



How Russian oil flows to Europe

Imports, dependency, trade value, ports and pipelines

7 March 2022

Summary

Transport is the largest consumer of oil in the EU, and the EU is dependent on imports for 97% of its oil products. One out of four barrels of crude oil that supplies the Bloc comes from Russia. In the context of the Russian Federation's invasion of Ukraine, this briefing compiles key information on the EU's dependence on Russian oil.

The dependence on Russian oil is not uniform across the continent: Slovakia is the most dependent member state, with four out of five barrels of all oil products originating from Russia, while the dependency of Poland, Finland, and Lithuania is more than two thirds. From 2004 to 2017, imports of oil products from Russia were relatively constant, exceeding 200 Mt per year. There has been a reduction in Russian imports from 2016, with 2020 imports being the lowest they've been since the year 2000.

The EU and UK are the largest trading partners with Russia for fuel products (oil, gas, and coal), accounting for 50% of revenues in 2019. In the recent context of the war in Ukraine, Russia has been synonymous with gas, but it is actually oil that generates the largest revenues for the country. In 2021, oil products being sold on the global market earned Russia three times more money than gas. This is largely inline with the value of EU imports.

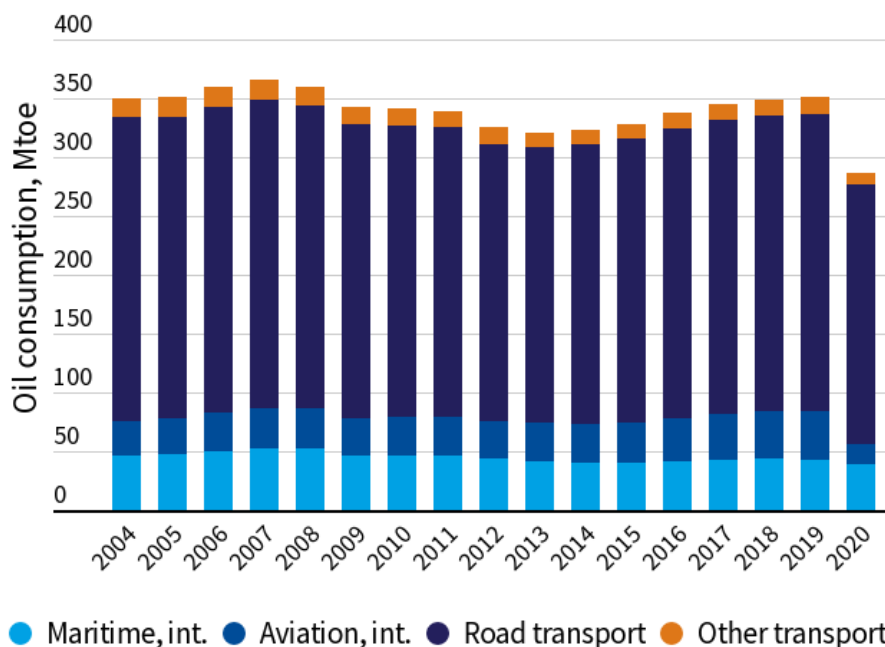
The EU is connected by pipelines to Russian oil, but most of the imports into the Bloc are via oil tankers and ports. About 70% to 85% of imported crude oil from Russia is shipped from its western ports on the Baltic sea and the Black sea and in smaller volumes from its Arctic terminals, while the remaining is directly delivered through the Druzhba pipeline. In 2019, crude oil coming by pipeline accounted for 4% to 8% of the EU's total crude imports. The Druzhba pipeline supplies refineries in Poland, Germany, Hungary, Slovakia and Czechia. The countries with the largest imports of Russian crude oil are the Netherlands, Italy, France and Finland. Only the top 10 ports importing Russian crude oil account for 51% of all imports by sea.

In conclusion, the European Commission must include Russian crude oil in its upcoming energy independence strategy. While the EU is heavily reliant on Russian crude, it is also one of the key revenue streams of Russian exports and has been helping to fund its military.

Introduction

The transport sector is the only sector in the EU that has increased emissions from 1990. These emissions have been driven by what has been up until recently, transport's insatiable thirst for oil. In 2019, the year before the Covid pandemic, oil demand in the EU was the same as it was 15 years prior at around 350 Mtoe. (Fig. 1). In terms of energy, transport is Europe's largest consumer of oil, responsible for 65% of total oil demand (Fig. 2). Road transport consumes 50% of all of the EU's oil alone.

In the context of the Russian Federation's invasion of Ukraine, we show the key graphs of how transport oil consumption has been the largest contributor of the flow of money to Russia. T&E, our Ukrainian members and many other organisations have called for an embargo¹ on oil from Russia to make sure that Europe (and the rest of the world) stops financing Putin's war in Ukraine. While T&E has been highlighting the geopolitical risks of its oil imports over the last 6 years^{2,3}, there is increasing interest in how Europe has helped to fund the Russian war effort.



Source: Eurostat

Figure 1: Oil consumption in the EU, by transport sector

¹ T&E (2022) End Russian oil and gas imports. Available:

www.transportenvironment.org/discover/end-imports-of-russian-oil-and-gas-to-stop-financing-putins-war/

² T&E (2016) Europe increasingly dependent on risky oil imports. Available:

www.transportenvironment.org/wp-content/uploads/2021/07/2016_07_Briefing_Europe_increasingly_dependent_risky_oil_FINAL_0.pdf

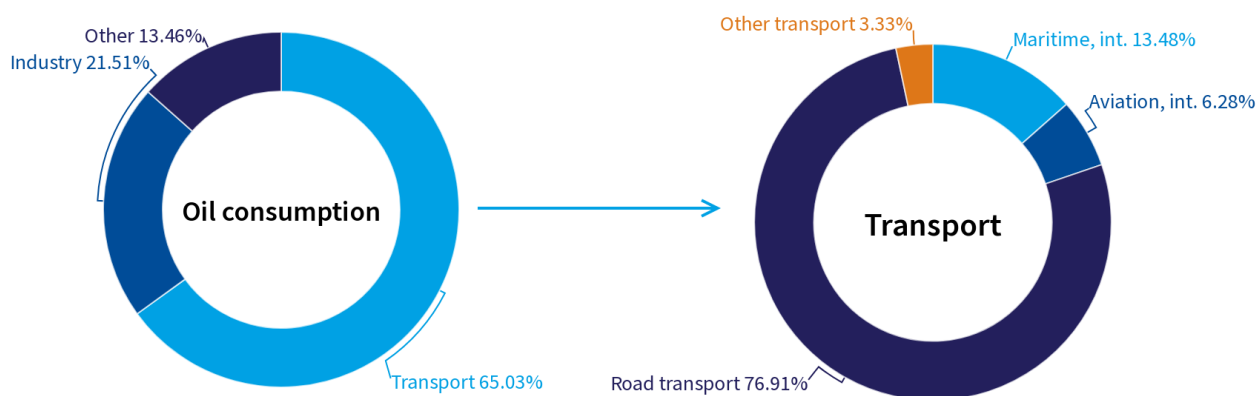
³ T&E (2020) Europe's deepening dependency on foreign oil. Available:

www.transportenvironment.org/discover/europes-deepening-dependency-foreign-oil/

In this short document, we will show: how dependent Europe is on Russian oil, and how much does that cost European citizens; how much oil enters the EU Bloc by pipeline, how much by port, what are the ports that have the largest share of Russian oil, and many other relevant facts in the context of a potential embargo.

The European Commission must include Russian crude oil and oil products in its upcoming energy independence strategy.

This document is the first of a three part series. In part 2, we will look at what Europe can do in the short, medium, and long term to reduce its oil consumption and this energy dependency on Russia for transport. In part 3, we will look at what Europe must **avoid** doing to fill the gap that would be left from an embargo, preventing aggravating knock-on effects from the war in Ukraine, such as food security beyond EU borders.



Note: Share by energy. Source: Eurostat

Figure 2: Oil consumption by sector, in the EU, 2020

1. How dependent is the EU on Russian oil?

In 2020, the EU was reliant on imports for 95.9% of its crude oil supply⁴. In terms of import dependence, the ratio of net imports to gross available energy, the EU has a dependency of 96.2% for crude oil and 97.0% for all oil products. Of the total supply, the EU imported 113 Mt of crude oil from Russia in 2020, and therefore the EU's dependence on Russian crude oil is 24.9% of total supply. The EU has a dwindling indigenous supply of crude oil production, amounting to 18.7 Mt in 2020, down from 41.7 Mt in 2004. Looking at direct imports of oil and petroleum products from Russia, individual countries are much more

⁴ In 2020, the EU produced 18.7 Mt of crude oil and imported 440.3 Mt. Eurostat (2022) Oil and petroleum products - a statistical overview. Available: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Oil_and_petroleum_products_-_a_statistical_overview&oldid=315177

exposed than others (Fig. 3). Slovakia is the most dependent member state, at 78.4%, while Poland, Finland, and Lithuania all import more than two thirds of their oil products from Russia. It should be underlined however that there is also a significant amount of trade within the bloc and with other regions.

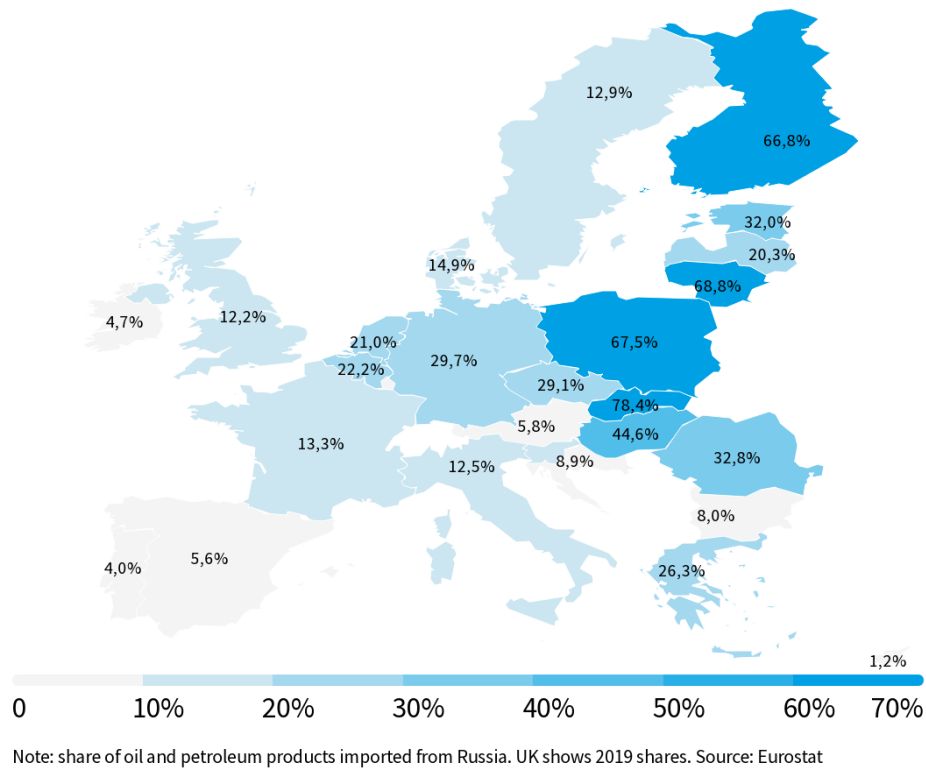
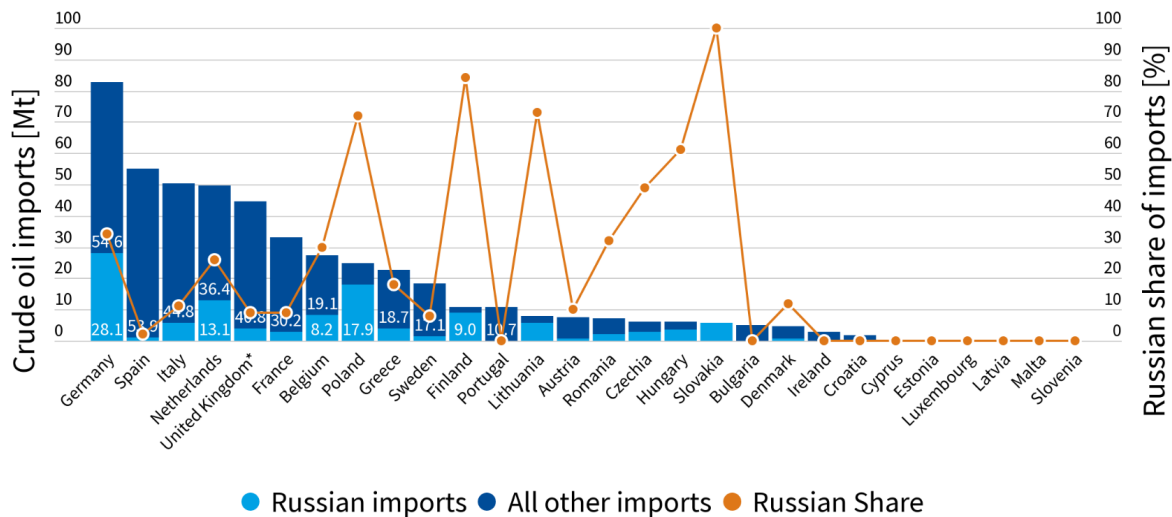


Figure 3: Dependence on Russian oil and petroleum products in the EU and UK, 2020.

Fig. 4 shows the imports of crude oil per country and highlights the share coming from Russia. While Russia is the main source of imports for many countries, Sweden for example has heavy reliance on Norwegian oil imports. Belgium and the Netherlands, with their large ports in Antwerp and Rotterdam have more flexibility to import from a variety of sources. Landlocked Luxembourg can only import from intra-EU sources. Countries like the Netherlands and the UK import high quantities and export the majority of it to either the internal market or other markets, particularly petrol to the United States⁵. So this means that Russian oil will be a higher percentage of fuel used for many countries than what is shown in Fig. 3, as they will be importing refined oil products from neighbouring EU countries that are refining it.

⁵ Cambridge Econometrics (2020) Oil Dependency in the EU. Available: <https://www.transportenvironment.org/discover/europes-deepening-dependency-foreign-oil/>



Source: Eurostat. *United Kingdom uses 2019 values

Russia supplies one-quarter of the EU's crude oil imports

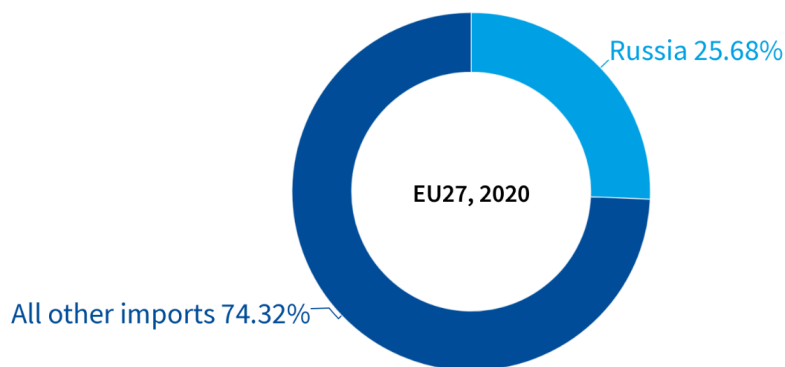
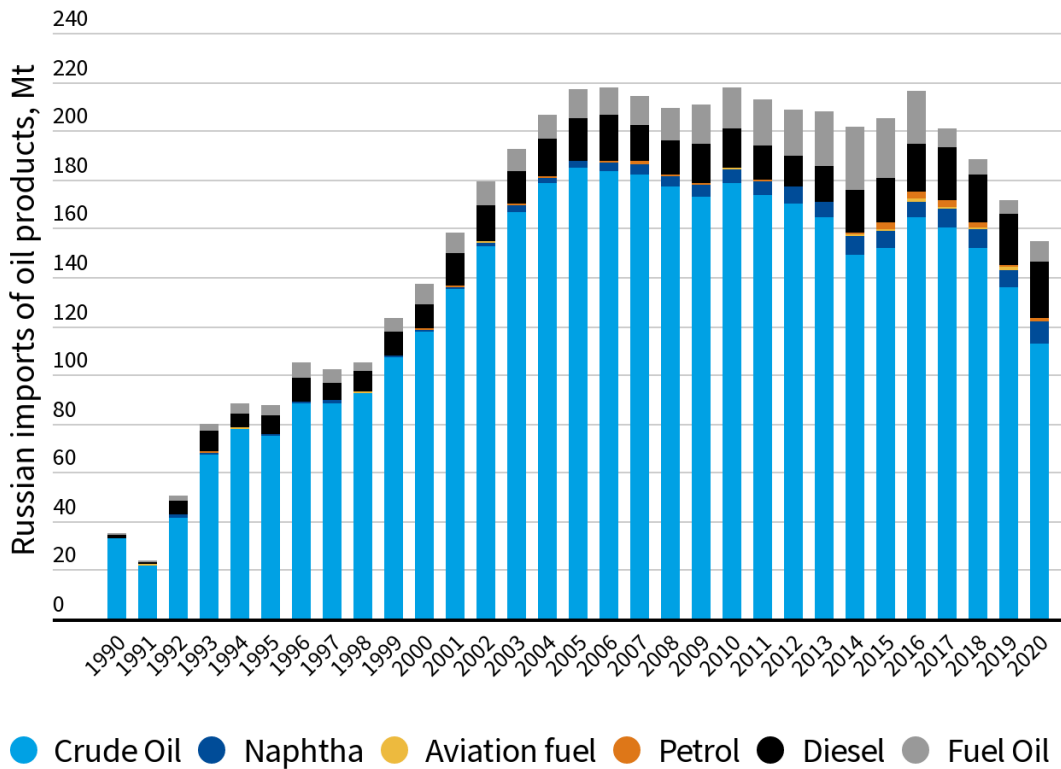


Figure 4: Russian share of crude oil imports, 2020 (above); total imports with Russian share (below)

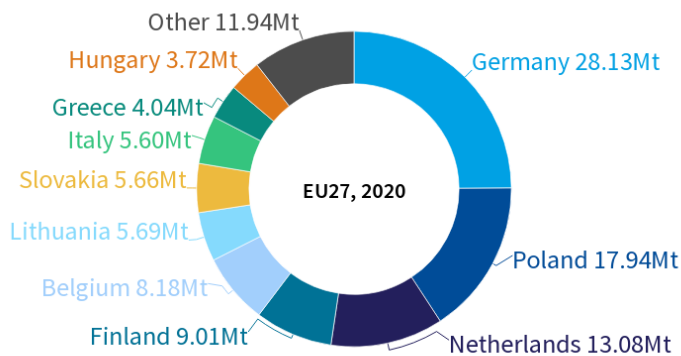
In Fig. 5, we show the total volumes of crude oil and refined products imported into the EU from Russia. From 2004 to 2017, imports were relatively constant, exceeding 200 Mt. Despite Russia’s involvement in Crimea in 2014, imports increased from 2014 to 2016. There has been a reduction in Russian imports from 2016, however, with the lowest imports in 2020 (since the year 2000) continuing the trend but also influenced by the covid-related restrictions on transport in most economies that reduced oil demand significantly. In 2020, Russian crude oil imports were 113 Mt.



Source: Eurostat

Figure 5: EU27 and UK imports of Russian crude oil and refined oil products

In Fig. 6, we have a look at the largest importers of Russian crude oil in the EU. Germany is the largest, at 28 Mt in 2020 and a quarter of the total imports, followed by Poland, and the Netherlands, that make up roughly half of all Russian crude imports.

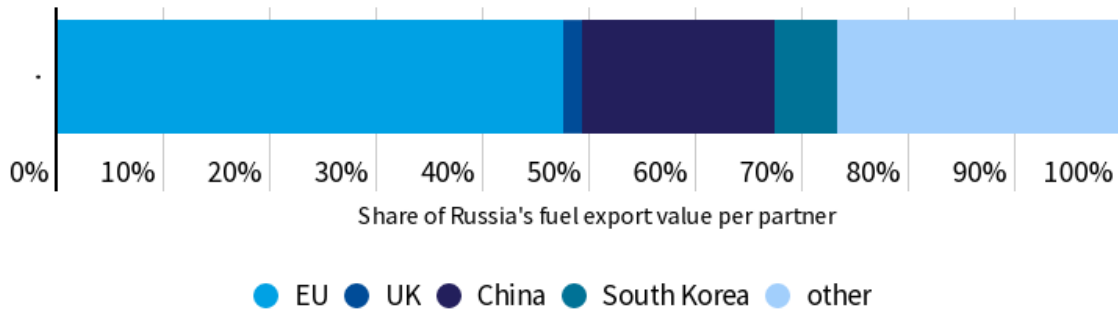


Russian crude oil imports in the EU27. Source: Eurostat

Figure 6: Largest EU importers of Russian crude oil

2. How much does Russia earn from its energy exports?

Russia is a large exporter of energy commodities, namely crude oil, refined petroleum and oil products, coal, and natural gas. According to the WITS of the World Bank⁶, by value the EU and the UK import half of all of Russia's fuel exports (Fig. 7). China and South Korea are the other large importers of Russian fuel.

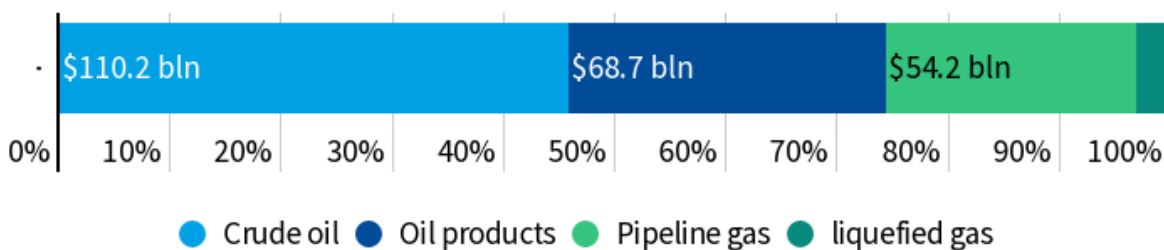


Source: WITS

Fuel includes crude, petrol, diesel, coal and natural gas (HS88 code 27).

Figure 7: Russia's fuel export partners, 2019

In 2021, Russian commodities exports reached \$492 billion. In terms of oil and gas, the value of Russia's exports were close to a quarter of a trillion dollars in 2021, or half of its total commodities exports. As shown in Fig. 8, 75% of the value of these commodities is from crude oil and oil products, such as refined diesel and petrol. Typically this share is higher, as 2021 has shown the highest spot gas prices ever recorded. While there is typically a strong association made between Russia and its gas, the main income stream for Russia is, and has been, its oil.



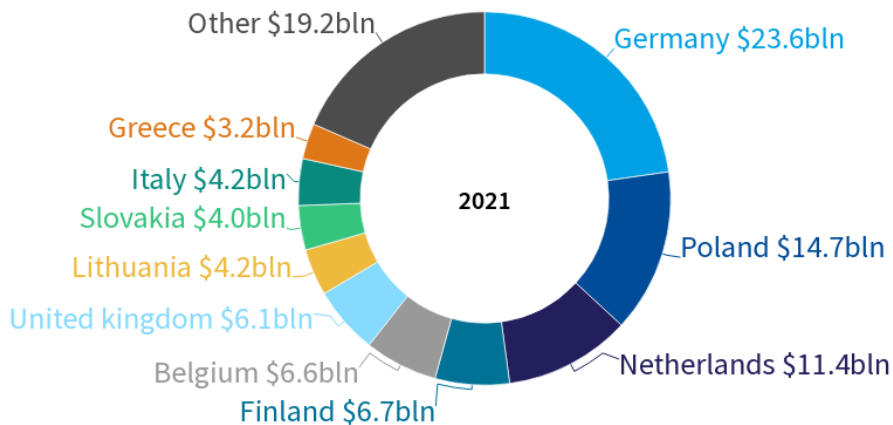
Source: Reuters

Figure 8: Russia's total exports of oil and gas revenues, 2021

In Fig. 10, we show the value of EU and UK imports of Russian crude, petrol, diesel, and gas. Compared to Fig. 5, there is much greater variability in the value of imports, despite relatively constant import volumes, based on the market values for the products. In 2020, 75% of the value of Russian oil and gas imports

⁶ World Integrated Trade Solution, World Bank. Accessed March 2022. <https://wits.worldbank.org/>

were for oil products⁷. In 2021, we estimate that crude oil, petrol and diesel imports from Russia are \$104 billion (\$285 million per day), or roughly €88 billion. This is around a quarter of a billion euros, every day. For gas, we approximate that imports in 2021 are \$43.4 billion, or €37 billion; €100 million per day. Taking Germany’s import share of Russian crude oil, petrol, and diesel imports from 2020, Germany alone will have spent in the order of €65 million per day on Russian these oil products. Applying the same approach, we can approximate the money spent by each country for Russian crude, petrol, and diesel, as shown in Fig. 9.

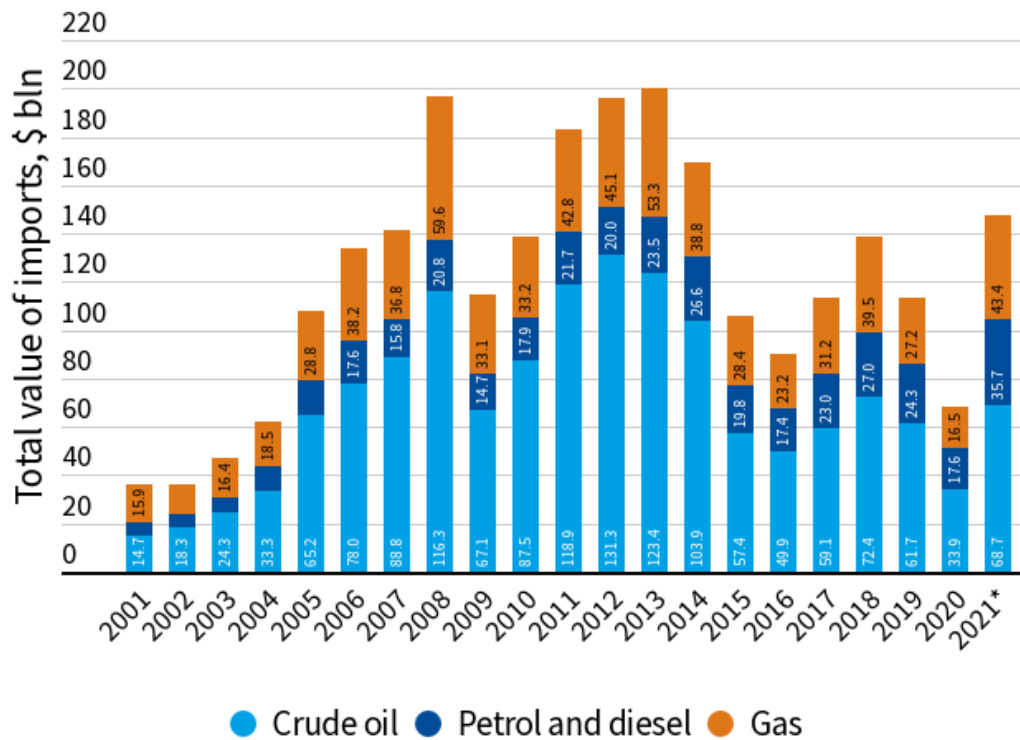


Sources: World Bank, Eurostat. T&E Analysis. Note: Oil includes imports of crude oil, petrol and diesel

Figure 9: The largest importers of Russian oil in the EU, 2021

As the European Commission considers its energy independence strategy, it should note the blocs high dependence on Russia for oil products, and also the high value of these oil product imports. Given that the Russian oil and oil product revenues are \$179 billion in 2021 and that we approximate that the EU and UK are importing \$104 bln, the EU and UK buy around 60% of all Russian oil products by value. It is clear that an embargo on oil would have a significant impact on the flows of EU money to Russia.

⁷ Note that this figure does not include the value of imports of fuel oil, used in ships, aviation fuel, and naphtha.



Note: 2021 volumes assumed to equal those of 2019. Sources: Worldbank, DG Energy Crude Oil Imports, Eurostat

Figure 10: Value of EU and UK imports of Russian energy products

3. How does Europe get its oil?

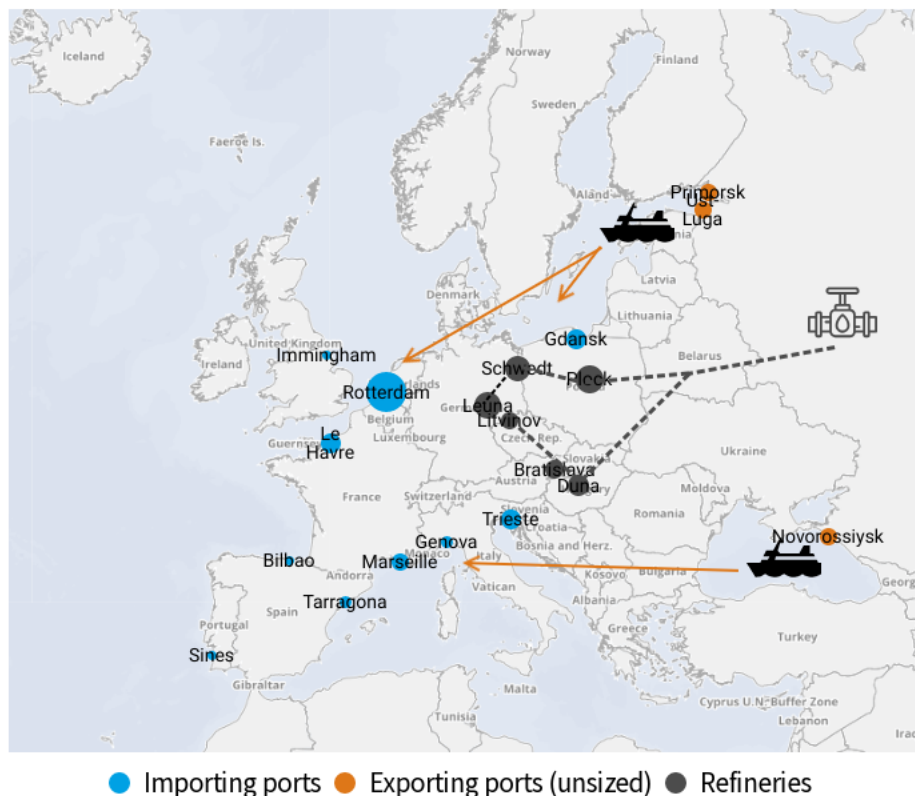
In 2019, the EU imported 507 Mt of crude oil of which more than 90% arrived by port. In 2020, the first year of the covid pandemic which saw many lockdowns and this reduction in mobility and its associated oil consumption, the EU imported 440 Mt of crude oil in total. Russia typically provides 25% of the imported crude oil, which amounted to 2.6 million barrels per day, or 124 Mt in 2021⁸. The crude oil from Russia is drilled in Western Siberia, the Urals and the Caspian and is transported west through a network of pipelines and ports. Typically, 70% to 85% of the imported crude oil from Russia is shipped from its ports on the Baltic Sea, the Black Sea and from its Arctic coast terminals to European ports. Around two thirds of crude imported by ships depart from the Baltic ports Primorsk and Ust-Luga, in the direction of EU countries with northern coastlines, while smaller volumes are shipped from the Black Sea port Novorossiysk, mainly destined to Mediterranean countries, and the Arctic terminals⁹. The remaining is directly delivered to European refineries through the Druzhba pipeline. Fig. 11 provides a visualisation of

⁸ Sladkova, N et al. (26 Jan, 2022) Ukraine Crisis Could Hit Russia-Europe Oil Flows. *Energy Intelligence*. Available: <https://www.energyintel.com/0000017e-9655-da5f-a7ff-df75716f0000>

⁹ Todd, F (24 Jan 2022) Ukraine crisis fallout could hit oil supplies. *Argus*. Available: <https://www.argusmedia.com/en/news/2294733-ukraine-crisis-fallout-could-hit-oil-supplies>

these flows. In 2019, 20 to 40 Mt of crude were delivered through the Druzhba pipeline, or 4% to 8% of total European crude imports¹⁰.

The Druzhba pipeline, “Friendship” in English, delivers crude oil to several large refineries in Central Europe. Coming western Russia, the pipeline splits in southern Belarus into a northern and southern branch. The northern branch, which typically accounts for two thirds of the total throughput, supplies refineries in Poland and Germany, while the southern branch, which runs through Ukraine, supplies refineries in Hungary, Slovakia and Czechia¹¹.



Notes: Importing ports sized by mass of imported fuel (Mt per year); Refineries sized by capacity (Mt per year)

Figure 11: Map of main trade flows of crude from Russia to the EU and UK

¹⁰ The lower bound was calculated using Eurostat, while the upper bound was calculated using Lee, J (10 Feb, 2022) Russia and Europe Are Vital to Each Other When It Comes to Oil. *Bloomberg*. Available: <https://www.bloomberg.com/news/articles/2022-02-10/russia-and-europe-are-vital-to-each-other-when-it-comes-to-oil?sref=M2YKkTZ6>

¹¹ Lee, J (10 Feb, 2022) Russia and Europe Are Vital to Each Other When It Comes to Oil. *Bloomberg*. Available: <https://www.bloomberg.com/news/articles/2022-02-10/russia-and-europe-are-vital-to-each-other-when-it-comes-to-oil?sref=M2YKkTZ6>

4. What are the countries and ports that import the most crude oil?

As Russia's main oil exports to Europe is crude oil, in this section, we show the countries and ports that import the largest amount of crude oil products by oil tanker, highlighting the share that comes from Russia. Fig. 12 shows the imports of crude oil by port by country registered from its ports, in 2019. The 2019 total for the EU and UK for imports of crude oil by ports was 467 Mt; of this, 120 Mt came from Russia. The Netherlands is the largest import country, both in terms of total amount of oil (94.1 Mt) and the total amount that comes from Russia (26.8 Mt). Spain, France, Italy, and the UK are the next largest importers of crude oil by oil tanker. In terms of the largest importers of Russian crude, Italy (14.4 Mt), France (12.8 Mt), Finland (10.6) and Lithuania (8.8 Mt) complete the top 5 ranking. Russian imports of crude by oil tanker by Finland, Lithuania and Romania make up 88%, 91% and 88% of their total port imports, respectively. Note that the imports into ports do not necessarily match with the total imports of Fig. 6. This is largely because of transshipments. For example, in the case of the Netherlands, half of the crude oil that arrives at Rotterdam is transported by pipeline to refineries in Germany and Belgium.¹²

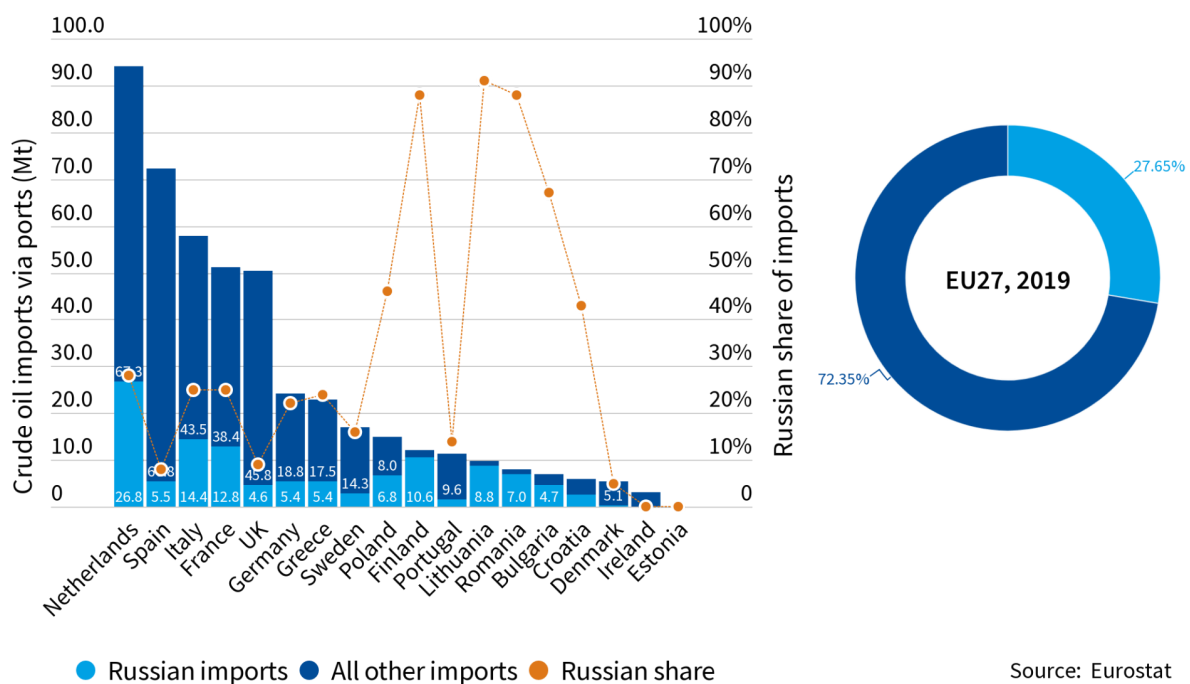


Figure 12: Quantities of crude oil imports from Russia via EU and UK ports, 2019

Fig. 13 shows the 10 ports importing the most Russian crude oil, representing 51% of Russian crude oil imports via ports. Rotterdam in the Netherlands is essentially the only Dutch crude oil importing port, and that is a similar case for Gdansk in Poland. Trieste and Genova are Italy's largest importers of Russian crude, while Le Havre and Marseille are the largest for France (together representing 90% of France's imports). If the port of Rotterdam, which handles almost one quarter of the total Russian crude oil

¹² Port of Rotterdam, refining and Chemicals, <https://www.portofrotterdam.com/en/setting/industry-port/refining-and-chemicals>

shipped in Europe, was to have an embargo on Russian crude oil imports, that would have a significant impact on how much Putin’s oil is imported into the continent.

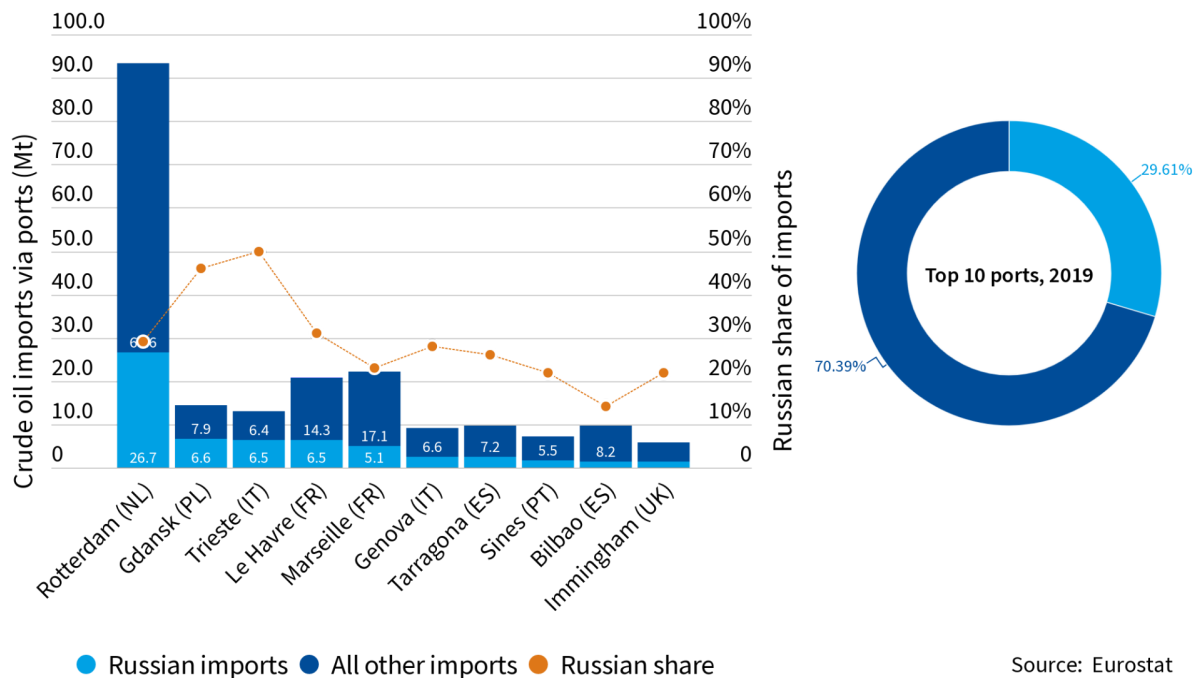


Figure 13: Top 10 EU and UK ports of Russian crude oil, 2019

5. Why is an oil embargo important?

Given that the EU is Russia’s largest importer of fuel products, and that most of the money Russia earns from its exports is from crude oil and oil products, we looked to see if there was a correlation with Russia’s military spending. The Stockholm International Peace Research Institute (SIPRI) provides this data as it has been reported.¹³ While correlation doesn’t mean causation, GlobalSecurity gives more qualitative detail.¹⁴ The Russian Ministry of Defence has its budget tied to the price of oil. Given the constant and reliable demand for oil from the EU (Fig. 5), it is clear that the EU has been a key contributor to the modernisation of the Russian military (Fig. 14).

¹³ SIPRI Military Expenditure Database. Accessed February 2022. Available: <https://www.sipri.org/databases/milex>

¹⁴ Global Security. <https://www.globalsecurity.org/military/world/russia/mo-budget.htm>



Importing Russian crude oil fuels their military spending

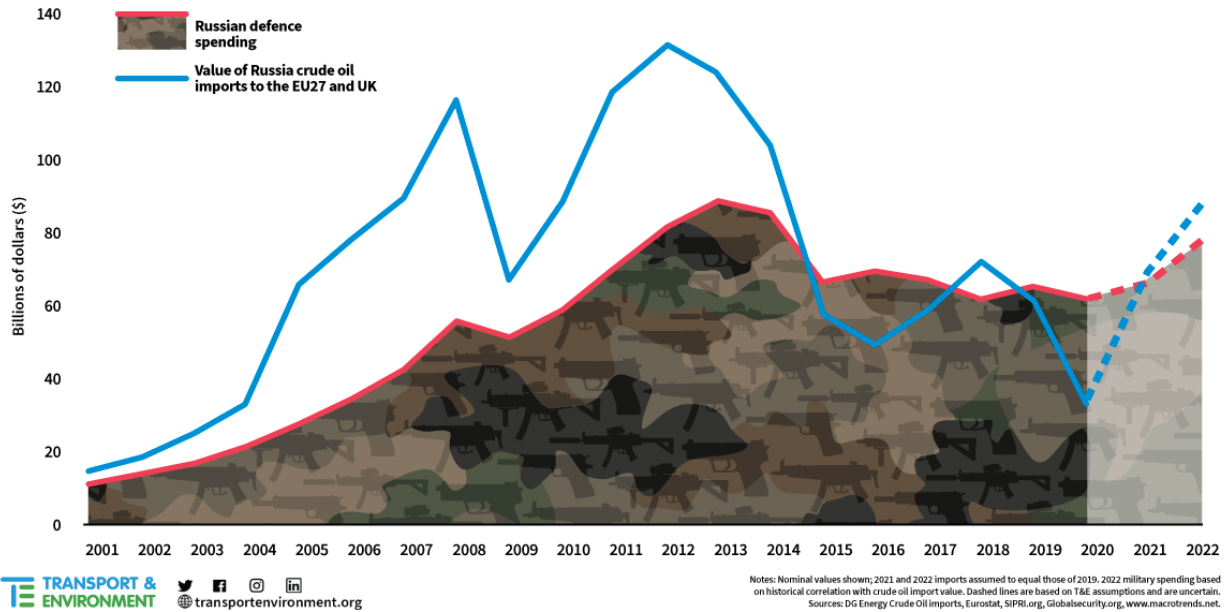


Figure 14: Value of Russian crude oil imports to the EU27 and UK compared to Russian military spending

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