Country Analysis Brief: Russia

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Overview

Table 1. Russia's energy overview, 2022

	Crude oil and other petroleum liquids	Natural gas	Coal	Nuclear	Hydro	Other renew-ables	Total
Primary energy consumption (quads)	6.9	17.1	5.5	2.4		0.7	32.5
Primary energy consumption (percentage)	21%	53%	17%	7%		2%	100%
Primary energy production (quads)	23.1	23.4	10.2	2.4		0.8	59.9
Primary energy production (percentage)	39%	39%	17%	4%		1%	100%
Electricity generation (TWh)	8.4	503.2	167.3	223.4	219.0	9.7	1,131.0
Electricity generation (percentage)	1%	44%	15%	20%	19%	1%	100%

Data source: U.S. Energy Information Administration, International Energy Statistics database
Note: We aggregate hydroelectricity and renewables as other renewables for primary energy production and consumption. Electricity generation excludes generation from other gases. Quads=quadrillion British thermal units and TWh=terawatthours

- Russia was the world's second-highest dry natural gas producer and exporter, the third-highest crude oil and condensate producer, and the third-highest coal exporter in 2022.[1]
- Following Russia's full-scale invasion of Ukraine in 2022, a number of countries imposed sanctions on Russia, including targeted measures on Russia's energy sector.[2] In May 2023, G7 countries reaffirmed previously set price caps and export bans on oil and petroleum products from Russia. In December 2023, the EU adopted a 12th package of restrictions that implemented compliance measures intended to limit the ability to circumvent capped oil prices.[3]
- Sanctions related to the invasion of Ukraine expedited a shift in Russian trade toward Asia, relying more heavily on seaborne shipments because of limited eastbound rail and pipeline infrastructure. Seaborne shipments of crude oil and condensate to Asia increased 57% year over year in 2023, and petroleum products increased 80%. Total seaborne coal shipments increased by 18% year over year from January to April 2023.[4]
- The Russian government is prioritizing liquefied natural gas (LNG) infrastructure development to better reach markets not readily accessible via pipeline, despite limited access to technology and financing as a result of sanctions. Russia's piped natural gas exports decreased 48% year over year in 2022. During the same period, Russia's LNG exports increased over 10%, followed by a 2% year over year decrease in 2023.[5]

Figure 1. Map of Russia

Data source: U.S. Central Intelligence Agency, The World Factbook–Russia

Figure 2. Map of regions in Russia

Data source: Eurasian Research Institute

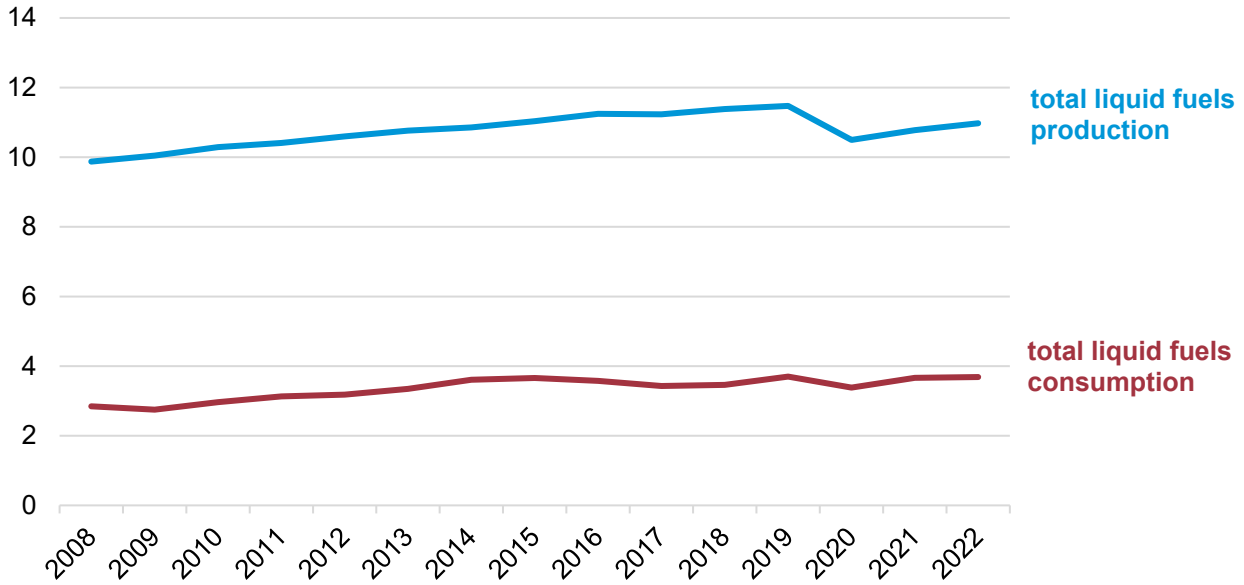
Petroleum and Other Liquids

- Russia's proved oil reserves were 80 billion barrels as of January 1, 2024.[6]
- Russia produced nearly 10.8 million barrels per day (b/d) in total liquid fuels in 2023, a 2% decrease from 2022 (Figure 3). Rosneft is Russia's largest oil producer and by-capacity refiner, accounting for 33% of annual production and 40% of refining capacity in 2023 (Table 2 and Table 3).[7]
- Russia's total liquid fuels consumption decreased 2% from 3.7 million b/d in 2021 to 3.6 million b/d in 2022 (Figure 3).[8] In September 2023, Russia briefly banned gasoline and diesel exports to address domestic fuel shortages caused by refinery maintenance, infrastructure delays, and higher prices because of a weakened ruble.[9] A subsequent six-month ban on gasoline exports began in March 2024.[10]
- In early 2023, as an OPEC+ participant, Russia set crude oil production for 2024 at 9.949 million b/d. In April 2023, Russia agreed to an additional voluntary cut of 500,000 b/d to 9.449 million b/d for the same period (2024). In March 2024, Russia announced a further voluntary production cut to 8.978 million b/d for the second quarter of 2024.[11]
- Western Siberia accounted for 87% of Russia's crude oil and condensate production in 2023, down from 90% in 2019, according to Rystad Energy data. During this same period, the proportion of Russia's production from Eastern Siberia and Russia's Far East increased from 5% to 9% and declined for all other regions, reflecting an overall shift in Russia's energy trade and investment toward Asia (Figure 4).[12]
- Russia produces eight main grades of crude oil. Urals is its major crude oil export, a medium-sour crude oil produced mainly in Western Siberia and Russia's Volga-Urals region (Table 4).[13] Historically, Urals was the main crude oil grade exported via pipelines from Baltic and Black Sea ports to Western markets, but sanctions have shifted the trade and pricing of Urals eastward.[14]
- Transneft, the world's largest pipeline company, transports more than 85% of oil produced in Russia. The state-owned firm owns and operates nearly 43,000 miles of oil and natural gas pipelines in Russia, Asia, Europe, and Eurasia.[15]
- Rosneft's Vostok Oil project began construction in 2022. The project plans include drilling 12,000 production wells by 2038 on the Taymyr Peninsula, including in the Vankor and Payakha oil fields.[16] As of November 2023, Rosneft Oil reportedly completed 124 miles of the project's 478-mile Vankor-Paykha-Bukhta Sever oil pipeline. Once completed, the pipeline will deliver oil to an Arctic oil terminal at the Bukhta Sever port, which would be Russia's largest oil terminal when at full capacity (approximately 2.3 million b/d).[17]
- The Russian government intends to increase refinery yield of light petroleum products to 70% by 2035 and to maintain increasing domestic refining capacity and complexity as a long-term initiative.[18] Rosneft accounts for 40% of Russia's refining capacity and reported a light petroleum product yield of 58.6% in 2023.[19] Lukoil, Russia's second-largest-capacity refining company, reported a light petroleum product yield of 71.2% in 2022.[20]
- Gazprom Neft, the oil subsidiary of Gazprom and Russia's second-largest oil producer and third-largest refiner by capacity, began commissioning work on completed upgrades to its Omsk refinery in August 2023. The Omsk refinery supports Russia's domestic market with an installed refining capacity of over 441,000 b/d of crude oil and a light petroleum product yield of 80%. Gazprom Russia's second-largest oil producer and third-largest refiner by capacity. [21]

- Russia had a number of refinery outages in the first quarter of 2024, many because of reported drone strikes, maintenance or technical issues, and possible impacts of Ukraine-related sanctions.[22] Mid-month refinery runs in January and February of 2024 were 5.50 million b/d and 5.44 million b/d lower than in December 2023 (5.65 million b/d), respectively, even though declines usually occur in spring because of seasonal maintenance.[23]
- Transneft's 311-mile Yug, or South, pipeline system delivers petroleum products to the Black Sea port of Novorossysk. The project postponed its third stage of development in November 2023, which would have connected the system to refineries in Samara and increased capacity from about 120,000 b/d to 221,000 b/d. Transneft began delivering diesel fuel via the pipeline in 2017 and, in 2018, completed a project for the pipeline to begin receiving more diesel fuel by rail.[24] The company's 656-mile Sever, or North, pipeline system launched in 2008, has 532,000 b/d of capacity, and delivers petroleum products to the Baltic Sea at Primorsk.[25]

Figure 3. Total annual petroleum and other liquids production and consumption in Russia, 2008–2022

million barrels per day



Data source: U.S. Energy Information Administration, International Energy Statistics database

Table 2. Russia's crude oil and condensate production by company, 2023

Company	Total production thousand barrels per day	Percentage of total production
Rosneft	3,490	33%
Gazprom Neft	1,751	16%
Lukoil	1,563	15%
Surgutneftegas	1,171	11%
Tatneft	577	5%
Others	2,076	20%

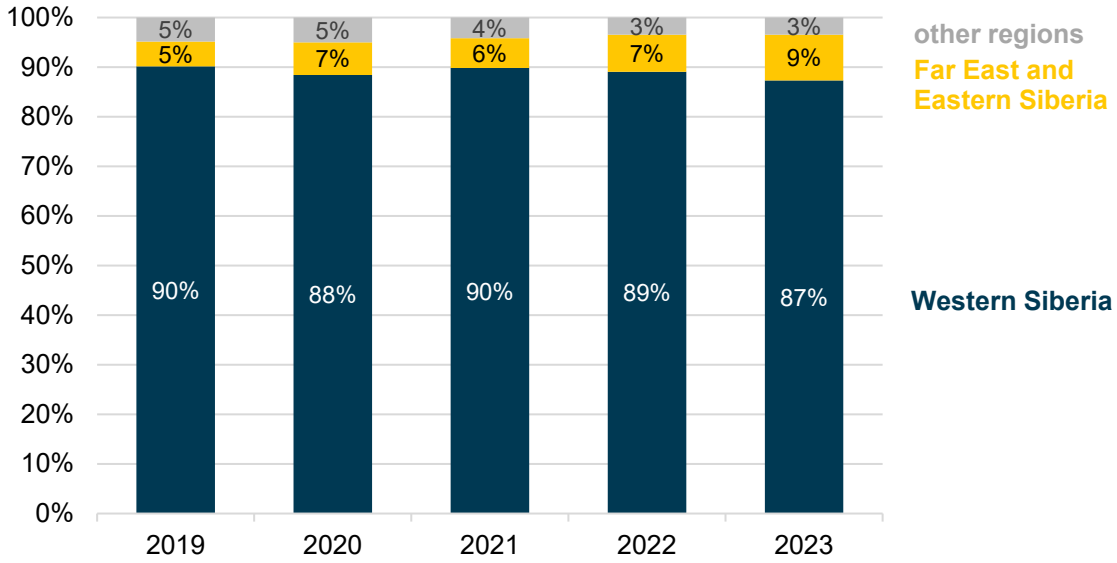
Data source: Rystad Energy Cube Browser

Table 3. Russia's crude oil refining capacity by company, 2022

Company	Total refining capacity thousand barrels per day	Percentage of total capacity
Rosneft	2,189	40%
Lukoil	985	18%
Gazprom Neft	831	15%
Surgutneftegas	404	7%
Tatneft	210	4%
Others	792	15%

Data source: *Oil & Gas Journal*

Figure 4. Russia's crude oil and condensate production by region, 2019–2023
percentage



Data source: Rystad Energy Cube Browser

Table 4. Major crude oil grades from Russia

	API gravity	Sulfur content	Regions
Urals	30 to 32	1.3% to 1.5%	Western Siberia and Volga-Urals
ESPO	34 to 37	0.4% to 0.6%	Eastern Siberia
Sokol	35 to 37	0.2% to 0.3%	Far East
Varandey	25 to 37	0.2% to 0.5%	Northern
Arco	23 to 24	2.2% to 2.4%	Northern
Siberian Light	34 to 36	0.2% to 0.6%	Western Siberia
Sakhalin	37 to 45	0.1% to 0.3%	Far East
Novy Port	30 to 35	0.1% to 0.3%	Western Siberian Arctic

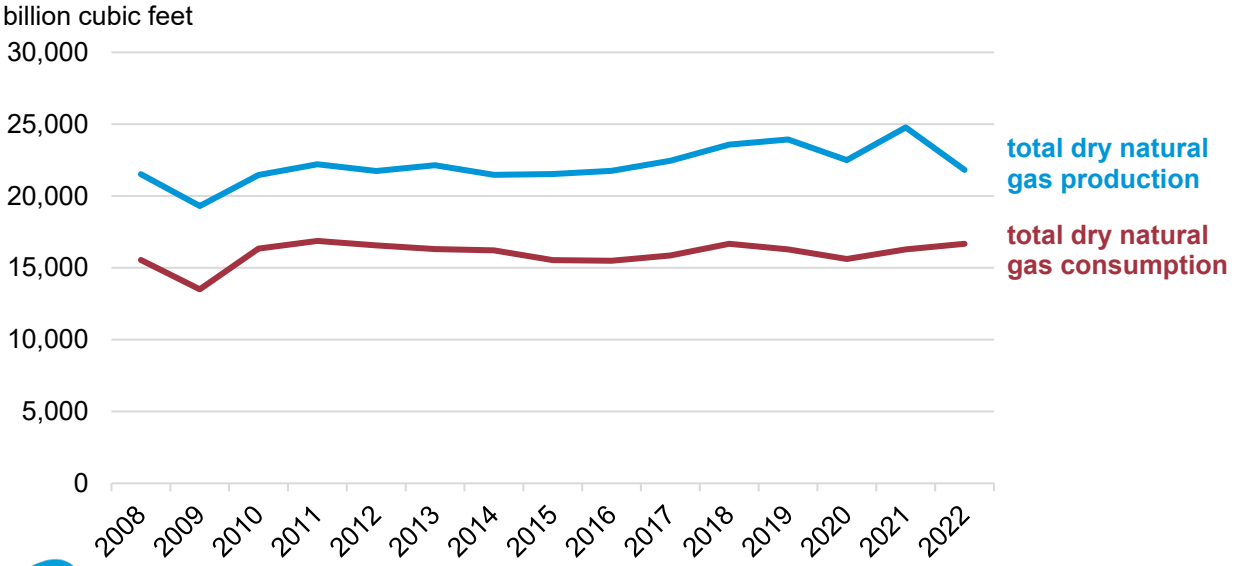
Data source: McKinsey & Company, Independent Commodity Intelligence Services, Trading Economics, Hydrocarbons Technology, *Pipeline and Gas Journal*, Reuters, Nasdaq, NS Energy, and Mitsubishi Corporation

Natural Gas

- Russia's proved natural gas reserves were 1,688 trillion cubic feet (Tcf) as of January 1, 2024, the largest in the world.[26] Gazprom, Russia's largest and state-owned natural gas company, holds over 70% of the country's natural gas reserves.[27]
- In 2022, 21.8 Tcf of dry natural gas was produced in Russia, a 12% decrease year over year (from 24.8 Tcf in 2021).[28] Dry natural gas consumption in Russia increased 2% in 2022, from 16.3 Tcf in 2021 to 16.7 Tcf, the most since 2018 (Figure 5).[29]

- Russia flares the most natural gas, released from upstream oil and gas fields, of any country in the world. In 2022, 901 billion cubic feet (Bcf) of natural gas was flared, and 898 Bcf was flared in 2021 (about 5.5% of consumption).[30]
- The Yamal-Nenets Autonomous Area, in the northern areas of Russia's West Siberian Plain, accounts for 90% of the country's natural gas production and 78% of its natural gas reserves.[31]
- Russia's Urengoy and Yamburg fields, the world's second- and third-largest natural gas fields, have an estimated 385 Tcf and 290 Tcf in respective reserves. Additional large natural gas fields are located in the same region as Urengoy and Yamburg, east of the Gulf of Ob along the Arctic Circle in Western Siberia, including Bovanenkovo (173 Tcf) and Zapolyarnoye (124 Tcf).[32]
- Novatek's Gas Condensate Fractionation and Transshipment Complex in Ust-Luga, near St. Petersburg, launched a new hydrocracking unit in June 2023 to increase the refinery's yield of light petroleum products. The complex processes about 162,000 b/d of natural gas condensate.[33]
- Novatek completed its Yamal LNG project in late 2018, five years after the final investment decision was made in December 2013.[34] In 2021, Novatek approved Yamal LNG to operate at 120% of nameplate capacity for three of its four trains, increasing operating capacity to 994 billion cubic feet per year (Table 5).[35]
- Two major LNG projects, Arctic LNG 2 and Ust-Luga, received final investment decisions in 2019. Each project is under construction and delayed because of Ukraine-related sanctions.[36] Novatek's Arctic LNG 2 project briefly started production at the first of three trains in late 2023, before suspending production in April 2024 (Table 5).[37]

Figure 5. Total annual dry natural gas production and consumption in Russia, 2008–2022



Data source: U.S. Energy Information Administration, International Energy Statistics database

Table 5. Russia's major LNG plants and projects, 2023

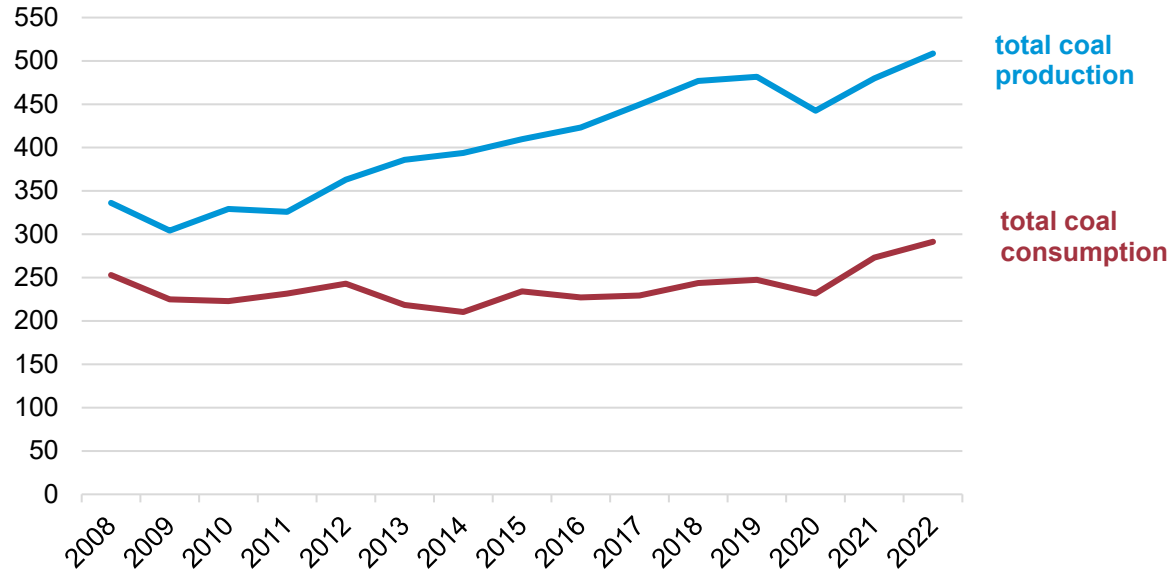
	Primary stakeholder	Region	Status	Estimated first year of production	Full nameplate capacity billion cubic feet	Exports billion cubic feet
Sakahalin-II	Gazprom	Far East	Operating	2009	471	470
Yamal LNG	Novatek	Western Siberia	Operating	2017	836	917
Cryogas-Vysotsk	Novatek	Northwest	Operating	2019	32	32
Portovaya LNG	Gazprom	Northwest	Operating	2022	72	62
Arctic LNG 2	Novatek	Western Siberia	Under construction	2024–2026	951	N/A
Ust-Luga	Gazprom	Northwest	Under construction	2027	937	N/A
Arctic LNG 1	Novatek	Western Siberia	Proposed	2027	951	N/A
Murmansk LNG	Novatek	Northern	Proposed	2027	980	N/A

Data source: Novatek, Mitsubishi Corporation, Reuters, Columbia University Center on Global Energy Policy, Global Energy Monitor, and Vortexa
Note: In 2021, Novatek approved Yamal LNG to operate at 120% of nameplate capacity for three of its four trains, increasing operating capacity to 994 billion cubic feet per year. Capacity and export quantities represent volumes in terms of gaseous natural gas. Proposed increases in capacity for operating LNG plants and projects are excluded. LNG=liquefied natural gas and N/A=not applicable

Coal

- Russia held the world's second-largest coal reserves in 2022, after the United States, estimated at 179 billion short tons.[38]
- In Russia, 509 million short tons of coal were produced in 2022, a 6% increase year over year from 480 million short tons in 2021 (Figure 6).[39]
- Russia produces the third-most metallurgical coal in the world, after China and Australia. In 2021, 125 million short tons were produced in Russia, a 15% increase from 108 million short tons in 2021.[40] Western Siberia is one of seven global regions that produce high-quality metallurgical coal. (The other six regions are the eastern United States, eastern Australia, and western Canada, China, Mozambique, and Mongolia.)[41]
- Coal production in Russia is centered in the Kuznetsk Basin, or Kuzbass region, in Western Siberia and is equidistant to Baltic Sea, Black Sea, and Pacific ports. The region accounts for over half of coal production in Russia, and all Western Siberia accounts for nearly 80% of total coal production in Russia.[42]
- Coal consumption in Russia was 291 million short tons in 2022, a 7% increase from 273 million short tons in 2021. Metallurgical coal represented 27% of Russia's coal consumption in 2022, decreasing 7% year over year from 84 million short tons in 2021 to 79 million short tons (Figure 6). [43]
- As of 2021, about 45% of Russian rail cargo was coal. Limited eastbound rail infrastructure from the Kuzbass region to the Pacific Ocean causes congestion and delays compared with more developed rail infrastructure for delivery to Europe. [44] In 2023, the reported capacity of Russia's eastern railways was 185 million short tons with an estimated throughput of 90% (166 million short tons).[45] Attempting to meet demand and better reach Asian markets, the Russian government seeks to increase capacity of eastbound railways to 231 million short tons by 2030 with an intermediate target of 198 million short tons by 2025.[46]

Figure 6. Total annual coal production and consumption in Russia, 2008–2022
million short tons

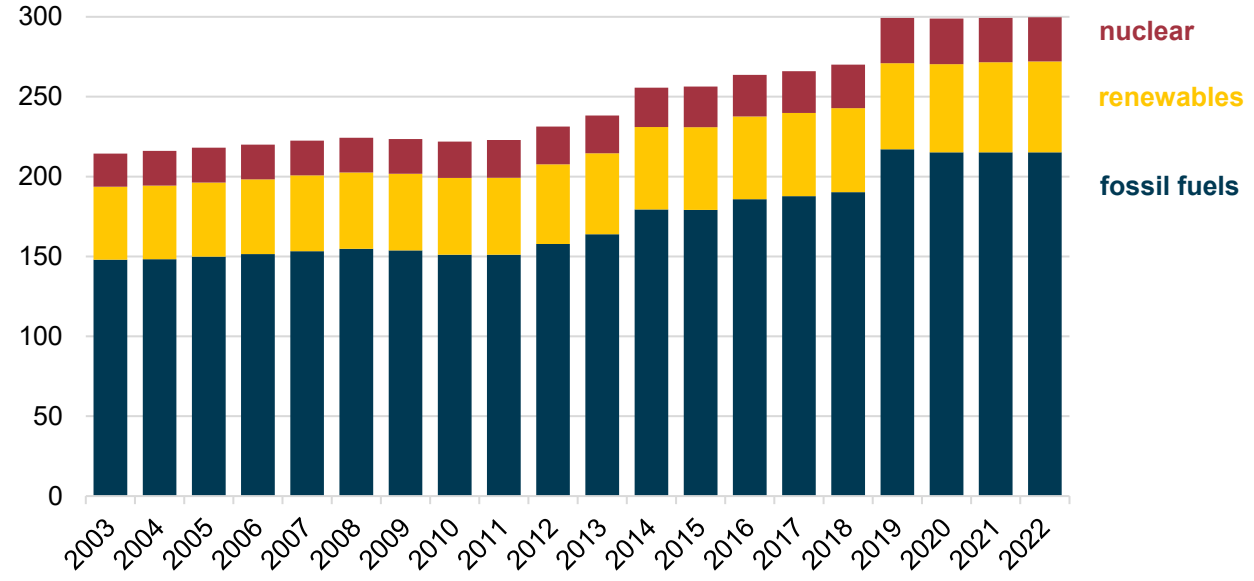


Data source: U.S. Energy Information Administration, International Energy Statistics database

Electricity

- Russia's installed electricity generation capacity was 301 gigawatts (GW) in 2022, less than 1% greater than in 2021. In 2022, fossil fuels represented 72% of installed capacity, followed by 19% from renewables, and 9% from nuclear. These proportions remained relatively unchanged from 2003 to 2022, but total capacity increased 40% during the same period (216 GW in 2003) (Figure 7).[47]
- In 2022, 1,138 terawatthours (TWh) of electricity was generated in Russia, a 1% decrease from 1,148 TWh in 2021. Russia generated 44% of its electricity from natural gas, followed by 20% from nuclear, 19% from hydroelectric, and 15% from coal. Oil, other renewables, and other sources each represented less than 1% of Russia's electricity generation in 2021 and 2022.[48]
- Russia was the world's fourth-largest nuclear power generator, after the United States, France, and China as of 2022, and had 37 operating nuclear power reactors representing 28 GW in generating capacity.[49] Rosatom, Russia's State Atomic Energy Corporation, is one of the world's largest by-capacity nuclear power companies. It has four nuclear power plant projects under construction as of March 2024 (Table 6).[50]
- Russia was the world's fifth-largest hydroelectric consumer as of 2022. Hydroelectric power is Russia's primary renewable source of electricity, making up 17% of installed electricity generation capacity in 2022.[51] RusHydro, Russia's major hydroelectric power company, owns an estimated 70% of installed capacity and most major domestic hydroelectric power plants (Table 7).[52] Non-hydroelectric renewables represented 2% (5 GW) of Russia's installed capacity in 2022 and 1% of generation.[53]

Figure 7. Installed electricity generation capacity in Russia by fuel type, 2003–2022
gigawatts



Data source: U.S. Energy Information Administration, International Energy Statistics database

Table 6. Major nuclear power plant projects in development in Russia, March 2024

	Location	Region	Status	Capacity megawatts	Additional notes
Kursk 2-1 and 2-2	Kurchatov	Central	Under construction	1,250 each	Intended to replace four older units at Kursk that are retiring from 2021 to 2031
BREST-OD-300	Seversk	Western Siberia	Under construction	300	Part of Rosatom's Proryv Project, using a closed nuclear fuel cycle
Leningrad 2-3	Sosnovy Bor	Northwest	Under construction	1,200	Replacing Leningrad-3
Leningrad 2-4	Sosnovy Bor	Northwest	Proposed	1,200	Replacing Leningrad-4

Data source: International Atomic Energy Association, World Nuclear Association, Bellona, and World Nuclear News

Table 7. Major hydroelectric power plants in Russia, 2023

	Company	Region	Status	Capacity megawatts
Sayano-Shushenskaya	RusHydro	Eastern Siberia	Active	6,400
Krasnoyarsk	EuroSibEnergo	Eastern Siberia	Active	6,000
Bratskaya	EuroSibEnergo	Eastern Siberia	Partially active	4,500
Boguchanskaya	RusHydro	Eastern Siberia	Active	2,997
Volzhskaya	RusHydro	Volga-Urals	Active	2,734

Zagorskaya	RusHydro	Central	Partially active	2,040
Bureiskaya	RusHydro	Far East	Active	2,010
Saratovskaya	RusHydro	Volga-Urals	Partially active	1,470
Cheboksarskaya	RusHydro	Volga-Urals	Partially active	1,404
Zeiskaya	RusHydro	Far East	Active	1,330
Chirkeyskaya	RusHydro	Southern	Active	1,000
Kolymskaya	RusHydro	Far East	Active	900
Ust-Srednekanskaya	RusHydro	Far East	Under construction	570
Novosibirsk	RusHydro	Western Siberia	Active	490

Data source: RusHydro, NES Fircroft, Power Technology, and Eurasian Research Institute

Energy Trade

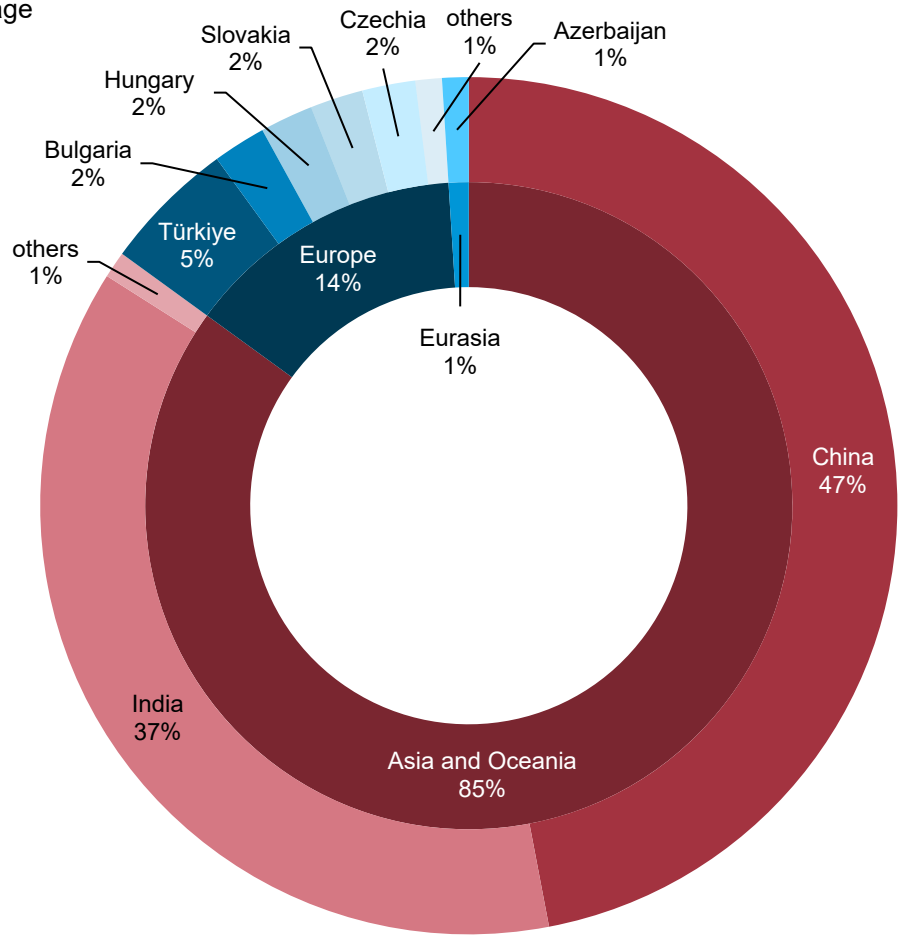
- Sanctions related to the Russia's full-scale invasion of Ukraine expedited a shift in Russia's energy trade toward Asia.[54] Asia and Oceania received 85% of reported crude oil exports from Russia in 2023, 37% of Russia's petroleum product exports, and 84% of Russia's coal exports. In 2022, when Ukraine-related sanctions began, these same percentages were 52% for crude oil, 21% for petroleum products, and 67% for coal (Figures 8–10).[55]
- China imported 2.2 million b/d of crude oil from Russia in 2023, 24% more than in 2022 (1.7 million b/d), resulting in Russia becoming China's top annual supplier of crude oil imports for the first time since 2018 (1.4 million b/d).[56]
- The Eastern Siberia–Pacific Ocean (ESPO) oil pipeline is Russia's major supply route for crude oil to Russia's Far East ports and China. Throughput was estimated at 700,000 b/d in 2021. The Skovorodino-Mohe branch of the ESPO pipeline connects to Chinese-owned pipelines (Russia-China 1 and 2) in China's northernmost county, with the main branch continuing to Kozmino (Figure 11 and Table 8).[57]
- The Druzhba pipeline system is one of the world's longest completed pipeline networks, supplying crude oil to Europe from Western Siberia (Figure 11 and Table 8). Transneft operates the pipeline and reported that oil supplied through the pipeline in 2023 decreased 60% year over year, but oil supplied to Russian ports increased 7.2%.[58]
- EU sanctions in 2022 exempted imports of oil from Russia via the Druzhba pipeline system for select European countries, including Czechia, Germany, Poland, Slovakia, and Hungary.[59] An 11th package of sanctions adopted by the EU in June 2023 ended exemptions for the northern segment of the pipeline system for Germany and Poland.[60] Kazakhstan continues to send oil exports through Russia to European markets; Russia approved the transit of approximately 24,000 b/d of oil from Kazakhstan through the Druzhba system for 2024.[61]
- Seaborne shipments of crude oil and condensates from Russia reached 3.3 million b/d in 2023, increasing 3% from 3.2 million b/d in 2022. Asia and Oceania represented 89% of seaborne crude oil and condensate exports in 2023, compared with 58% in 2022.[62]
- Seaborne shipments of petroleum products from Russia reached 2.6 million b/d in 2023, remaining relatively flat year over year. Asia and Oceania represented 36% of seaborne petroleum product exports, up from 20% in 2022. Diesel represented about 40% of seaborne petroleum products from

Russia between 2022 and 2023, but Western sanctions resulted in diesel shipments to Europe decreasing 51% year over year in 2023. To all other regions, except North America, diesel shipments increased.[63]

- Brazil and Saudi Arabia replaced France and Germany as Russia's second- and third-highest seaborne diesel importers, respectively, in 2023. Brazil received 136,000 b/d in 2023 (1,700 b/d in 2022), and Saudi Arabia received 61,000 b/d in 2023 (1,100 b/d in 2022). Türkiye, a non-EU member, was Russia's top seaborne diesel importer for both periods, receiving 315,000 b/d in 2023, up from 122,000 b/d in 2022 (Figure 12). Select countries in Africa increased annual seaborne diesel imports from Russia by more than 20,000 b/d in 2023, including Libya, Tunisia, Morocco, and Ghana.[64]
- G7 economies, the EU, and Australia announced price caps on crude oil and petroleum products from Russia in late 2022 as part of invasion-related sanctions. The G7 Price Cap Coalition, made up of these countries, released a compliance and enforcement alert in February 2024 highlighting common industry actions taken to evade the price caps, such as false documents, intermediary or irregular shipping routes, and the *shadow* or *gray* fleet (anonymously owned or insured vessels used to trade sanctioned oil and oil products).[65]
- In total, EU countries, G7 countries, and Norway insured 56% of departing tankers shipping crude oil from Russia in the first half 2023, decreasing from 76% in 2022. The same countries owned 34% of such tankers departing in the first of half of 2023, decreasing from 54% in 2022.[66]
- Russia aims to develop its Northern Sea Route as a shorter route to Asian markets (Figure 13). In 2023, China received nearly 11 million barrels of crude oil through the Arctic, and in September 2023, Russia authorized non-ice-class oil tankers to deliver shipments of crude oil from Murmansk.[67] A separate test shipment sent over 33,000 short tons of coal from the Kuzbass region, north along the Yenisei River, to China via the Northern Sea Route in mid-2023.[68]
- Russia exported 6.2 Tcf of dry natural gas in 2022, decreasing 30% year over year from 8.9 Tcf in 2021. China (14% of exports), Türkiye (12%), and Germany (11%) were Russia's top importers (Figure 14).[69]
- Gazprom's Power of Siberia 1 natural gas pipeline set a daily record for natural gas supplied to China in January 2024. Gazprom reported that it exported 802 Bcf of natural gas to China via the pipeline in 2023, a 47% increase from 544 Bcf in 2022.[70]
- Historically, Russia built its natural gas pipelines with the intent to deliver to Europe (Figure 15 and Table 9). The country's current natural gas export strategy includes the expansion of piped deliveries to non-EU consumers and LNG infrastructure development, each of growing importance since Russia's full-scale invasion of Ukraine.[71]
- Western Arctic ports represented 62% (915 Bcf) of Russia's total seaborne exports of LNG in 2023 (1,483 Bcf), seasonally varying deliveries to Europe or Asia based on access via the Northern Sea Route. During the same year, Far East ports shipped exclusively to Asian markets, and 86% of shipments from Baltic ports went to European destinations. Since Russia's Portovaya LNG project was completed on the Baltic Coast in 2022, Russia's LNG shipments from the Baltic Sea increased 136%, from 41 Bcf in 2022 to 97 Bcf in 2023 (Table 5 and Figure 16).[72]
- Russia exported 243 million short tons of coal in 2022, decreasing 7% year over year from 261 million short tons in 2021. Metallurgical coal represented 19% (47 million short tons) of Russia's total coal exports in 2022.[73]

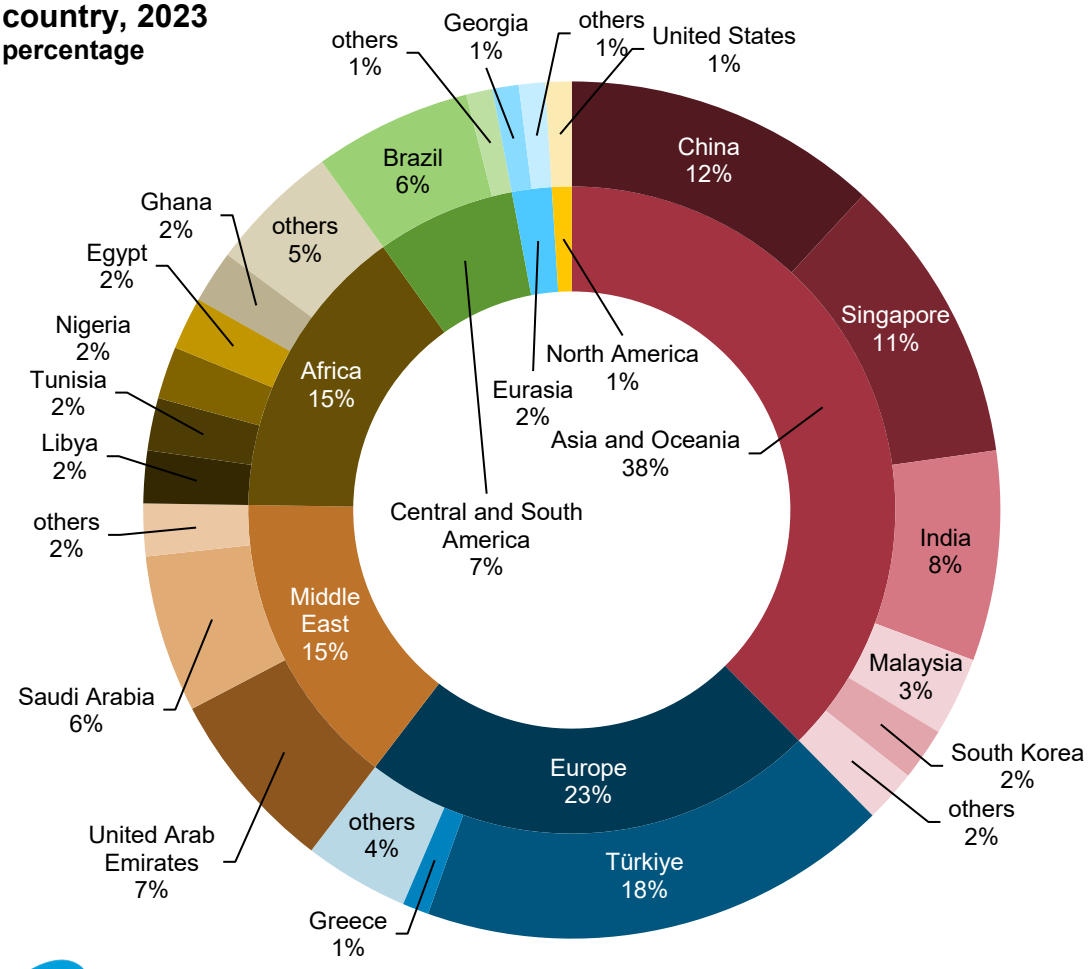
- Russia represented an estimated 39% of China's coal imports in 2022, up from 27% in 2021, as a result of China lifting tariffs on metallurgical coal imports in 2022 and restricting imports of Australian coal from 2020 through early 2023.[74]
- China, the world's largest consumer of metallurgical coal, received an estimated 37% (27 million short tons) of its metallurgical coal imports from Russia in 2022.[75]
- Russia became India's third-highest supplier of metallurgical coal in 2023, after Australia and the United States, because of decreased imports in India from Australia and Canada, periodic discounts on coal from Russia (compared with coal from Australia), and an overall rise in steel demand from 2020 to 2023.[76]

Figure 8. Imports of crude oil from Russia by country and region, 2023
percentage



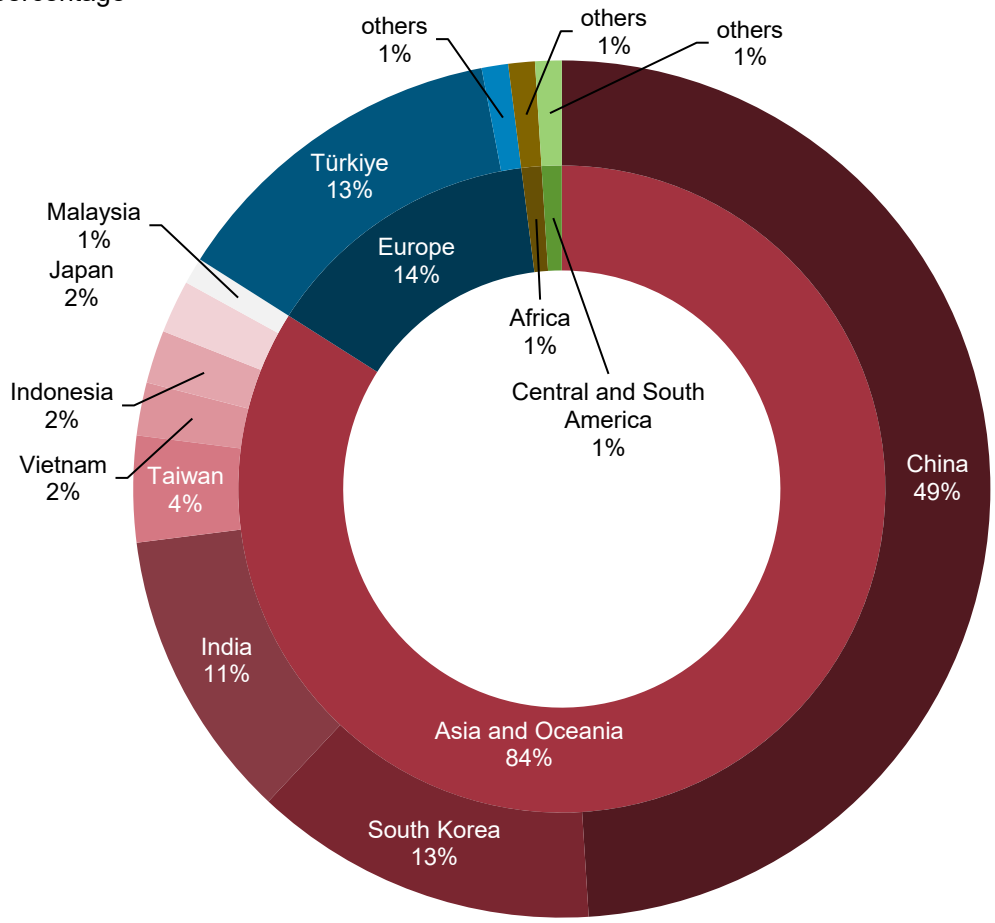
Data source: Global Trade Tracker and Vortexa
Note: Individual percentages might not add to the total because of rounding.

Figure 9. Imports of petroleum products from Russia by region and country, 2023
percentage



Data source: Global Trade Tracker and Vortexa
Note: Individual percentages might not add to the total because of rounding.

Figure 10. Imports of coal from Russia by region and country, 2023
percentage



Data source: Global Trade Tracker
Note: Individual percentages might not add to the total because of rounding.

Figure 11. Map of major crude oil pipelines and ports in Russia, 2023

Data source: Global Energy Monitor, Reuters, Bruegel, and the Centre for Research on Energy and Clean Air

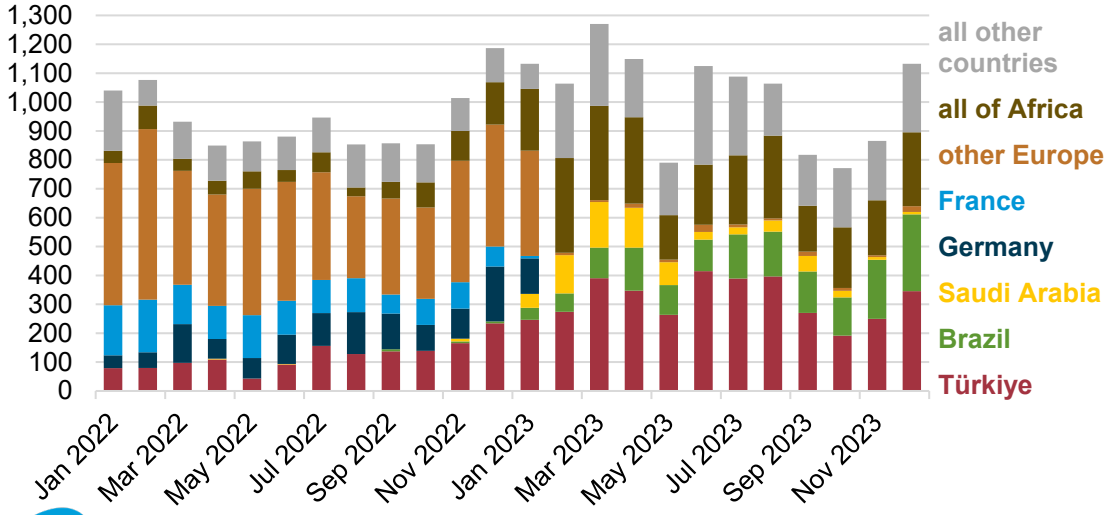
Table 8. Russia's major crude oil pipelines, 2023

	Capacity thousand barrels per day	**Total length** miles	**Delivery path**	**Status**	**Stakeholders**	**Destination region**	**Additional notes**
Caspian Pipeline Consortium (CPC)	1,470–1,670	940	Tengiz Oil Field, Kazakhstan, (northeastern coast of the Caspian Sea) to Novorossiysk, Russia, (coast of the Black Sea)	Operating	Transneft, Samruk-Kazyna, Chevron, and others	Eurasia	Russia accounts for an estimated 11–13% of pipeline shipments since 2021, exempt from international sanctions related to Ukraine, but still less favored by Western suppliers.
Eastern Siberia–Pacific Ocean 1 and 2 (ESPO-1 and ESPO-2)	600–1,610	2,990	Tayshet, Russia, (in Eastern Siberia) to Mohe County, China, and Kozmino, Russia, (on the Pacific Coast)	Operating	Transneft	Asia	Includes Skovorodino-Mohe branch, connecting to Russia-China 1 and 2 in Mohe County, China
Druzhba	120–1,490	3,170	Central Russia to Central Europe via northern and southern branches that split in Belarus.	Partially closed	Transneft and others	Europe	The EU ended exemptions to sanctions on the import of oil from Russia via the Druzbha in 2023, leading to increased imports of oil from Kazakhstan via the pipeline.
Baltic Pipeline System 2 (BPS-2)	720	620	Bryansk Oblast, Russia, (bordering Belarus and Ukraine) to Ust-Luga (near St. Petersburg)	Operating	Transneft	Europe	Connects to the Druzhba pipeline at Unecha Junction in Bryansk Oblast
Baltic Pipeline System 1 (BPS-1)	120–560	830	Yaroslavl Oblast, Russia, (northwest of Moscow) to Primorsk (near St. Petersburg)	Operating	Transneft	Europe	Primary pipelines within the system are Palkino-Primorsk, Yaroslavl-Kirishi, and Kirishi-Primorsk, with Palkino-Primorsk running parallel to the Yaroslvl-Kirishi and Kirishi-Primorsk segments
Atasu-Alashankou (eastern segment of Kasakhstan-China pipeline)	400	600	Atasu, Kazakhstan, (Central Kazakshtan) to Alashankou, China, (near the border with Kazakhstan)	Operating	Samruk-Kazyna (Kazakh state-owned company) and China National Petroleum Corporation	Asia	China receives an estimated 200,000 barrels per day of oil from Russia via the pipeline each year, connecting to Russian pipelines northward via the Omsk-Pavlodar-Skymkent system.
Russia-China 1	300	580	Mohe County, China, (near Russian border) to Daqing City, China	Operating	China National Petroleum Corporation	Asia	Connects to ESPO-1 and ESPO-2, running parallel to Russia-China 2
Russia-China 2	300	590	Mohe County, China, (near Russian border) to Daqing City, China	Operating	China National Petroleum Corporation	Asia	Connects to ESPO-1 and ESPO-2, running parallel to Russia-China 1

Data source: Reuters, Interfax, Kazakhstan-China Pipeline LLC, Kursiv, Hillhouse Analytics, Global Energy Monitor, and Upstream
Note: Ranges in capacity represent the minimum and maximum values of the referenced pipeline branches and segments in each row. The length of the Baltic Pipeline System 1 (BPS-1) excludes the Palkino-Primorsk pipeline (440 miles). Capacity and length measurements are rounded to the nearest 10 value after metric conversions.

Figure 12. Seaborne diesel shipments from Russia by region, 2022–2023

thousand barrels per day



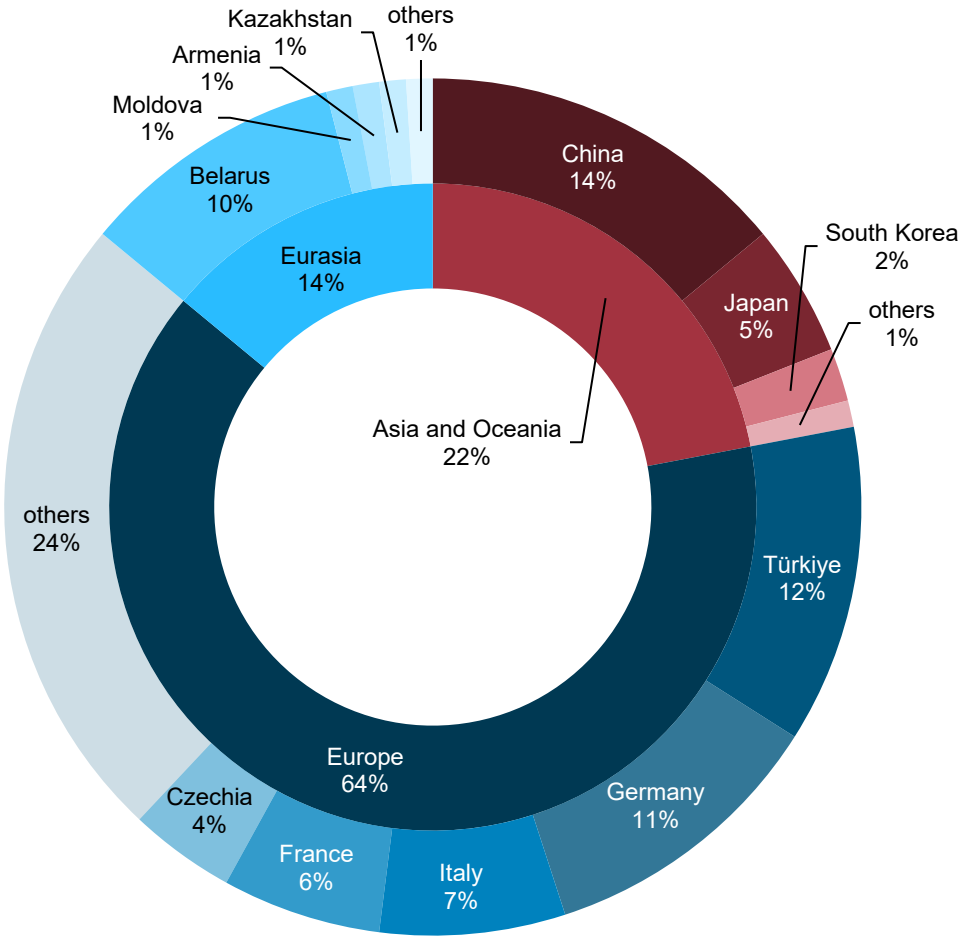
Data source: Vortexa

Note: Shipments with no recorded destination are included in *all other countries*.

Figure 13. Map of Northern Sea Route

Data source: *The Economist*

Figure 14. Natural gas exports from Russia by region and country, 2022
percentage



Data source: U.S. Energy Information Adminstration, BP, Eurostat, Global Trade Tracker, International Energy Agency, Vortexa, and UK Department of Energy Security and Net Zero
Note: Individual percentages might not add to the total because of rounding.

Figure 15. Map of major natural gas pipelines and ports in Russia, 2023

Data source: Global Energy Monitor, Reuters, and the Center on Global Energy Policy

Table 9. Russia's major natural gas pipelines, 2023

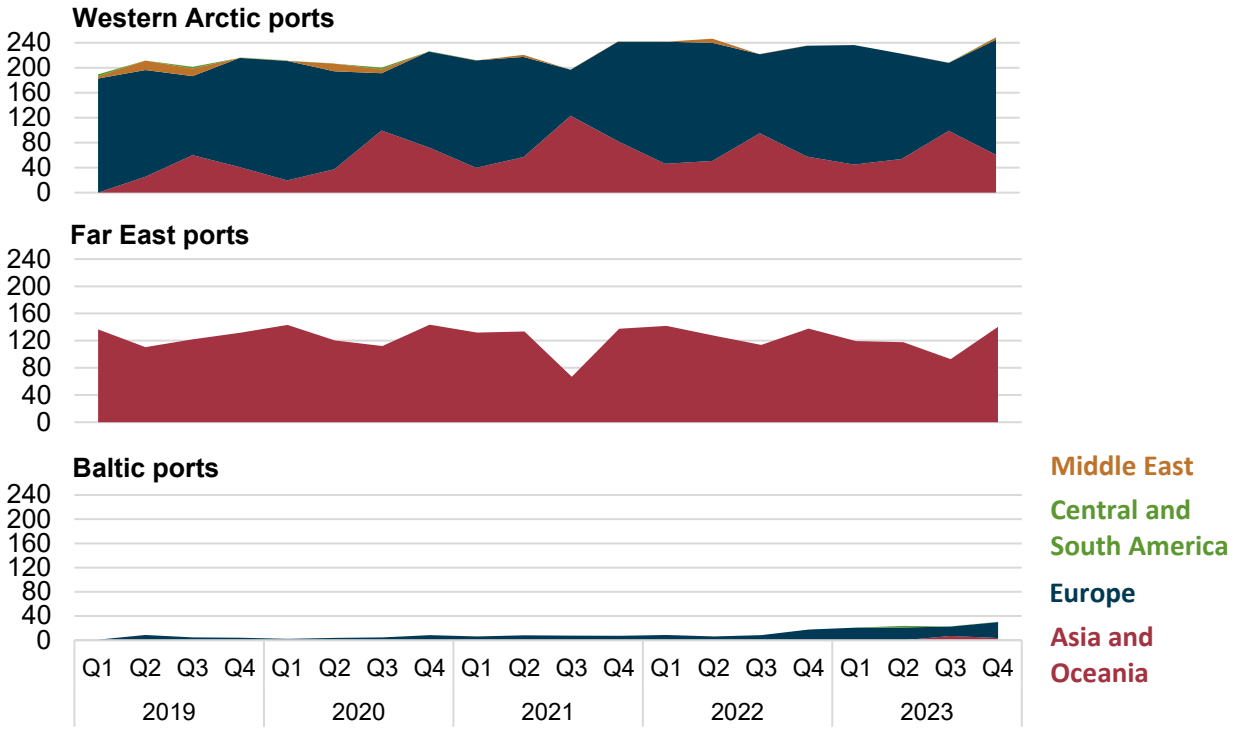
	Capacity billion cubic feet	**Length** miles	**Delivery path**	**Status**	**Primary stakeholder**	**Destination region**	**Additional notes**
Nord Stream 1	1,940	760	Vyborg, Russia, (near St. Petersburg) to Germany via Baltic Sea	Closed	Gazprom	Europe	Consists of two parallel 970 Bcf pipelines, reported explosions damaged both pipelines in September 2022
Nord Stream 2	1,940	760	Ust-Luga, Russia, (near St. Petersburg) to Germany via Baltic Sea	Closed	Gazprom	Europe	Consists of two parallel 970 Bcf pipelines, reported explosions damaged one pipeline in September 2022
Power of Siberia 2	1,770	2,210	Northwest Siberia to China	Proposed	Gazprom	Asia	Proposed delivery of natural gas by 2030
Volkhov-Murmansk-Belokamenka	1,410	810	Volkhov, Russia, (near St. Petersburg) to Murmansk and Barents Sea	Proposed	Gazprom	Arctic	Potential construction scheduled for completion by 2027
Power of Siberia 1	1,340	1,860	Kovykta and Chayanda gas fields (in Eastern Siberia) to border with Northwest China	Operating	Gazprom	Asia	Connection proposed to Sakhalin-Khabarovsk-Vladivostok natural gas pipeline on Russia's Pacific coast
Yamal-Europe and SRTO-Torzhok	740–1,170	2,400	Northwest Siberia to Germany via Belarus and Poland	Partially closed	Gazprom	Europe	Orlen, Poland's state energy company, took over Gazprom's ownership of the Polish section of the pipeline in late 2023, which closed in 2022.
Turkstream	1,130	580	Anapa, Russia, (southern coast) to Northwest Türkiye via the Black Sea	Operating	Gazprom	Europe	Consists of two parallel 570 Bcf pipelines
Urengoy-Pomary-Uzhhorod	990	2,770	Northwest Siberia to Uzhhorod, Ukraine	Operating	Gazprom	Europe	Part of Brotherhood pipeline network transiting Ukraine to Slovakian border, existing transit agreements with Ukraine scheduled to expire at the end of 2024
Soyuz	880	1,710	Orenburg, Russia, (near the southern Ural Mountains) to Uzhhorod, Ukraine	Closed	Gazprom	Europe	Part of Brotherhood pipeline network transiting Ukraine to Slovakian border, closed following Russia's invasion of Ukraine in 2022
Blue Stream	570	750	Stravropol Krai, Russia, (near the southern coast) to Ankara, Türkiye	Operating	Gazprom	Europe	Onshore segment of pipeline in Türkiye owned and operated by Botas, Türkiye's state-owned pipeline company

Data source: Reuters, NS Energy, Global Energy Monitor, Neftegaz, Carnegie Endowment for International Peace, Lowy Institute, Financial Times, European Parliament, Offshore Technology, Nord Stream, *Pipeline & Gas Journal*, The Barents Observer, RBC Ukraine, and bne IntelliNews

Note: Capacity and length measurements are rounded to the nearest 10 value after metric conversions. The length of the Power of Siberia 2 pipeline includes the Soyuz Vostok segment of the pipeline (598 miles).

Figure 16. Quarterly liquefied natural gas (LNG) exports from Russia by ports of origin and destination, 2019–2023

billion cubic feet



Data source: Vortexa

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