



## Background Reference: Russia

Last Updated: December 13, 2021

Map of Russia



Source: Central Intelligence Agency, [The World Factbook](#)

### Overview

Russia is a major producer and exporter of petroleum and natural gas, and energy exports play a large role in Russia's economy.

Russia has also become an increasingly active and important partner to OPEC. In late 2016, [OPEC, Russia, and several other oil-producing countries \(OPEC+\)](#) agreed to limit production from January 2017 through June 2017 to try to manage the oil market. In May 2017, OPEC+ agreed to extend production cuts through the end of March 2018. In April 2020, [OPEC+ agreed to make significant cuts to production](#) mainly in response to the decline in global oil demand that resulted from COVID-19 pandemic. The first

quarter of 2020 also saw a temporary spike in crude oil supply and global oil inventories that stemmed from a breakdown in OPEC negotiations to extend production cuts in March 2020.<sup>1</sup>

## Effects of sanctions

In response to the actions and policies of the Government of Russia with respect to Ukraine, the United States imposed progressively tighter sanctions on Russia through a series of executive orders in 2014.<sup>2</sup> Among other measures, the sanctions limited Russian firms' access to U.S. capital markets, specifically targeting five Russian energy companies: Novatek, Rosneft, Gazprom, Gazprom Neft, and Transneft. Sanctions also prohibited the export to Russia of goods, services, or technology in support of deepwater, Arctic offshore, or shale projects.<sup>3</sup> The European Union imposed similar sanctions.<sup>4</sup>

In August 2017, the U.S. Congress enacted new legislation codifying the existing sanctions on Russia. This legislation also extended the prohibition on providing technology in support of new deepwater, Arctic offshore, or shale projects to cover not only projects in Russia but also projects anywhere in the world in which a person or entity already subject to sanctions owns 33% or more of the project. The legislation also authorizes the President of the United States to impose additional sanctions on persons or entities providing support to the development of energy export pipelines in Russia, but it does not require the President to do so.<sup>5</sup>

These sanctions immediately stopped the large-scale investments that Western firms had planned. Virtually all involvement in Arctic offshore and shale projects by Western companies ceased following the sanctions. Attracted by the potentially vast resources, many international companies had entered into partnerships with Russian firms to explore Arctic and shale resources. ExxonMobil, Shell, BP, and Statoil signed agreements with Russian companies to explore shale resources. ExxonMobil, Eni, Statoil, and China National Petroleum Company (CNPC) all partnered with Rosneft in 2012 and 2013 to explore Arctic fields.<sup>6</sup> Despite sanctions announced in March 2014, Total agreed in May to explore shale resources in partnership with Lukoil. However, Total halted its involvement in September 2014, as additional sanctions were announced later in the year.

At the same time as the United States and the European Union imposed sanctions, crude oil prices fell by more than half, from an average Brent crude oil price of \$109 per barrel (b) in the first half of 2014 to an average of less than \$50/b in January 2015. Both the sanctions and the fall in crude oil prices put pressure on the Russian economy in general and made it more difficult for Russian energy firms to finance new projects, especially higher-cost projects such as deepwater, Arctic offshore, and shale projects.

In recent years, the Russian government has offered special tax rates or tax holidays to encourage investment in difficult-to-develop resources, such as Arctic offshore and low-permeability reservoirs, including shale reservoirs. However, Arctic offshore and shale resources face significant challenges to development at least in the near future, given that Russian technological development in unconventional drilling lags behind Western companies and that sanctions inhibit Russia's ability to secure the necessary financing, equipment, and capital to exploit these resources.<sup>7</sup>

## Sector Organization

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Domestic companies dominate Russia's oil production. Following the collapse of the Soviet Union, Russia initially privatized its oil industry. Starting in the late 1990s, privately owned companies drove growth in the sector, and a number of international oil companies attempted to enter the Russian market with varying degrees of success. More recently, Russia's oil industry has consolidated into fewer firms with more state control.

A number of ministries are involved in the oil sector. The Ministry of Natural Resources and Environment issues field licenses, monitors compliance with license agreements, and levies fines for violations of environmental regulations. The Federal Agency of Subsoil Use (Rosnedra) and the Federal Service for the Supervision of the Use of Natural Resources are the regulatory bodies within the Ministry of Natural Resources and Environment that oversee crude oil and natural gas extraction with a narrower focus on subsoil licensing and compliance with environmental standards. The Ministry of Energy develops and implements general energy policy. The Finance Ministry is responsible for hydrocarbon taxes, and the Federal Antimonopoly Service regulates tariffs.<sup>8</sup>

When oil prices significantly fell in the mid-2010s, Russian state revenues from oil and natural gas activities declined dramatically, and the state's budget deficit grew. In response, the Russian government implemented or proposed various measures to increase revenues, such as changing the minerals extraction tax (MET) and the hydrocarbons export taxes. For example, in 2015, the hydrocarbon tax rates changed (often referred to as the 2015 tax maneuver), raising the MET and lowering export taxes for 2015 and setting out additional changes for 2016 and 2017 that would further raise the MET and lower export taxes. The increases in the MET were designed to approximately balance the decreases in the export taxes, making them revenue neutral, neither increasing nor decreasing overall taxes on the energy industry.<sup>9</sup>

Russia has two main taxes that are relevant for the hydrocarbons sector: MET and the export tax. The export tax varies for crude oil and for petroleum products. In 2011, Russia changed product export taxes so that export tax rates on all products were lower than the crude oil export tax to encourage investment in refining capacity. In recent years, the government has also offered special MET rates or MET holidays for difficult-to-develop resources such as Arctic offshore and low-permeability reservoirs, including shale reservoirs. Recent increases to the MET rate have increased the value of these previously agreed MET discounts for difficult resources. In addition to taxes, the Russian government also collects dividends from oil and natural gas companies in which the state is a shareholder.

## Petroleum and Other Liquids

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### Exploration and production

Most of Russia's oil production originates in West Siberia and the Urals-Volga regions. In the longer term, Russia's eastern oil fields, along with the largely untapped oil reserves in the Russian Arctic, may play a larger role. The Russian portion of the [Caspian Sea](#) and the predominantly undeveloped areas of Timan-Pechora in northern Russia also may hold large hydrocarbon reserves.

A number of new projects are in development. Some of these new projects may only offset declining output from aging fields and not result in significant output growth in the near term. The use of advanced technologies and the application of improved recovery techniques is resulting in increased oil output from some existing oil deposits.

### *Russia's oil- and natural gas-producing regions*

#### ***Urals-Volga***

Urals-Volga was the largest producing region until the late 1970s when West Siberia surpassed it. Production from this region has declined by more than 50% as a result of its maturing fields and lack of greenfield development.<sup>10</sup>

#### ***Khanty-Mansiysk***

The Khanty-Mansiysk area of West Siberia is Russia's largest oil-producing region. One of the largest and oldest fields in Khanty-Mansiysk is Samotlor field, which has been producing oil since 1970, although production has been declining as the field has matured. Other large oil fields in the region include the Priobskoye, Mamontovskoye, Fedorovskoye, and Samotlorskoye fields.<sup>11</sup>

#### ***Yamal-Nenets, Krasnoyarsk, and the Arctic offshore***

The Yamal-Nenets Autonomous district straddles the Arctic coast of West Siberia, with Krasnoyarsk lying just to the east of Yamal-Nenets. This region is mostly known for natural gas production. Crude oil development is relatively new for the region and has required the construction of new infrastructure.

The start-up of the Rosneft's Vankorskoye (Vankor) oil and natural gas field in August 2009 has notably increased production in the region and has been a significant contributor to Russia's increase in oil production since 2010. Vankor, located north of the Arctic Circle in Russia's Krasnoyarsk region near the border with Yamal-Nenets, was the largest oil discovery in Russia in 25 years. Rosneft built a 345-mile pipeline to connect Vankor field to the Transneft oil pipeline system at Purpe. Rosneft is also developing three smaller nearby fields—Suzunskoye, Tagul'skoye, and Lodochnoye—also known as the Vankor cluster fields. Production at Suzunskoye started in late 2016.<sup>12</sup>

#### ***East Siberia***

Rosneft's Verkhnechonskoye oil and natural gas condensate field lies in the Irkutsk region near the ESPO pipeline.<sup>13</sup> The Yurubcheno-Tokhomskoye and Kuyumba fields lie in south-central Krasnoyarsk and connect to the ESPO pipeline via the Kuyumba-Taishet pipeline.<sup>14</sup>

#### ***Bazhenov shale***

The Bazhenov shale layer, lies under much of the existing West Siberian resource deposits. In the 1980s, the Soviet government tried, unsuccessfully, to stimulate production by detonating small nuclear devices underground. In recent years, the government has used tax breaks to encourage Russian and international oil companies to explore the Bazhenov and other shale reservoirs. However, Russian firms have made little progress in developing shale resources because sanctions have hindered development of shale projects.<sup>15</sup>

## ***Caspian Sea***

Lukoil has been actively exploring some of the deposits in the North Caspian Sea. Lukoil launched the Yurii Korchagin and the Filanovsky fields in 2010 and 2016, respectively.<sup>16</sup> Other discoveries in the area include the Khvalynskoye and Rakushechnoye fields. The development of the region is highly sensitive to taxes and export duties, and the rollback of tax exemptions announced in October 2020 may negatively affect development.<sup>17</sup>

## ***Sakhalin Island***

Sakhalin Island is located off Russia's eastern shore. The offshore area to the east of Sakhalin Island is home to a number of large oil and natural gas fields that have received significant investment from international companies. Many of Sakhalin's oil and natural gas fields are being developed under two production-sharing agreements (PSA) signed in the mid-1990s. The Sakhalin-1 PSA covers three oil and natural gas fields: Chayvo, Odoptu, and Arkutun-Dagi. Sakhalin-1 mainly produces crude oil and other liquids, most of which are exported through the De-Kastri oil terminal. Most of the natural gas currently produced at Sakhalin-1 is reinjected, with small volumes of gas sold domestically.<sup>18</sup> The Sakhalin-2 PSA covers two major fields—the Piltun-Astokhskoye oil field and the Lunskeye natural gas field—and it includes twin oil and natural gas pipelines that run from the north of the island to the south end of the island. The Sakhalin-2 project also has an oil export terminal and a natural gas liquefaction and export terminal.<sup>19</sup>

## **Transport and storage**

### ***Pipelines***

Russia has an extensive domestic distribution and export pipeline network. Russia's domestic and export pipeline network is nearly completely owned and run by the state-owned Transneft. Transneft holds a near-monopoly over Russia's pipeline network, and most of Russia's crude oil exports must traverse Transneft's system to reach bordering countries or to reach Russian ports for export. Smaller volumes of exports are shipped by rail and on vessels that load at independently owned terminals. Notable exceptions are the Caspian Pipeline Consortium (CPC) pipeline, which runs from Tengiz field in [Kazakhstan](#) to the Russian Black Sea port of Novorossiysk, and the TransSakhalin pipeline, owned by the Sakhalin-2 consortium, in eastern Russia.<sup>20</sup>

### ***Ports***

Novorossiysk is Russia's main oil port on the Black Sea coast. It handles petroleum from Central Asian countries as well as from Russia. The Kozmino oil port is located near the city of Vladivostok, in Russia's far eastern Primorsky province, and is the terminus of the ESPO crude oil pipeline. The Kozmino port opened in December 2009 and initially received crude oil by rail from Skovorodino until the second phase of the ESPO pipeline opened in 2012.<sup>21</sup>

The Primorsk and Ust-Luga terminals are both located near St. Petersburg, Russia, on the Gulf of Finland. The Primorsk terminal opened in 2006, and the Ust-Luga oil terminal opened in 2009. Both Primorsk and Ust-Luga receive oil from the Baltic Pipeline System, which brings crude oil from fields in the Timan-Pechero, West Siberia, and Urals-Volga regions. Ust-Luga is also a major port for Russian coal and hydrocarbon gas liquids exports.

## Refining and refined oil products

Russia has more than 30 oil refineries in commercial operation. Rosneft, the largest refinery operator, owns 13 major refineries in Russia.<sup>22</sup> Lukoil is the second-largest operator of refineries in Russia with four major refineries.<sup>23</sup> Many of Russia's refineries are older, simple refineries, with mazut, a low-quality fuel oil, accounting for a large share of their output. Recent tax changes have raised the export duty on mazut and other heavy oil products to equal the export duty on crude oil, eroding the already slim profit-margins of less-complex refineries. Mazut production and exports dropped significantly in 2016 as refinery upgrades continued and as companies lowered utilization at less-complex refineries.<sup>24</sup>

You can find updates on Russia's petroleum sector in the latest [Country Analysis Executive Summary](#).

## Hydrocarbon Gas Liquids

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[Hydrocarbon gas liquids](#) (HGLs) refers to both the natural gas liquids (paraffins or alkanes such as ethane, propane, and butanes) and olefins (alkenes such as ethylene, propylene, and butylene) produced by natural gas processing plants, fractionators, crude oil refineries, and condensate splitters but excludes liquefied natural gas and aromatics. HGLs are produced in association with both natural gas and petroleum products.

A surplus of liquefied petroleum gas (LPG)—primarily propane and butane—on the Russian market has led major producers to focus on the export market and the development of HGL-fed petrochemical capacity as outlets for their growing production. Traditionally, the main outlet for Russian LPG exports had been shipments to Europe by rail. More recently, Russia added marine export capacity to serve more distant waterborne markets, and in 2019, Russian exporters began to export LPG to East Asia. Marine exports from Russia began in mid-2012, when Russia's first modern marine LPG export terminal came online in Taman on the Black Sea.<sup>25</sup> The Taman terminal is currently [undergoing expansion](#), including increasing draught to allow for the loading of larger LPG carriers.

In mid-2013, Sibur, Russia's largest LPG producer, shipped its first LPG cargo out of Ust-Luga, near St. Petersburg.<sup>26</sup> In a first for Russia, the Sibur-operated terminal can handle both pressurized and refrigerated product; there are plans to expand its capacity, but the timeline for its development has not been reported.<sup>27</sup> The Ust-Luga terminal, like Taman, is capable of receiving LPG by rail. Additional volumes of LPG are produced on-site at the Novatek-operated Gas Condensate Fractionation and Transshipment Complex.<sup>28</sup>

In addition to direct exports, Russian companies are seeking to use domestically produced LPGs in petrochemical manufacturing, which would capture more value and minimize their export tariff exposure. In December 2014, Sibur commissioned its propane dehydrogenation (PDH) facility at the Tobolsk-Polymer complex in West Siberia,<sup>29</sup> which can produce 510,000 tons per year of polymer-grade propylene from an estimated 33,000 b/d of propane feedstock.

# Natural Gas

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## Sector organization

A number of ministries regulate and oversee the natural gas sector. The Ministry of Natural Resources and Environment, along with the Federal Agency of Subsoil Use (Rosnedra) and the Federal Service for the Supervision of the Use of Natural Resources, issue field licenses, monitor compliance with license agreements, and levy fines for violations of environmental regulations. The Ministry of Energy develops and implements general energy policy. The Federal Antimonopoly Service regulates midstream tariffs and monitors natural gas pricing.<sup>30</sup>

The state-run Gazprom dominates Russia's upstream natural gas sector. While independent and oil company producers have gained importance, upstream opportunities remain fairly limited for independent producers and other companies, including Russian oil majors. Furthermore, Gazprom's dominant upstream position is reinforced by its legal monopoly on pipeline natural gas exports.

## Exploration and production

The Yamal-Nenets region is home to three of the country's historically most prolific natural gas fields—Yamburg, Urengoy, and Medvezhye—all of which are licensed to Gazprom. These three fields have been operating for more than 30 years and have seen output declines in recent years; however, they still have significant remaining reserves and large annual production volumes. Gazprom has two other large operating natural gas fields in the region. The Zapolyarnoye field started production in 2001 and reached its full design capacity of 4.6 Tcf per year in 2013.<sup>31</sup> The Bovanenkovo field has a design capacity of 4.1 Tcf per year and started production in 2012.<sup>32</sup>

Gazprom and other producers are increasingly investing in new regions, such as Eastern Siberia and Sakhalin Island, to bring natural gas deposits in these areas into production. Gazprom is currently working to develop two large natural gas fields in Eastern Siberia—Chayandinskoye field in the Yakutia region and Kovyktinskoye field in the Irkutsk region. Both fields will connect to the Power of Siberia natural gas pipeline and serve demand in Eastern Russia and China.<sup>33</sup> In addition, the partners in the Sakhalin-1 project, which include Rosneft and ExxonMobil, announced a plan to construct a new LNG export facility at the De-Kastri port near Sakhalin Island, although no completion date has yet been announced.<sup>34</sup>

### *Natural gas flaring*

In Russia, natural gas associated with oil production is often flared, and Russia flares more natural gas than any other country. A number of Russian government initiatives and policies have set targets to reduce routine flaring of associated gas. Also, regulatory changes have made it easier and more profitable for third-party producers to transport and market their natural gas.<sup>35</sup>

## Transport and storage

### *Pipelines*

Russia's natural gas transmission network includes more than 100,000 miles of pipeline and more than 20 underground natural gas storage facilities. Since the late 2000s, Gazprom has been adding major new



pipelines to accommodate new sources of supply, including fields in Yamal and Eastern Siberia, and new export routes, including exports to China and new pipelines to Europe that bypass Ukraine.

The Unified Gas Supply (UGS) System is the collective name for the interconnected western portion of Russia's natural gas pipelines. The UGS system includes domestic pipelines and the domestic portion of export pipelines in European Russia and western Siberia.<sup>36</sup> In 2007, the Russian government directed Gazprom to establish an Eastern Gas Program (EGP) to expand natural gas infrastructure in eastern Siberia and Russia's Far East. The backbone of the EGP is the Power of Siberia pipeline, which was brought online in late 2019 and which Gazprom is currently planning to expand capacity.<sup>37</sup>

Gazprom is sole owner of virtually all of Russia's natural gas pipelines. Russia's 1999 Law on Gas Supply requires owners of all natural gas systems to provide non-discriminatory access to any available capacity with the aim of supplying domestic consumers. Separate regulations established rules for third-party access to the UGS system, but the government has not established rules for access to pipelines that are not part of the UGS system. Access to pipeline capacity for exports is not included, as the 2006 Law on Gas Exports grants pipeline export rights exclusively to Gazprom, the owner of the UGS system.<sup>38</sup> Despite these long-standing laws, independent natural gas producers, including state-owned oil companies, have only recently begun to get access to some of Gazprom's domestic pipelines. Actions by the Federal Antimonopoly Service (FAS) have helped promote better third-party access. Between 2008 and 2011, the FAS brought 28 infringement cases against Gazprom related to third-party access.<sup>39</sup>

## *LNG*

Russia has two operating large-scale liquefied natural gas (LNG) export facilities, Sakhalin LNG and Yamal LNG. The Sakhalin LNG facility has been operating since 2009, with the majority of the LNG contracted to Japanese and South Korean buyers under long-term supply agreements.<sup>40</sup>

In 2013, Russia modified its Law on Gas Exports to allow Novatek and Rosneft to export LNG, breaking Gazprom's monopoly on all natural gas exports. Yamal LNG, which received final investment decision (FID) approval in 2013, began commercial operations in late 2017. The three trains each have a capacity of 264 billion cubic feet per year and draw natural gas from the South Tambeykoye natural gas and condensate field located in the northeast of the Yamal Peninsula.<sup>41</sup> To transport LNG from its arctic location, Yamal LNG has commissioned 15 ice-class tankers.<sup>42</sup> Exports are mainly aimed at Asian LNG markets, and during most of the year, the ice-class tankers will take cargoes west from the Yamal peninsula directly to Asia, transiting the Arctic Ocean and the Bering Strait. In winter, when the direct route is not navigable, the ice-class tankers take cargoes west from the Yamal peninsula to Europe.

Russian companies are also interested in building a network of small- and mid-scale LNG liquefaction facilities, mainly to serve remote natural gas demand and to serve transportation demand for LNG in Russia and neighboring areas.<sup>43</sup> In January 2019, Russia's first floating storage and regasification unit (FSRU) began operating off the Baltic coast in the Kaliningrad region. The FSRU has a capacity of about 131 Bcf per year and was built to act as an alternative source of natural gas supply for the region, which, prior to January 2019, received natural gas solely from the Minsk—Vilnius—Kaunas—Kaliningrad pipeline. The Kaliningrad region is a small province located on the Baltic coast between Poland and Lithuania and is geographically isolated from the Russian mainland.<sup>44</sup>



You can find updates on Russia's natural gas sector in the latest **Country Analysis Executive Summary**.

## Electricity

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### Sector organization

A number of ministries and regulatory agencies are involved in the power sector. The Ministry of Energy is in charge of general energy policy, including development of the legal framework for the electric sector and also approves investment plans for Russia's electric transmission system. The main regulatory agency involved in the sector is the Federal Antimonopoly Service, which regulates transmission tariffs and oversees compliance with the unbundling rules and charges of abuse of market dominance in competitive electric markets.

Russia has seven regional power systems in the power sector. These systems are: the East, Center, Middle Volga, Urals, Northwest, North Caucasus, and Siberia. The East system is not well connected to the other regional power systems and operates separately from its closest neighbor to the west, the Siberian system. The remaining six systems covering European Russia are well integrated with one another and connected to systems in neighboring countries.<sup>45</sup>

Before 2001, the Russian power sector was essentially a state monopoly and the RAO Unified Energy System (UES) was the state-owned enterprise (SOE) responsible for the generation, transmission, and distribution of electricity to all end users in the country. However, the power sector began to restructure starting in 2001, and much of the sector, particularly in power generation, was privatized. The reform required ownership unbundling in the electric sector, separating the industry into largely privately owned, competitive generation assets and state-controlled, regulated transmission assets, and RAO UES was eventually liquidated in 2008.<sup>46</sup> No company is allowed to own both generation and transmission assets. The Federal Grid Company, which is more than 70% owned by the Russian government (directly and through Gazprom), controls most of the transmission and distribution infrastructure in Russia. The grid comprises more than 1.5 million miles of power lines, including slightly less than 100,000 miles of high-voltage cables of 220 kilovolts (Kv) or more. The government has been trying to attract private investment into the wholesale and regional electric generating companies, but it is unclear if the government's efforts have been made any significant progress.<sup>47</sup>

### Coal

Although coal accounts for a relatively modest share of Russia's total energy consumption, coal is a more vital part of consumption in Siberia, where most Russian coal is mined.

More than half of Russia's coal production comes from the Kuzbass region in southwestern Siberia. Kuzbass coal travels long distances by rail to reach ports in the west or the east of the country for export to European or Asian consumers. This long overland transport generally puts Russian coal at an economic disadvantage to competing sources of coal. In spite of the geographic challenge, Russia's coal exports have generally grown steadily since the late 1990s and are likely to continue growing in the future as a result of increasing demand in Asia.<sup>48</sup>


Russia's coal-exporting ports are geographically located to serve either European or Asian markets. Some of Russia's major coal ports include Murmansk, Ust-Luga, and Tuapse, all of which lie in the West and handle exports to Europe. Vanino and Vostochny lie in the East and handle exports to Asia.<sup>49</sup> China and some East European countries receive coal imports from Russia directly by rail.<sup>50</sup>

## Nuclear energy

The state atomic energy corporation, Rosatom, controls all aspects of the nuclear sector in Russia, including uranium mining, fuel production, nuclear plant engineering and construction, generation of nuclear power, and nuclear plant decommissioning. Rosenergoatom is the division of Rostom and is the sole utility company that operates the nuclear power plants.<sup>51</sup>

Russia has 38 operating nuclear reactors, almost all of which are located in the western part of the country. The two exceptions are the Bilibino plant and the *Academician Lomonosov* floating nuclear power plant in Pevek, both of which are located in the far northeast.<sup>52</sup>

Many of Russia's nuclear power facilities are aging. The working life of a reactor is considered to be 30 years, but Russian government has established an active life-extension program, which allows the working life limit of a reactor to be extended for another 15 years.<sup>53</sup> Russia's current federal target program envisions a 45% to 50% nuclear power share of total generation by 2050 and a 70% to 80% share by 2100. To achieve these goals, the program intends to replace rapidly aging nuclear reactors with reactors that employ a closed fuel cycle, to eliminate the production of radioactive waste that is a by-product of nuclear-derived power generation.<sup>54</sup>

You can find updates on Russia's power sector and other fuel sources in the latest  Country Analysis Executive Summary.

## Notes

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- Data presented in the text are the most recent available as December 13, 2021.
- Data are EIA estimates unless otherwise noted.

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<sup>2</sup> Dianne E. Rennack, Cory Welt. "[U.S. Sanctions on Russia: An Overview](#)," *Congressional Research Service*, IF10779, September 1, 2021.

<sup>3</sup> "[Announcement of Expanded Treasury Sanctions on Entities within the Financial Services and Energy Sectors of Russia, Against Arms or Related Materiel Entities, and those Undermining Ukraine's Sovereignty](#)," press release, U.S. Department of the Treasury, accessed September 21, 2021. Dianne E. Rennack, Cory Welt. "[U.S. Sanctions on Russia: An Overview](#)," *Congressional Research Service*, IF10779, September 1, 2021.

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- <sup>5</sup> Countering America's Adversaries Through Sanctions Act, [Title II—Sanctions with Respect to the Russian Federation and Combating Terrorism and Illicit Financing](#), 2017. Cory Welt, et al. "[U.S. Sanctions on Russia](#)," *Congressional Research Service*, R45415, January 17, 2020.
- <sup>6</sup> James Henderson and Julia Loe, "[The Prospects and Challenges for Arctic Oil Development](#)," Oxford Institute for Energy Studies, (November 2014), p. 34.
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- <sup>9</sup> James Henderson. "[Key Determinants for the Future of Russian Oil Production and Exports](#)," Oxford Institute for Energy Studies, Paper: WPM 58, April 2015, pp. 36 – 48.
- <sup>10</sup> Sergei Ermolaev. "[The Formation and Evolution of the Soviet Union's Oil and Gas Dependence](#)," *Carnegie Endowment for International Peace*, Working Paper, March 29, 2017. Production estimates for Urals-Volga region based on data provided by *Rystad Energy*, accessed November 9, 2021.
- <sup>11</sup> Note there are two large oil fields in Russia named Prirazlomnoye. One is operated by Rosneft and is located onshore in the Khanty-Mansiisk area of West Siberia. The other is operated by Gazprom and is located in the Arctic offshore. "[Khanty-Mansi Autonomous Oblast, Russia](#)," The Northern Forum Secretariat, accessed September 21, 2021. "Prirazlomnoye (Rosneft) Asset Factsheet," *Rystad Energy*, September 10, 2021. "[Samotlor: The Giant of Siberia](#)," *Energy Global News*, April 14, 2019.
- <sup>12</sup> "[Rosneft Oil Company has successfully closed the transaction of selling 15% shares in Vankorneft JSC to ONGC Videsh Limited](#)," press release, Rosneft, May 31, 2016. "[History \[of RN-Vangkor LLC\]](#)," Rosneft company website, accessed September 21, 2021.
- <sup>13</sup> "[JSC Verkhnechonskneftegaz](#)," Rosneft company website, accessed September 21, 2021.
- <sup>14</sup> Nadia Radova, ed. Alisdair Bowles. "[Transneft sees fast growth in Arctic, E Siberian crude pipeline flows](#)," *Argus Global Media*, April 5, 2019.
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- <sup>16</sup> "[Nine million tonnes of oil produced at Lukoil's North Caspian fields](#)," press release, Lukoil, April 3, 2017. "[Lukoil produces three million tonnes of oil at Vladimir Filanovsky field](#)," press release, Lukoil, July 11, 2017.
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