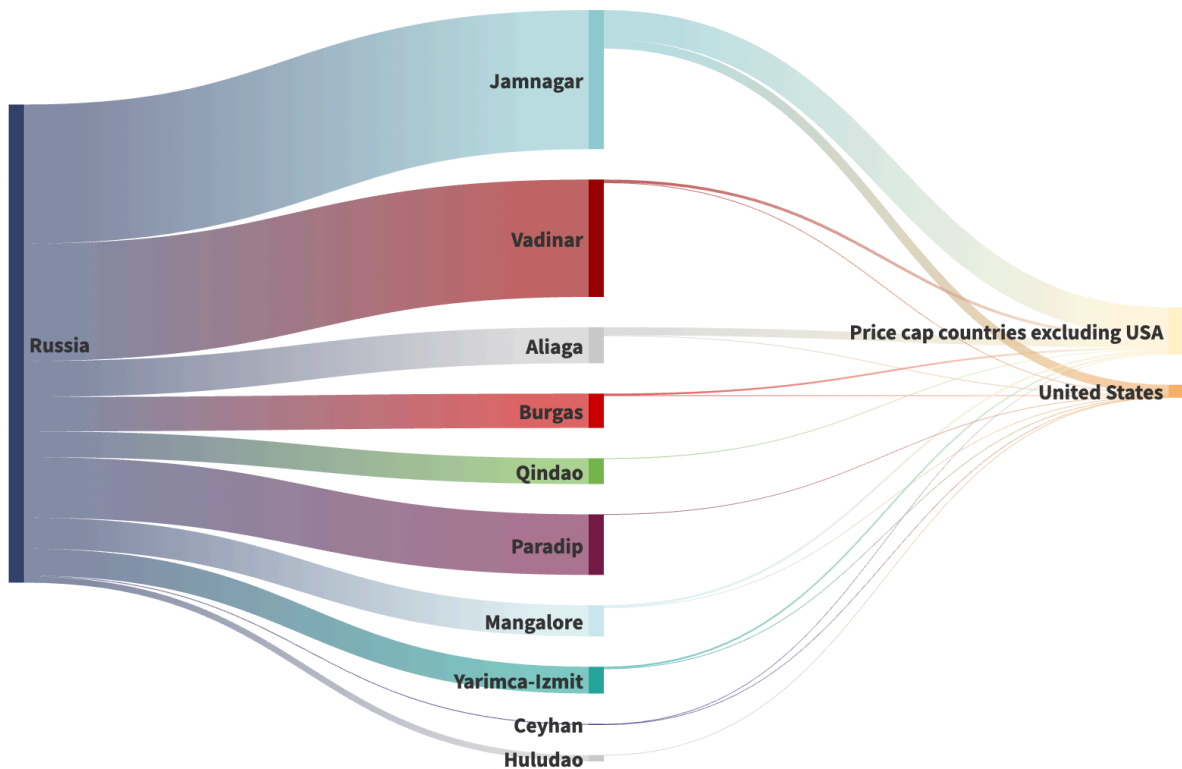


Refining loophole widens: 44% increase in sanctioning countries imports of oil products from Russian crude in 2023

Oil products derived from Russian crude flowing to PCC and USA

5 December 2022 - 31 December 2023 | Million tonnes



Source: CREA analysis based on Kpler and Eurostat

Key findings

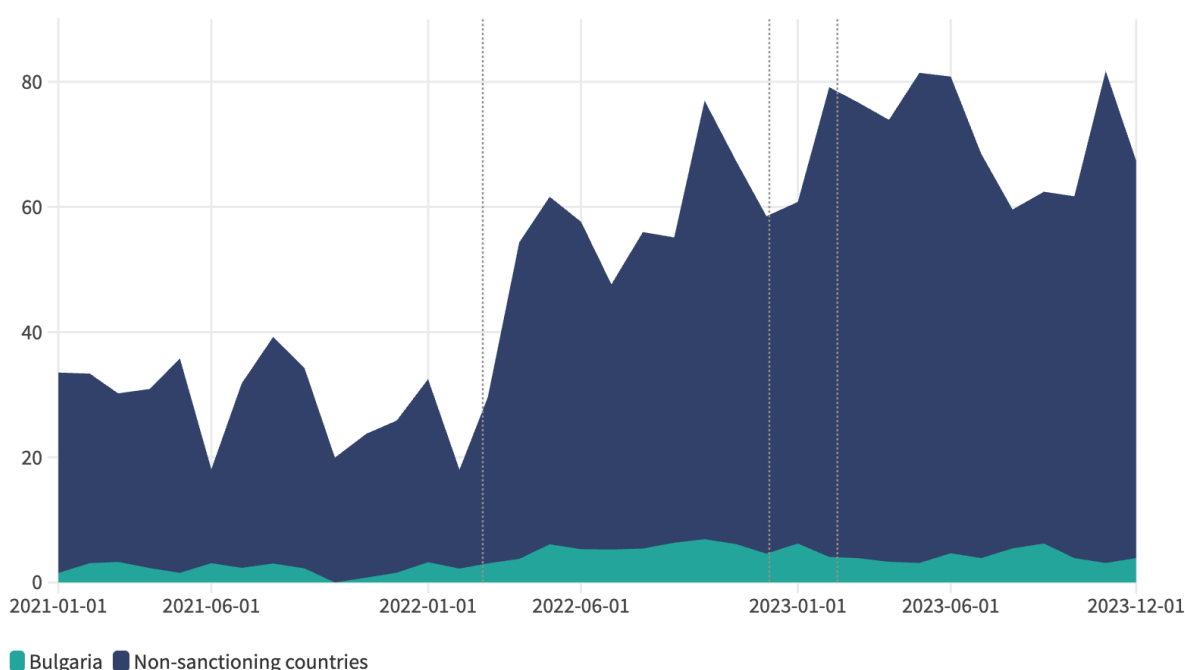
- EUR 8.5 bn of price cap coalition¹ countries' imports of oil products between December 2022 and December 2023, were made from Russian crude. These imports in a 13 month period are [equivalent to 68% of the EU's annual](#) commitment to aid Ukraine between 2024 and the end of 2027.
- In 2023, there was a **44% year-on-year increase** in sanctioning countries' imports of oil products, by volume, produced from Russian crude.
- The price cap coalition's (PCC) imports of oil products made from Russian crude oil **generated EUR 1.7 bn of tax revenues for the Kremlin** from December 2022 to December 2023.
- Since the introduction of the price cap till December 2023, the **USA imported EUR 1.6 bn worth of oil products derived from Russian crude**. EUR 807 mn of Russian crude was used to make these products for the USA.
- Price cap coalition countries imported **EUR 2.4 bn of diesel derived from Russian crude**.

¹ [Price cap coalition countries](#) (PCC) consist of the EU, G7 and Australia. [Norway](#) and [Switzerland](#) also implement the oil price cap policy.

The threat of the refining loophole

Volume of Russian crude used to make products for PCC

Thousand tonnes of Russian crude | January 2021-December 2023



CREA analysis using Kpler and Eurostat •

Dotted lines are: invasion of Ukraine, EU/G7 ban on crude oil, EU/G7 ban on oil products



When EU/G7 countries introduced the price cap and an embargo on the imports of Russian crude oil in [December 2022](#), they hoped this would go on to affect the Kremlin's revenues and create a vacuum in its funding for the invasion of Ukraine. At first it forced Russia to offer huge discounts on their oil to attract new buyers.

The lack of a policy on refined oil produced from Russian crude meant that these new buyers — third countries not imposing sanctions — could import larger volumes of Russian crude, refine them into oil products and legally export them to price cap coalition countries² (PCC). This major loophole has helped stabilise the price of Russian crude and ensured that extortionate revenues keep flowing back to the Kremlin. The oil price cap and

²Price cap coalition countries/sanctioning countries consist of the EU, G7 and Australia. [Norway](#) and [Switzerland](#) also implement the oil price cap policy.

embargo did lower Russia’s export earnings by an [estimated 14%](#), but gaps in the sanctions such as the refining loophole have disappointingly deflated their impact.

In 2023, there was a 44% year-on-year increase in sanctioning countries’ imports of oil products, by volume, estimated as being produced from Russian crude from third countries. This bolstered an already existing trend — in 2022, there was a 66% increase in imports of oil products made from Russian crude in third countries — since Russia’s invasion of Ukraine. This analysis shows a widening in the refining loophole in 2023, expanding the gaps in the sanctions on Russia and enabling higher quantities of oil made from Russian crude to be used in countries that are considered to be Ukraine’s allies.

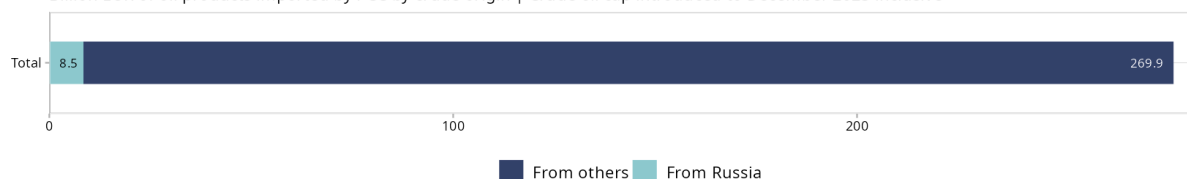
While volumes have increased monumentally, the year-on-year increase in the value of imports of Russian crude derived oil products has been a more modest 6%. CREA’s analysis estimates that the average price of exported Russian crude oil was 22% lower in 2023 compared to the prior year. This explains why the imported volume of oil products produced from Russian crude was significantly higher than the value. The trend of Ukraine’s allies buying oil products from countries increasing their reliance on Russian crude rose significantly in the first year after Russia’s full scale invasion. As shown by CREA’s analysis, in 2022 before bans were implemented, sanctioning countries’ value of imports of oil products from Russian crude saw a year-on-year increase of 115%.

This shows that while the ‘refining loophole’ has expanded its reach significantly in volume terms, in terms of value it hasn’t grown quite as significantly. This difference is due to a lower valuation of Russian oil, in 2023 — due in part to the discounts on Russian oil forced by the sanctions.

How much Russian crude ends up in price cap coalition countries?

Total oil products imported by PCC using Russian crude oil

Billion EUR of oil products imported by PCC by crude origin | Crude oil cap introduced to December 2023 inclusive



Source: CREA analysis using Kpler and Eurostat.

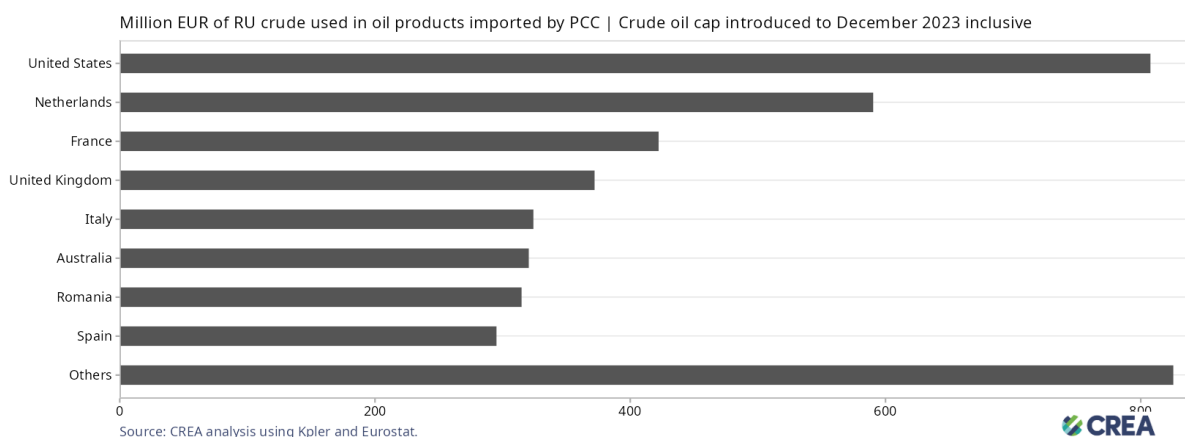
CREA’s analysis identified eight refineries that use Russian crude and are also major exporters of oil products to countries in the price cap coalition within the timeframe of the introduction of the price cap (5 December 2022) to the end of December 2023.

According to our estimates, 3% (EUR 8.5 bn) of price cap coalition countries’ imports of oil products from non-sanctioning countries in this time period were made from Russian crude. These imports in a 13 month period are [equivalent to 68% of the EU’s annual commitment to aid Ukraine between 2024 and the end of 2027](#). An estimated EUR 4.2 bn of Russian crude was used to make these products.

The price cap coalitions’ imports of oil products made from Russian crude oil generated EUR 1.7 bn of tax revenues for the Kremlin from December 2022 until the end of 2023.

Who is the largest importer?

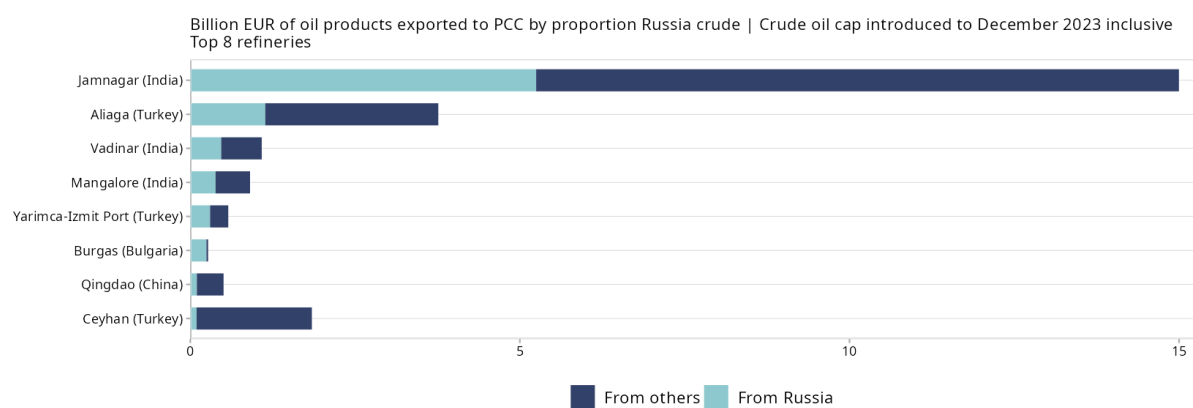
Value of Russian crude oil used to create oil products exported to PCC countries



The USA imported EUR 1.6 bn worth of oil products derived from Russian crude since the introduction of the crude oil price cap (5 December 2022) until the end of December 2023. EUR 807 mn of Russian crude was used to make oil products which were then exported to the USA — making it the largest importing country. EUR 2.6 bn of Russian crude was used to make oil products for countries in the EU, with the top three being the Netherlands (EUR 590 mn), France (EUR 422 mn) and Italy (324 mn).

Refineries exporting products made from Russian crude to the PCC

PCC imported oil products from refineries that imported Russian crude



Since the imposition of sanctions and the price cap, China, India and Turkey have emerged as the largest consumers of Russian crude. These countries have also become major refining hubs that subsequently export products to sanctioning countries.

In the 13 months since the oil price cap took effect, over one third of India's exports of oil products to sanctioning countries was derived from Russian crude (EUR 6.16 bn). A huge proportion of this came from the Jamnagar refinery, which alone exported EUR 5.2 bn of oil products produced from Russian crude to the price cap coalition. India imported Russian crude worth EUR 3.04 bn to create these products for sanctioning countries.

The USA imported EUR 1.2 bn of oil products from India, which were estimated as being refined from Russian crude. India imported EUR 733 mn of Russian crude to create these products for the USA.

Shockingly, price cap coalition countries imported a further EUR 469 mn worth of oil products from the Vadinar refinery in India. The refinery is owned by Nayara Energy. Russian energy giant Rosneft — [who are on OFAC's list of sanctioned entities](#) — is its single largest shareholder with a [49.1% share in](#) the company. The USA imported EUR 59 mn of oil products from Vadinar starting from the introduction of the crude oil price cap until the end of December 2023. According to CREA's estimates, 42% of the refinery's feedstock is Russian crude. Imports of oil products from the Vadinar refinery into countries such as the USA lead to significant tax revenues for the Kremlin in the form of taxing the exported

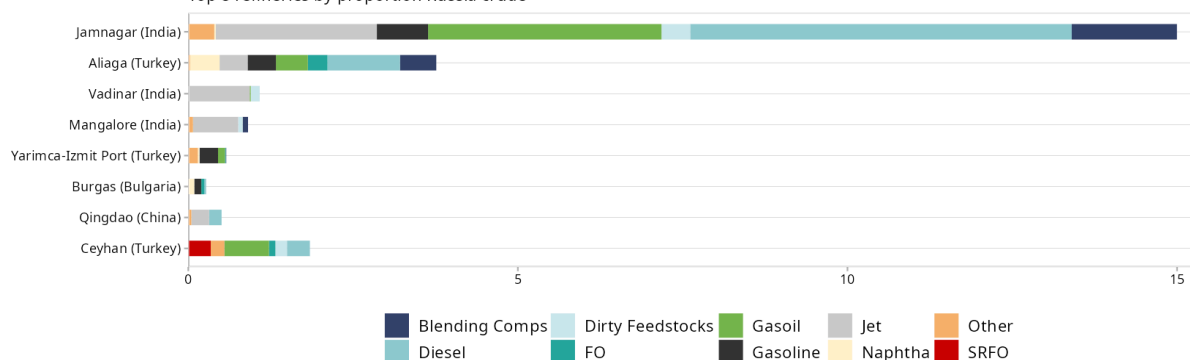
Russian crude oil but also reaping profit margins made by Rosneft in the sale of high valued oil products produced from discounted Russian crude.

Turkey's port of Aliaga (the location of the STAR refinery and Tupras Aliaga Izmir Refinery), was the second highest export location of oil products made from Russian crude to the price cap coalition. 30% of the refinery's total exports of oil products, worth EUR 1.13 bn, were derived from Russian crude. Bulgaria's Neftochim Burgas refinery, within the EU's borders, exported EUR 245 mn of oil products made from Russian crude to sanctioning countries. 90% of the refinery's feedstock has been Russian crude since the implementation of the EU's ban on Russian oil until the end of 2023. CREA has previously [investigated and highlighted the refinery's role in exploiting an EU derogation](#) to increase its imports of Russian crude and fund the Kremlin's war chest.

What products is the price cap coalition importing?

PCC imported oil products from refineries that imported Russian crude

Billion EUR of oil products exported to PCC by type | Crude oil cap introduced to December 2023 inclusive
Top 8 refineries by proportion Russia crude



Source: CREA analysis using Kpler and Eurostat.



Over one third of sanctioning countries' imports of oil products from the eight major refineries identified as using Russian crude, consisted of diesel, worth EUR 7.4 bn. 76% of this, worth EUR 5.7 bn, came from the Jamnagar refinery in India. According to CREA's estimates, EUR 1.88 bn of this diesel was derived from Russian crude. This lies upon the assumption that the diesel exported from this refinery is produced from the same proportion of Russian feedstock as for all other oil products. Relying upon a similar assumption, EUR 2.4 bn of diesel imported by the price cap coalition from these eight refineries is derived from Russian crude.

Sanctioning countries' second highest imported product from these refineries is gasoil, worth EUR 4.8 bn, of which EUR 2.4 bn is derived from Russian crude. The refineries exported EUR 4.7 bn of jet fuel to sanctioning countries, of which EUR 1.5 bn was made from Russian crude.

How can Ukraine's allies curb Russian oil revenues?

The most effective step would be to ban the importation of oil products produced from Russian crude oil. This would enhance the impact of the sanctions by disincentivizing third countries from importing large amounts of Russian crude and help cut Russian revenues.

The price cap coalition's relatively low reliance (3%) on oil products produced from Russian crude means that a ban on these imports would have no significant inflationary pressure on domestic oil prices.

Banning the imports of oil products from refineries that process Russian crude oil would also drop the price of Russian oil, which has remained above the price cap level of USD 60 per barrel from [July until end of November 2023](#). CREA's analysis of the one-year impact of the crude oil price cap found that immediately after the sanctions came into force, prices of Russian oil dropped due to them having to heavily discount their oil to attract new buyers and maintain similar export volumes that previously went to sanctioning countries. Russia has [consistently traded oil using Western owned or insured tankers above the price cap](#), as Russia has found new and consistent buyers, prices have risen. Higher export prices for Russian oil paired with evidence that trades have taken place above the cap with limited enforcement of sanctions significantly negates the impact of the price cap.

The movement towards the implementation of [tighter shipping measures are encouraging](#), but more needs to be done to tackle violations and disincentivize those doing so. The price cap coalition should require maritime insurers to verify via bank statement that the oil price was paid below the cap to avoid fraudulent attestation documents being used to attain Western insurance; this could significantly improve compliance with the policy.

Vessels owned or insured by G7 countries have persisted in loading Russian oil at all ports within Russia during periods when prices remain above the price cap. These occurrences serve as compelling evidence of violations against the price cap policy. Yet there is very

little [information](#) on enforcement agencies implementing penalties against shippers, insurers or vessel owners in the public domain.

A recent CREA publication revealed that [33% of all Russian oil \(by volume\) was transported on tankers insured in the UK](#) since the sanctions were implemented until early November 2023. Penalties must be imposed on firms that violate sanctions and facilitate Russia in increasing their oil export earnings above the price cap that are then used to fuel the war on Ukraine.

Penalties for entities caught violating the oil price cap are inadequate. Sanctioning countries should ban maritime services in perpetuity for vessels used to transport Russian crude without complying with the price cap. The current ban of 90 days, prohibiting vessels from attaining EU maritime services following a violation of sanctions, is far too weak.

The Oil Price Cap Coalition should introduce a spill insurance verification program for vessels that travel through their waters. Sanctioning countries could mandate that tankers travelling through their waters must provide compliant spill liability insurance under international maritime law. This could exclude ‘shadow’ tankers without spill insurance from travelling through their most travelled route from Baltic ports whilst reducing the risk of environmental catastrophe.

The most important way to cut Russia’s export revenues though will be to drive down the oil price cap and use their reliance on G7/EU insurance to do so. Lowering the price cap would be deflationary, reducing Russia’s oil export prices and inducing more production from Russia to make up for the drop in revenue.

A price cap of USD 30 per barrel would have slashed Russia’s revenues by EUR 2.65 bn or 24% in December 2023 alone. If this price cap had been established in December 2022, when the sanctions were originally implemented, Russia's oil export earnings would have been reduced by 25% (EUR 37 bn).

Methodology and assumptions

Assumptions

We look at locations that have exported oil products to countries that implement sanctions on Russia and assume these are refineries. We assume that refineries perfectly mix the crude imported over the period of analysis, December 2022 to the end of December 2023.

Data sources

CREA analysis is based on an array of different data sources including: Kpler, Eurostat, Comtrade, Equasis, P&I providers, Global Energy Monitor.

Estimated crude consumption capacity and oil product output by refinery

For most refineries (except Ruwais, as discussed in the *Limitations and Challenges* section), we estimated crude consumption capacity based on whichever is higher: the total crude oil imported in tonnes, or the estimated crude required to export the products. This would produce a more conservative estimate of the refinery's reliance on Russian crude as a proportion of the total oil feedstock.

We estimated the oil product output to be the refinery capacity multiplied by a processing gain constant (106.3%)³. The processing gain is the output of oil products compared to the input of feedstock to a facility⁴. As a result of adding chemicals to produce the refined final petroleum product or due to the higher density of refined oil compared to crude, this can result in the volume of oil products being higher than the feedstock crude oil. We are assuming that the processing gain is constant across refineries and products too.

We assumed the refinery's consumption of domestic or pipeline crude oil is the difference between the capacity and the total seaborne crude imported. We assumed domestic

³ Processing gain taken from

<https://www.eia.gov/energyexplained/oil-and-petroleum-products/refining-crude-oil-inputs-and-outputs.php>

⁴ https://energyeducation.ca/encyclopedia/In_a_barrel_of_oil

consumption of oil products is the difference between the capacity (multiplied by the processing gains) and the total seaborne oil products exported.

Estimated value of oil products using Russian crude for export to the sanction implementing countries

For each refinery, we take the percentage of seaborne Russian crude oil coming into the facility as a percentage of the capacity. To estimate the value of products sold to the sanctioning countries that were produced from Russian crude, we multiply this percentage by the total value of products exported to the sanctioning countries by each refinery.

Estimated Russian crude consumed to make products for export to countries implementing sanctions

For each refinery, we assumed the percentage of seaborne oil products exported to the destination is the percentage of the oil product exported to that location. To estimate the value of crude required to produce the exported products, we multiply this percentage by the value of Russian crude imported to the refinery.

Limitations and challenges

We cannot guarantee that crude imported into a port near a refinery will be used at that refinery or that oil products exported were generated by that specific refinery. In these cases, we aggregate multiple refineries into one location. This means that the estimated values for each refinery may include crude oil processed or products produced by other nearby refineries. However, this does not affect the percentage consumption of Russian crude oil, the percentage of the products created using Russian crude oil, and the totals of these values exported to the countries implementing sanctions.

As we don't know the exact capacity for most refineries, we estimate this based on the seaborne imports of crude oil and exports of oil products. This estimate is only accurate if the refinery does not receive crude via other means, for example, by pipeline or by road. This could lead to an inaccurate estimation of Russian crude oil used by these refineries. To mitigate this, we have checked and modified the methodology by identifying pipelines to the refineries:

- For those refineries that rely heavily on domestically produced feedstock or other sources of crude oil, we have identified the UAE Ruwais refinery as the only refinery that imports crude from Russia and attains high volumes of domestically produced pipeline crude oil. We are assuming the refinery is constantly running at full capacity to take a more conservative approach when calculating the reliance on Russian crude.
- For refineries that could be reliant on Russian crude oil via pipeline, we have checked the top 10 refineries that export products to the countries implementing sanctions (together these provide a significant proportion of the oil consumed by the countries implementing sanctions) and our research shows that none of these refineries appears to have a crude oil pipeline from Russia.

Kpler's installations may be separated by import and export of products. Therefore we use ports instead of installations. This may aggregate multiple refineries into a single entity or include storage facilities.

We are using the average processing gain for US refineries and applying this across the world. This may not be accurate for other countries' refineries due to differences in methodology or technology.