukraine as the question of how Russian gas will be delivered to Europe once again becomes a contentious issue for Ukraine after the war. That uncertainty is reflected in the wide range of assumptions regarding potential transit through Ukraine across the five scenarios, from as low as zero to as high as 62 bcm/y, which is the technical capacity at the Ukraine-Slovakia border. In the case of a peace deal, apart from the Ukrainian pipeline system, Russian gas can be delivered directly to Finland, the Baltic states, via the Yamal-Europe pipeline, and through the undamaged pipeline of the Nord Stream 2 project (not to mention any repairs that could be done on the other three pipelines of Nord Stream 1 and 2). The grand bargain could involve all or part of gas deliveries from Russia being released at the eastern border of Ukraine, at which point European buyers would contract with Ukraine to transport and potentially store the gas in western Ukraine. This convergence of supply options would stimulate trade and the development of another gas hub in western Ukraine (a point where LNG imports via Poland and gas from the south and east meet).

Increase Pipeline Sales to Asia

At the end of 2022, Russian pipeline gas exports to Asia nearly equaled exports to Europe for the first time. Russia has already announced plans to connect its western gas grid, which primarily serves Europe and Central Asia, with Asian markets, offering it flexibility to flow gas by pipeline either west or east. Russia has long sought this arbitrage as a means of gaining a better negotiating position. Current events have pushed the 55 bcm/y pipeline, currently dubbed Power of Siberia 2 (PS2; Soyuz-Vostok), to the top of Gazprom's priority list.

In 2021, Russia sold around 30 bcm of gas to Asia,¹⁸ compared to 155 bcm to EU countries. Sakhalin provides two-thirds of the LNG to Asia, while Yamal LNG in northwest Siberia provides the rest of the LNG. Russia does operate a standalone pipeline system in east Siberia, the 38 bcm Power of Siberia 1 (PS1) to northeast China.¹⁹ That pipeline, which began in 2019 and will eventually ramp up to capacity by 2025, delivered 15.5 bcm in 2022.²⁰ An agreement for an additional 10 bcm of supply to China, via a "Far Eastern" gas pipeline route (PS3) from Sakhalin going through Khabarovsk and Vladivostok with a border crossing somewhere between Khabarovsk and Vladivostok, was signed in February 2022.²¹

However, China's position as the sole buyer means that Russia will have to offer concessions to make the PS2 project work. The choice between a traumatized Europe and a sole buyer in China is not ideal. It is worth recalling that, from the signing of the first pipeline LTC (in

2014), it will take at least 10 years for PS1 to reach full capacity. Any new, large-scale gas deal between Russia and China will have to take this timeline into account. In terms of revenues, as the PS1 example shows, pipeline gas supplies to China provide much lower profit than exports to Europe. Finally, Russian enthusiasm for the new pipeline is not shared in Beijing, as its energy security objective is to have a balanced import portfolio. China has recently signed a substantial number of new long-term LNG contracts with various LNG exporters, including the United States, Russia, and Qatar.²² Chinese companies will have around 26 bcm of contracted US LNG supplies by the middle of the decade, compared with around 48 bcm of pipeline gas supply from Russia and 11 bcm of Russian LNG.

Scenarios 1–3 use a relatively conservative estimate of 48 bcm/y of Russian pipeline gas to China, while scenarios 4 and 5 incorporate the start of Power of Siberia 2 at reduced capacity by 2030, yielding total pipeline exports to China of around 53.5 bcm, with the potential for Russian pipeline gas exports to China to more than double over the following years.

Increase LNG Exports

Investing in a shift from pipeline to LNG exports would provide Russia with enhanced flexibility and optimization in the future. Russia exported 39.6 bcm of LNG in 2021,²³ based on Gazprom's 15 bcm Sakhalin 2 plant, Novatek's 24 bcm Yamal LNG, and a 0.9 bcm train at Vysotsk. Its exports are estimated to have increased by around 9 percent in 2022—up to 44.²⁴ Gazprom started operating the 2 bcm Portovaya plant in September 2022. There is a lot of uncertainty regarding the additional three 9.0 bcm trains under construction at Arctic LNG 2, which were originally scheduled to start in 2023 and reach capacity in 2026.

Russia's LNG export strategy emerged long before the start of the war in Ukraine and formally kicked off with the passage of the LNG liberalization law that went into effect in December 2013. The law formally broke Gazprom's export monopoly (although pipeline exports remained under its total control), allowing non-Gazprom entities²⁵ the right to export LNG. With the government's support (or rather push) and relatively favorable LNG market conditions, several projects were announced by the top three gas producers in Russia—Gazprom, Novatek, and Rosneft (Table 1). Most of these projects (especially the large-scale ones) currently look unrealistic due to Western sanctions on access to finance as well as Western liquefaction technologies. However, in the event of a peace deal, Russia will be even more motivated than before the war to diversify away from pipeline gas and pivot to global LNG markets. If such a shift was to occur, Russia could have approximately 80 million metric tons per annum (mtpa) of LNG export capacity, and its incremental LNG capacity would represent about half of pipeline capacity to the EU (before the start of the war).



Table 1: LNG projects announced by Russia's largest gas producers

Company	Project	Capacity (mtpa)
Gazprom	Vladivostok LNG	1.5
Gazprom	Ust Luga LNG	13.0
Gazprom	Expansion at Sakhalin-2 LNG	5.4
Novatek	Arctic LNG-2	20.0
Novatek	Obsky-LNG	5.0
Rosneft	Dalnij Vostok-LNG	6.2
Total potential new LNG capacity		51.1

Source: Authors' analysis.

A strategic policy question then emerges for the Russian government with respect to managing its gas export markets and competition between its national champions (e.g., Gazprom, Novatek, Rosneft, and any new players that emerge after the redistribution of energy assets in Russia) abroad. Under the 2013 LNG liberalization law, LNG exports should be coordinated by the Russian government in a way that minimizes competition between pipeline gas and LNG. In this regard, Gazprom's pivot to Asia via pipelines could minimize direct competition. Until the war in Ukraine, Novatek's LNG deliveries were in direct competition with Gazprom's pipeline gas flows to Europe.

Crucially, Russia's ability to realize the LNG projects depends on access to finance and technologies, which is limited under the current sanction regime, putting additional pressure on the timeline of these potential projects. Russia has tried to develop its own LNG liquefaction technology, which was given explicit support in the government's "road map" on the localization of critically important energy equipment for mid-scale and large-scale LNG projects. Novatek managed to develop a small-scale (1 mtpa) technology at the Yamal LNG project and is trying to scale it up to 2.5 mtpa at the Obsky LNG project. Gazprom is also developing liquefaction technology for large-scale LNG projects but has yet to apply it. Delays experienced by the upcoming Arctic LNG 2 will be a good indication of how well Russia fares without Western LNG technology.

There will be uncertainty regarding the timeline completion of the Arctic LNG 2 project, and it is likely that the trains could miss the timeline that Novatek has announced (2023 for train 1, 2024 for train 2, and 2026 for train 3).²⁶ However, all the scenarios except for scenario 1 envisage the full competition of the LNG project at full capacity (27 bcm/y) by 2030. The Arctic LNG 2 volumes might be below project capacity, however, due to logistical constraints. In scenario 1, only the first train is completed. Meanwhile, in scenario 5 Novatek develops additional small-scale LNG trains such as Yamal T4, increasing LNG export capacity. However, Russia's access to LNG technology from Western or Japanese companies will remain



extremely uncertain even if a peace agreement is signed, as these companies would be cautious about resuming operations in Russia.

Increase Domestic Use and Exports to Central Asia

The reduction of Russian gas exports since the invasion of Ukraine has afforded Russia the opportunity to use more gas domestically, but the potential of this growth is limited: the share of natural gas is already high, accounting for 53 percent of Russian primary energy consumption. Domestic demand usually runs at double the export volumes annually, with at least double the weather-based use in winter compared to summer. Over half of the gas consumed is used for power generation and central heating.

So far, the market has not seen any meaningful increases, implying new investments will be required to shift toward higher domestic demand. Moreover, Russia faces the difficult strategic choice of which energy sector to support in the domestic market in the first place, as not only the gas industry but also coal miners and oil companies face the consequences of a sharp drop in export volumes and revenues. Tough lobbying competition between all these players is likely.

So far, the gas held back from exports to Europe has either flowed into domestic storage at a higher-than-normal rate or triggered production cuts. At the end of December 2022, Russian deputy prime minister Alexander Novak announced in an interview that Russian gas production fell by 18–20 percent that year to 671 bcm.²⁷ Through November 2022, Gazprom had reduced gas production by 221 Mcm/d (19.4 percent) compared to 2021, while exports to non-Commonwealth of Independent States countries dropped by 228 Mcm/d (44.5 percent).²⁸ Gazprom accounts for 80–90 percent of Russian gas supply on an annual basis.²⁹ Russian domestic demand for Gazprom’s gas from the gas transmission system decreased by 38 Mcm/d or 5.7 percent through November.³⁰ Notably, while Gazprom’s production fell in 2022 due to the ongoing sanctions, the so-called independent gas producers in Russia—Novatek and Rosneft, in particular—managed to increase their production by 1.7 percent (to circa 83.6 bcm) and 16 percent (to circa 69 bcm) relative to 2021, respectively.³¹ This highlights that Gazprom, being largely dependent on European pipeline deliveries, is suffering a double crisis—unable to export to Europe while losing Russian domestic market share. Novatek’s increase in production is largely meant to serve the growing LNG export, while Rosneft enjoys a firm offtake agreement with Russia’s largest energy utility—Inter RAO.³² Overall, for Gazprom, this is an extremely weak position from which to start negotiations with China over the PS2 project.

In theory, another outlet for Gazprom’s gas would be export-oriented, gas-intensive industries. But domestic demand for gas chemistry and fertilizers is limited with the Russian economy in stagnation and sanctions pressure unlikely to let up anytime soon. Moreover, any export-oriented, gas-intensive project requires capital and technologies, which are not available in Russia at present and have a longer lead time.

While not strictly a Russian “domestic” outlet, President Putin proposed the formation of a “gas alliance” with Kazakhstan and Uzbekistan to utilize the gas infrastructure shared among the three countries, and in particular to supply Russian gas to the domestic markets of the



two neighboring countries.³³ Both Kazakhstan and Uzbekistan reacted to this proposal with skepticism, to say the least.³⁴ Even if the three countries were to form such an alliance, the economics of selling Russian gas to Central Asia, including the dynamics around prices and payment terms, would preclude the kind of cozy relationship that Gazprom enjoyed with European buyers or, for that matter, Chinese buyers. Nevertheless, this option remains on the table and will likely be exercised if Gazprom is willing to ship gas to Central Asia at a short-run variable cost of gas delivered from the Nadym-Pur-Taz region (the region where production of most of the gas that is shut in due to sanctions is taking place).³⁵

Export through Intermediaries (e.g., Turkey)

Russia is actively negotiating with Turkey and Iran on joint activities in the European market and in the markets of Pakistan and India. The shape of these activities is not yet clear, and there is no answer to the question of how the corresponding infrastructure can be created under the conditions of sanctions. Nevertheless, this option must be kept in mind when considering various scenarios for Russian exports. Putting aside the issues of sanctions and access to deep-sea vessels to lay offshore pipes, it is worth noting that from the signing of contracts in 2014, it took eight years for the TurkStream pipeline to be built and reach full capacity. Moreover, some of TurkStream’s front-end engineering and design work was based on the South Stream project being canceled in 2014, which was announced back in 2007.

Another important issue that will arise in this scenario is Turkey’s role as a transit country. Gazprom’s Ukraine transit bypass strategy, pursued since the breakup of the Soviet Union, suggests how sensitive Gazprom has been to the issue of transit monopolies affecting its access to European markets. If most Russian pipeline gas was delivered via Turkey, the new arrangement would not be much different to Ukraine’s near-monopoly position in the past. For example, Turkey already plans to seek a 25 percent price discount on Russian gas supplies to the country.³⁶ None of the scenarios presented here envisage a much stronger role for Turkey, and the annual capacity of TurkStream remains at 31 bcm; however, given that one of the strings of this pipeline is serving Hungary, it is likely to be used at near capacity as it is today, except in scenario 1 where all exports to Europe are interrupted.

Conclusion

In its latest “World Energy Outlook 2022,” the International Energy Agency (IEA) predicted that Russian gas exports would be around 130 bcm by 2030, one-third of the level expected in the IEA’s previous outlook.³⁷ This volume would be consistent with the maximum flow potential described in scenarios 1 and 2 (depending on actual realized flows from Russia)—either a continuation or deterioration of the current situation. In the absence of an answer to the crucial questions of what the endgame is between Russia and Ukraine and how the world might end the war, scenarios 2 or 3 may very well be the most likely outcomes. Though less likely, a further deterioration of the situation is possible, as is an evolution toward a frozen conflict (scenario 4). For scenario 5 to play out, many changes would need to happen, notably on the Russian side, but this possibility cannot be ruled out completely.

It is conceivable that Russian gas could continue to play a significant role in global energy markets by 2030, supported by a combination of spot/short-term pipeline deliveries to



Europe; a further and gradual ramp-up of pipeline deliveries to China, potentially including those via PS2 under a set of LTCs; and a shift to global gas markets via LNG. However, each of these avenues will require technology and finance that can only be unlocked by a geopolitical settlement in Europe after the end of the war.

The outcomes of each scenario have strong implications for global gas markets, including not only how much non-Russian gas supply would be needed to supply Europe and China but also how much competition Russian LNG could offer to other large LNG suppliers eager to expand their capacity. Although not discussed in this commentary, the evolution of these flows between now and 2030 could help to loosen global gas markets, bring down prices, and encourage investment in LNG exports from alternative sources. Looking beyond natural gas and the 2030-time frame, a peace agreement with Russia could spur EU countries to look at Russian hydrogen delivered by pipeline with renewed interest.



Appendix

Table A-1: Russian gas exports scenario matrix (2030)

Scenario	Maximum gas flows in operation based on available capacity	EU restrictions	Russian restrictions	Potential Russian export
	Pipeline flows to EU	Pipeline flows to non-EU countries and LNG exports		
1. Further intensification of hostilities (e.g., use of tactical nuclear or chemical weapons)	None	<ul style="list-style-type: none"> PS1: 38 bcm/yr Far Eastern Route (PS3): 10 bcm/yr Pipeline to Turkey's market: 31.8 bcm/yr Sakhalin LNG: 13.1 bcm/yr Yamal LNG: 23.7 bcm/yr (note that due to a complete LNG embargo from Europe, it is unclear whether European terminals will be allowed to offer "transshipment" services to Yamal LNG flowing via Europe to other destinations) Portovaya LNG: 2.0 bcm/yr Arctic LNG T1: 9.0 bcm/yr 	Complete embargo (pipeline gas and LNG)	All sanctions remain in place
	Total pipeline to EU: 0 bcm/yr	Total non-EU pipeline and LNG: 127.6 bcm/yr		Total export: 127.6 bcm/yr
2. Continuation of the status quo (i.e., large-scale military conflict)	<ul style="list-style-type: none"> TurkStream: up to 16.5 bcm/yr Ukrainian transit: up to 15 bcm/yr (with significant risk of reduction due to military accidents and commercial disputes) 	<ul style="list-style-type: none"> PS1 and Far Eastern Route (PS3): 48 bcm/yr Pipeline to Turkey's market: 31.8 bcm/yr Pipeline to Central Asia and Iran: 5-15 bcm/yr Sakhalin LNG: 13.1 bcm/yr Yamal LNG: 23.7 bcm/yr Portovaya LNG: 2.0 bcm/yr Arctic LNG T1: 9.0 bcm/yr Arctic LNG T2: 9.0 bcm/yr Arctic LNG T3: 9.0 bcm/yr 	No restrictions	All sanctions remain in place
	Total pipeline to EU: 31.5 bcm/yr	Total non-EU pipeline and LNG: 150.6-160.6 bcm/yr		Total export: 182.1-192.1 bcm/yr

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Scenario	Maximum gas flows in operation based on available capacity	EU restrictions	Russian restrictions	Potential Russian export
3. Deescalation toward limited military action along the line of contact	<p>Pipeline flows to EU</p> <ul style="list-style-type: none"> TurkStream: up to 16.5 bcm/yr Transit through Ukraine: up to 15 bcm/yr 	No restrictions	All sanctions remain in place	<ul style="list-style-type: none"> Pipeline to the EU: 31.5 bcm/yr Pipeline to China: 48 bcm/yr Pipeline to Turkey's market: 31.8 bcm/yr Pipeline to Central Asia and Iran: 5-15 bcm/yr LNG: 65.8 bcm/yr
	<p>Pipeline flows to non-EU countries and LNG exports</p> <ul style="list-style-type: none"> PS1 and Far Eastern Route (PS3): 48 bcm/yr Pipeline to Turkey's market: 31.8 bcm/yr Pipeline to Central Asia and Iran: 5-15 bcm/yr Sakhalin LNG: 13.1 bcm/yr Yamal LNG: 23.7 bcm/yr Portovaya LNG: 2.0 bcm/yr Arctic LNG T1: 9.0 bcm/yr Arctic LNG T2: 9.0 bcm/yr Arctic LNG T3: 9.0 bcm/yr 	Total export: 182.1-192.1 bcm/yr		
4. Temporary stabilization and transition to a frozen conflict/temporary truce	<p>Total pipeline to EU: 31.5 bcm/yr</p> <ul style="list-style-type: none"> TurkStream: up to 16.5 bcm/yr Transit through Ukraine: up to 40 bcm/yr, in line with the 2020-24 transit contract due to repairs of the Sokhranovka entry point that can be used by Gazprom 	Security of supply restrictions (limiting share of Russian gas for each EU member state, storage obligations, etc.)	Russian sanctions and restrictions on gas supplies via Yamal-Europe to Finland and the Baltics could be lifted	<ul style="list-style-type: none"> Pipeline to the EU: 56.5 bcm/yr Pipeline to China: 53.5 bcm/yr Pipeline to Turkey's market: 31.8 bcm/yr Pipeline to Central Asia and Iran: 5 bcm/yr LNG: 65.8 bcm/yr
	<p>Total non-EU pipeline and LNG: 150.6-160.6 bcm/yr</p> <ul style="list-style-type: none"> PS1 and Far Eastern Route (PS3): 48 bcm/yr PS2 start ramping up: up to 5.5 bcm/yr (ca. 10% of nominal capacity) Pipeline to Turkey's market: 31.8 bcm/yr Pipeline to Central Asia and Iran: 5 bcm/yr Sakhalin LNG: 13.1 bcm/yr Yamal LNG: 23.7 bcm/yr Portovaya LNG: 2.0 bcm/yr Arctic LNG T1: 9.0 bcm/yr Arctic LNG T2: 9.0 bcm/yr Arctic LNG T3: 9.0 bcm/yr 	Total export: 212.6 bcm/yr		

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Scenario	Maximum gas flows in operation based on available capacity		EU restrictions	Russian restrictions	Potential Russian export
5. Conclusion of a peace agreement and lifting of all sanctions on Russia	Pipeline flows to EU	Pipeline flows to non-EU countries and LNG exports	Security of supply restrictions (limiting share of Russian gas for each EU member state, storage obligations, etc.); sales of Russian gas at the Russian border	No Russian sanctions or restrictions and no informal limitations on transit via Ukraine	<ul style="list-style-type: none"> • Pipeline to the EU: 143.1 bcm/yr • Pipeline to China: 53.5 bcm/yr • Pipeline to Turkey's market: 31.8 bcm/yr • Pipeline to Central Asia and Iran: 5 bcm/yr • LNG: 69.8 bcm/yr
	<ul style="list-style-type: none"> • Supplies to Finland (1.7 bcm/yr in 2021) and the Baltics (2.4 bcm/yr in 2021) resume, as does transit via Poland (33 bcm/yr) • Nord Stream's string that remained undamaged is available (27.5 bcm/yr) • Transit through Ukraine: up to 62 bcm/yr (technical capacity on Ukraine-Slovakia border) • TurkStream: up to 16.5 bcm/yr 	<ul style="list-style-type: none"> • PS1 and Far Eastern Route (PS3): 48 bcm/yr • PS2 start ramping up: up to 5.5 bcm/yr (ca. 10% of nominal capacity) • Pipeline to Turkey's market: 31.8 bcm/yr • Pipeline to Central Asia and Iran: 5 bcm/yr • Sakhalin LNG: 13.1 bcm/yr • Yamal LNG: 23.7 bcm/yr • Portovaya LNG: 2.0 bcm/yr • Arctic LNG T1: 9.0 bcm/yr • Arctic LNG T2: 9.0 bcm/yr • Arctic LNG T3: 9.0 bcm/yr • 3 small-scale LNG units: 4 bcm/yr 			
	Total pipeline to EU: 143.1 bcm/yr	Total non-EU pipeline and LNG: 160.1 bcm/yr			Total export: 303.2 bcm/yr

Source: Authors' analysis and ENTSOG.



Notes

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