

EU oil ban and price cap are costing Russia EUR 160 mn/day, but further measures can multiply the impact

Key findings

- Russia's earnings from fossil fuel exports fell 17% in December, to the lowest level since the start of the country's full-scale invasion of Ukraine.
- The EU oil ban and price cap are costing Russia an estimated EUR 160 mn/day. The fall in shipment volumes and prices for Russian oil has cut the country's export revenues by EUR 180 million per day. Russia managed to claw back EUR 20 million per day by increasing exports of refined oil products to the EU and to the rest of the world, resulting in a net daily loss of EUR 160 million.
- The measures caused a 12% reduction in Russia's crude oil exports and a 23% drop in selling prices, for a 32% drop in Russian crude oil revenues in December. Germany's stoppage of pipeline oil imports shaved off another 5% at the end of December.
- Russia is still making an estimated EUR 640 mn per day from exporting fossil fuels, down from a high of EUR 1000 mn in March to May 2022. The EU's ban on refined oil imports, the extension of the price cap to refined oil and reductions in pipeline oil imports to Poland will slash this by an estimated EUR 120 mn per day by February 5.
- The EU remained the largest importer of oil from Russia in December, when pipeline crude oil and all oil products are included. This will have changed as Germany ceased to import Russian pipeline oil at the end of December and the EU oil products ban enters into force in February. Japan became the largest importer of LNG from Russia as European buyers cut purchases. China, South Korea, Turkey, India and Japan were the largest importers of coal.
- Russia has so far made EUR 3.1 bn shipping crude oil on vessels covered by the price cap, resulting in approximately EUR 2.0 bn in tax income to the Russian government. This tax income can be eliminated almost completely by revising the price cap to a level that is much closer to Russia's costs of production.
- Lowering the crude oil price cap to USD25–35, still well above production and transport costs in Russia, would slash Russia's oil export revenue by at least EUR 100 mn per day.

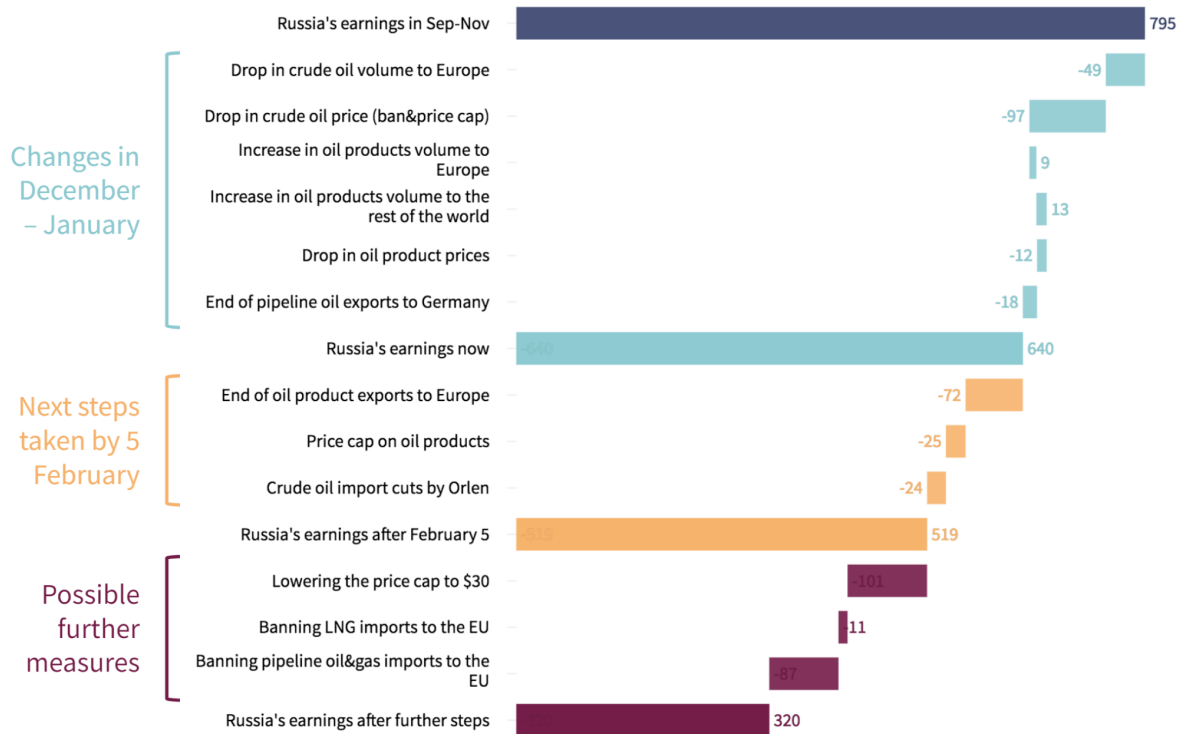
- The price cap coalition has a strong leverage to push down the price caps — Russia has not found a meaningful alternative to vessels owned and/or insured in the G7 for the transportation of Russian crude and oil products from Baltic and Black Sea ports.
- In the Pacific, Russia continues to use UK-insured tankers to sell oil to China, although the market price for the oil is above the price cap level. New measures are needed against insurers and tankers engaged in this trade.
- Further measures available to the EU and allies can cut Russia's fossil fuel export revenues further by an estimated EUR 200 mn per day, from the level projected after the oil products import ban and price cap.

Policy recommendations

- Reductions in fossil fuel demand have played a key role in enabling the implementation and effectiveness of the import bans. It is essential to make these reductions more sustainable economically and socially by further investing in energy efficiency, energy savings and clean energy.
- Revise the oil price cap down to USD25–35 per barrel of crude oil and USD5/barrel higher for refined products. This level substantially reduces Russian mineral tax revenues while keeping Russian oil production economically viable.
- Strengthen the implementation of the price cap by increasing penalties for tankers violating the cap, as well as strengthening disclosure requirements or requiring payments to be made through an intermediary.
- Introduce additional sanctions to limit Russian seaborne oil trade. This includes restrictions on sales of tankers, to prevent Russia, its allies and related traders from acquiring old tankers to use to circumvent the cap, as well as prohibiting transshipment of Russian oil in territorial waters and exclusive economic zones of price cap coalition countries. Restrict the use of tankers without adequate insurance coverage and ensure the enforcement of environmental norms for tankers in the Baltic and Black Seas.
- Institute price caps and/or import restrictions for pipeline oil, pipeline gas and LNG from Russia to the EU.

Russia's expected earnings from fossil fuels

Million EUR per day



Source: CREA estimates.

The steps taken by the EU and allies in December–January cut Russia's fossil fuel export revenue by an estimated EUR 160 mn per day. Further measures that are being implemented by February 5, 2023, will result in an estimated additional EUR 120 mn per day reduction. These include the EU oil product import ban, price cap (assumed at USD65/barrel) and Polish Orlen's [announcement](#) of not renewing a contract with Rosneft in January for pipeline crude oil. Further steps that the EU and allies can take, most importantly lowering the price caps for crude oil and oil products, have the potential to cut off another EUR 200 mn/day.

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Introduction

As the sanctions and the costs of the invasion of Ukraine take their toll on Russia's economy, the country is more dependent than ever on revenue from fossil fuel exports. The EU has taken massive steps over the past year to cut off its dependence on fuel imports from Russia and cut off financing for the Kremlin's unprovoked and illegal assault against Ukraine and Europe. The short-term windfall generated to Russia by sky-high fossil fuel prices in 2022 is starting to wear out, in part due to reductions in fossil fuel consumption prompted by the high prices. Further cuts to Kremlin's revenue will therefore materially weaken the country's ability to continue its assault and help bring the war to an end. This briefing assesses the impacts of measures taken by the EU and Ukraine's other allies to date, and identifies further options to drain Kremlin's war chest.

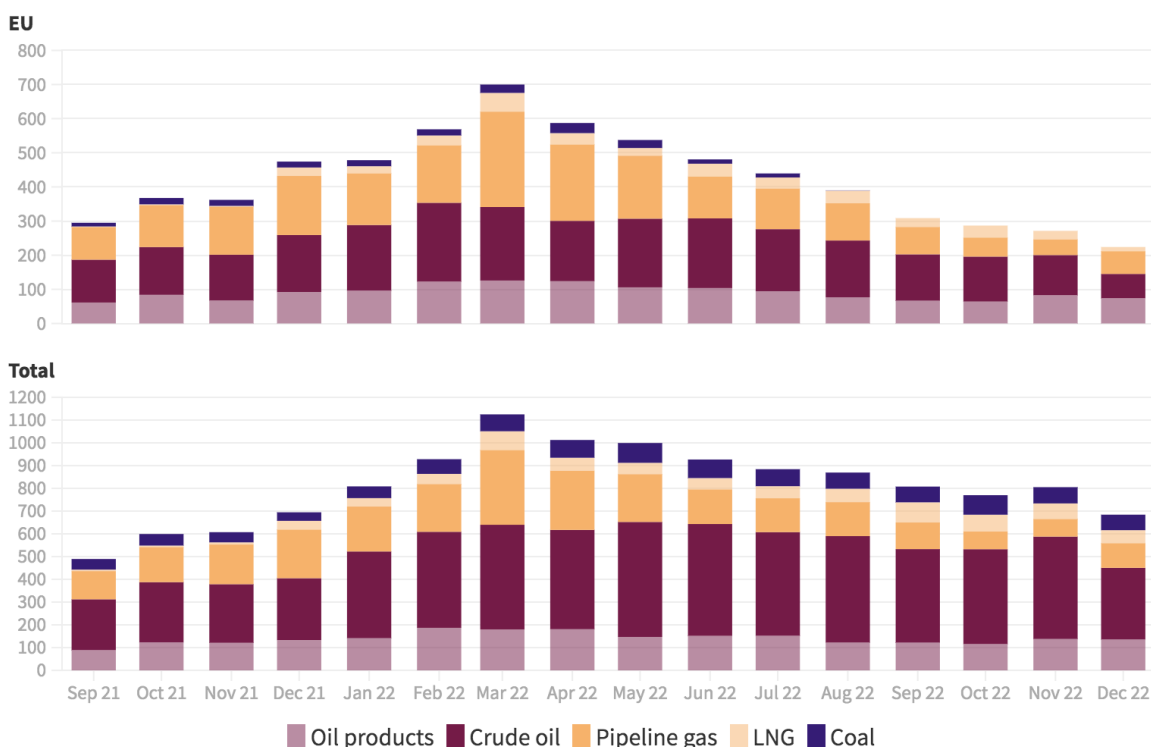
The EU crude oil import ban and the oil price cap have effectively cut Russia's oil revenues

Russia's earnings from fossil fuel exports fell 17% in December, to the lowest level since the start of the country's full-scale invasion of Ukraine. The EU crude oil import ban and the price cap caused a 12% reduction in Russia's crude oil exports, and a 23% drop in selling prices, for a 32% drop in crude oil revenue in December. Germany's stoppage of pipeline oil imports shaved off another 5% at the end of December.

The fall in shipment volumes and prices for Russian crude oil cut the country's export revenues by EUR 180 mn per day after the oil ban and price cap entered into force. Germany's stoppage of pipeline oil imports cost another EUR 20 million per day. Russia managed to claw back EUR 20 mn per day by increasing exports of refined oil products to the EU and to the rest of the world, for a net loss of EUR 160 mn.

Russia's estimated revenue from fossil fuel exports

Million EUR per day



Source: CREA analysis. • By date of departure from Russia.

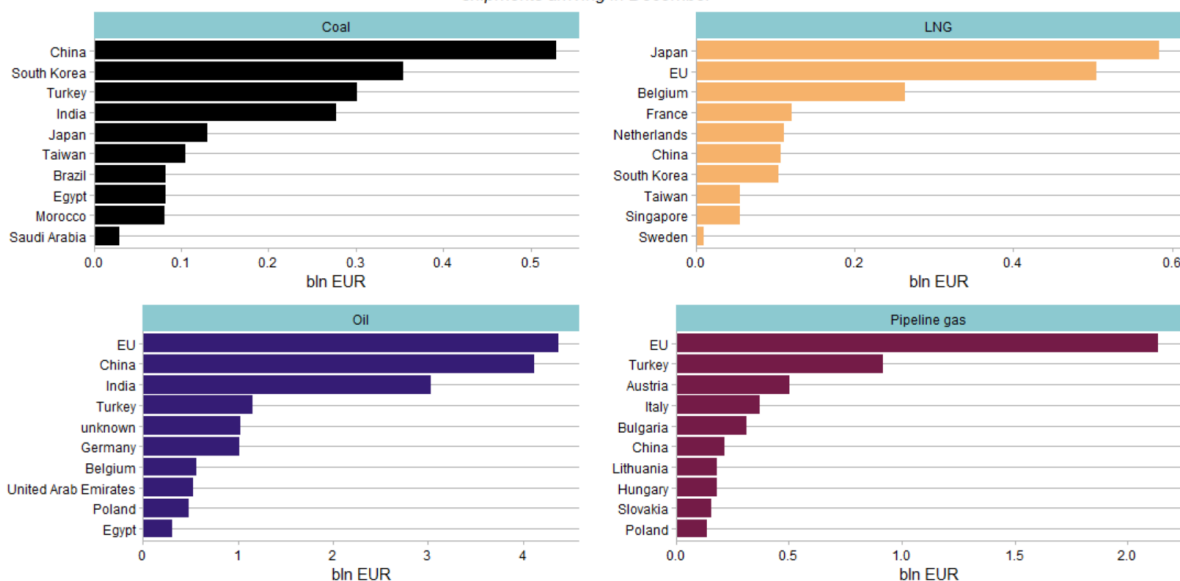
Russia is still making over EUR 600 million/day on fossil fuel exports

Russia is still making an estimated EUR 640 mn per day from exporting fossil fuels, down from a high of EUR 1000 mn in March to May 2022. The EU’s ban on refined oil imports, the extension of the price cap to refined oil, and Polish Orlen’s announced reductions in pipeline crude oil imports will slash this revenue by an estimated EUR 120 mn per day by February 5.

Russia’s current revenue comprises EUR 260 mn/day from crude oil exports, EUR 80 mn from LNG, EUR 90 mn from pipeline gas, EUR 80 mn from coal and EUR 140 mn from oil products, expected to fall to EUR 40 mn after 5 February.

Largest importers of fossil fuels from Russia

shipments arriving in December



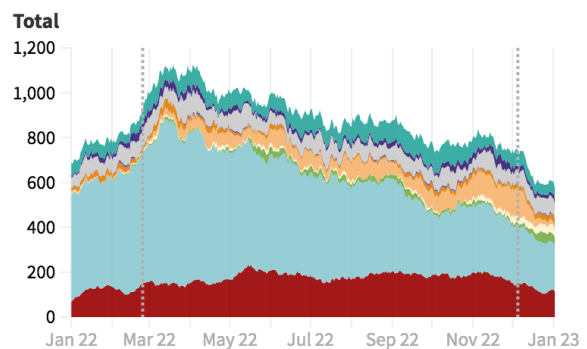
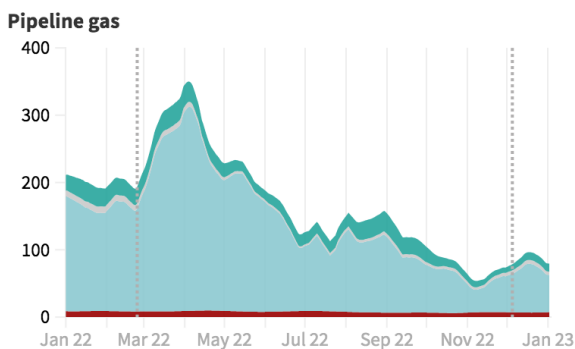
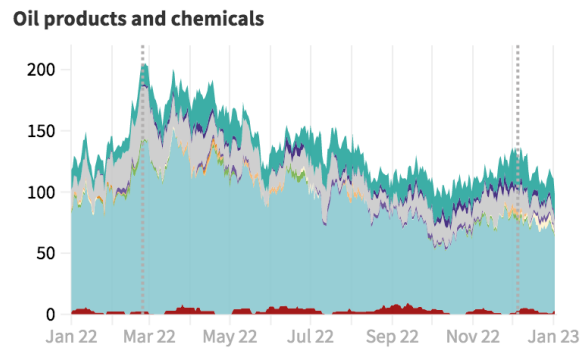
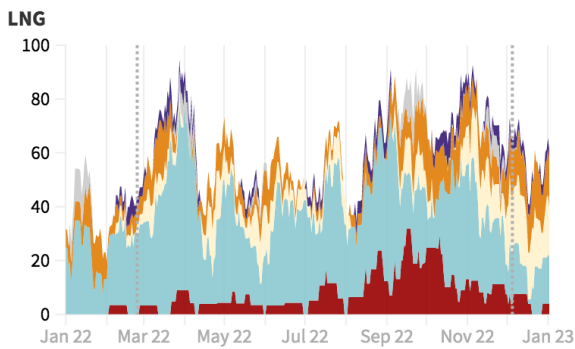
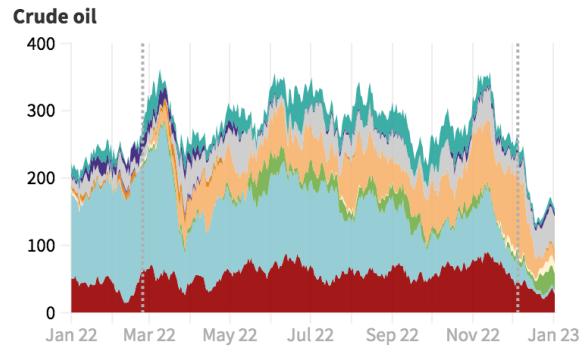
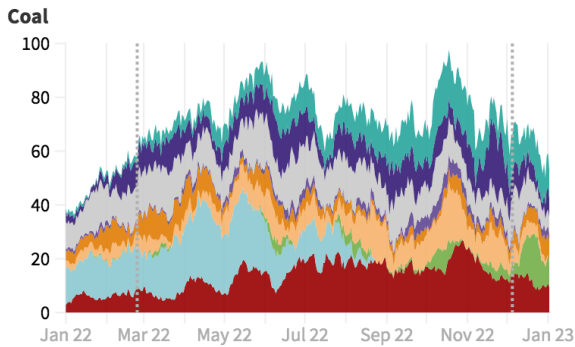
The EU remained the largest importer of oil from Russia in December, when pipeline crude oil and all oil products are included. This is changing as Germany ceased to import Russian pipeline oil at the end of December and the oil products ban enters into force in February. Japan became the largest importer of LNG from Russia as European buyers cut purchases. China, South Korea, Turkey, India and Japan were the largest importers of coal.

Fossil fuel exports from Russia

By declared destination

Million EUR per day, 14-day running average

■ China
 ■ EU
 ■ Egypt
 ■ For orders
 ■ India
 ■ Japan
 ■ Morocco
 ■ Others
 ■ South Korea
 ■ Turkey
 ■ United States
 ■ Unknown



Source: CREA analysis. • Dotted lines represent the beginning of the war and of EU's oil ban & the wider price cap respectively. The date represents the date of departure for shipped commodities. Pipelined oil is not shown separately but is included in Total.

Ukraine's allies have more options to starve Russia off fossil fuel cash

We've identified further measures available to the EU and allies to cut Russia's fossil fuel export revenues further by an estimated EUR 200 mn per day, from the level projected after the oil products import ban and price cap.

Revising down the oil price cap

Russia has so far made an estimated EUR 3.1 bn shipping crude oil on vessels covered by the price cap, resulting in approximately EUR 2.0 bn in tax income to the Russian government. The current price cap level is too lenient, allowing the government to capture approximately two thirds of the price as tax.

The oil price cap initially prevented an increase in oil exports to non-EU destinations to make up for the loss of European demand. Now Russia has managed to increase shipments under the price cap and the cap needs to be revised down.

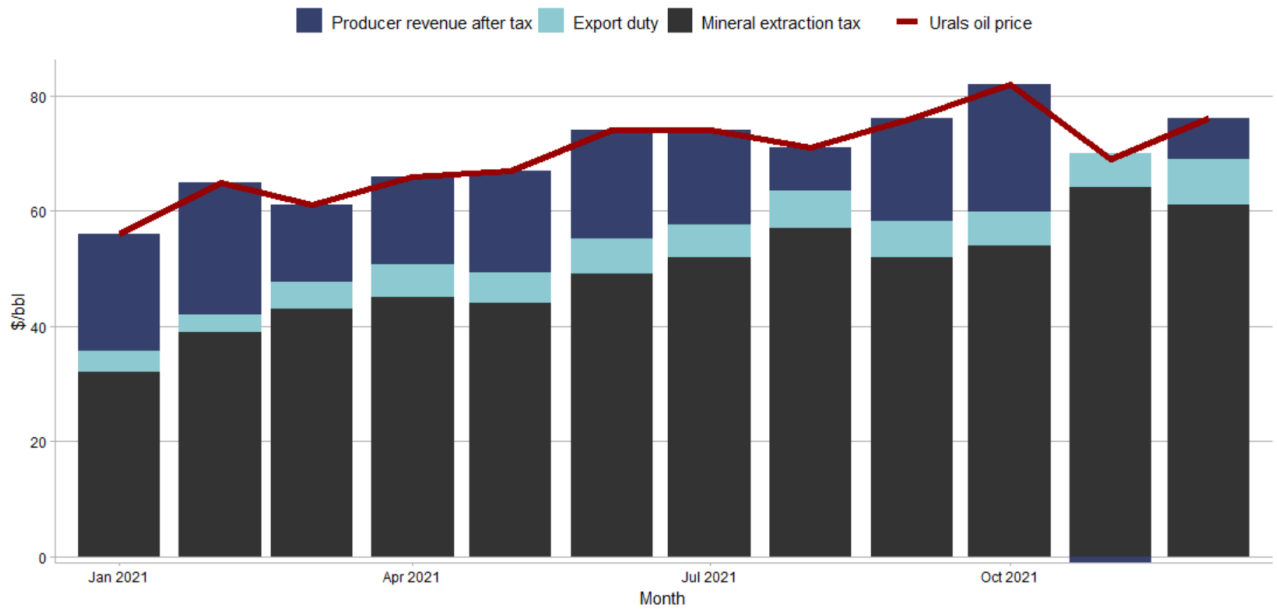
Russia's tax income from oil exports can be eliminated almost completely by revising the price cap to a level that is much closer to Russia's costs of production. Lowering the crude oil price cap to the USD25-35 range, still well above production and transport costs in Russia, would slash Russia's oil export revenue by at least EUR 100 mn per day. This range would take into account the variation in production and transport costs for different oil fields, as well as leave margin for uncertainties and different political concerns including keeping the market stable and cutting the maximum amount of fossil fuel revenues from the Kremlin's war chest.

We estimate that in 2021, Russian oil producers made on average USD15 per barrel after tax to cover production and transportation costs. The government collected an average of USD55 per barrel in tax through the mineral export tax and export duty. The tax per barrel is determined retroactively by the government to extract as much revenue as possible, meaning that a lower selling price for oil translates into less tax revenue while allowing oil producers to recoup costs and keep operating.

The data on insurers and owners of vessels transporting Russian crude oil before and after the introduction of the price cap, as well as data on insurers and owners of vessels transporting Russian oil products, demonstrate that the price cap coalition has a strong leverage to push down the price cap — Russia has not found a meaningful alternative to

vessels owned and/or insured in the G7 for the transportation of Russian crude and oil products.

Urals oil price and tax on crude oil



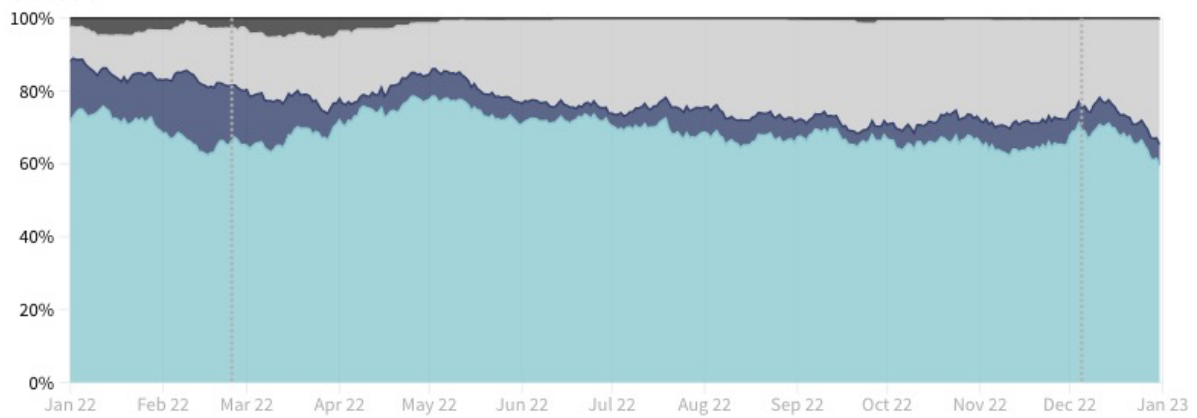
Fossil fuel shipment departures from Russia

By ship ownership / insurer

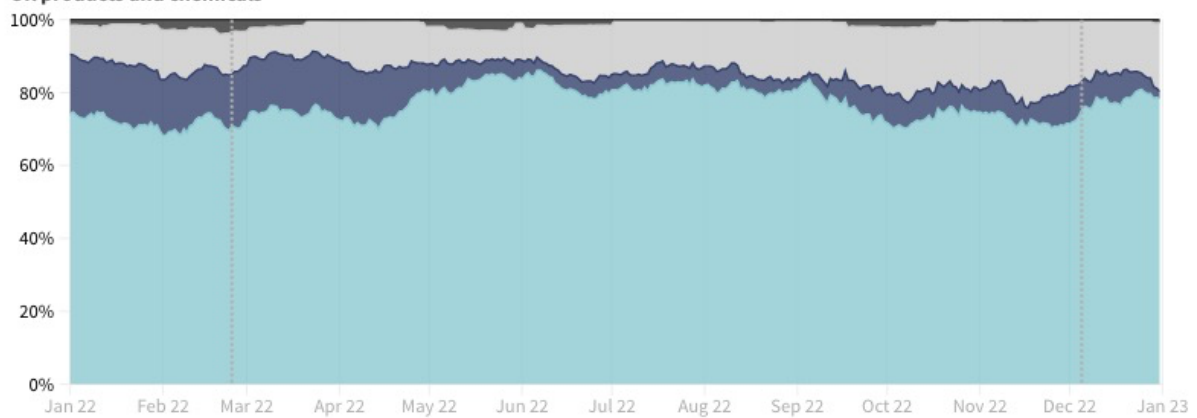
30-day running average

Owned and / or insured in EU & G7 Insured in Norway Others Unknown

Crude oil



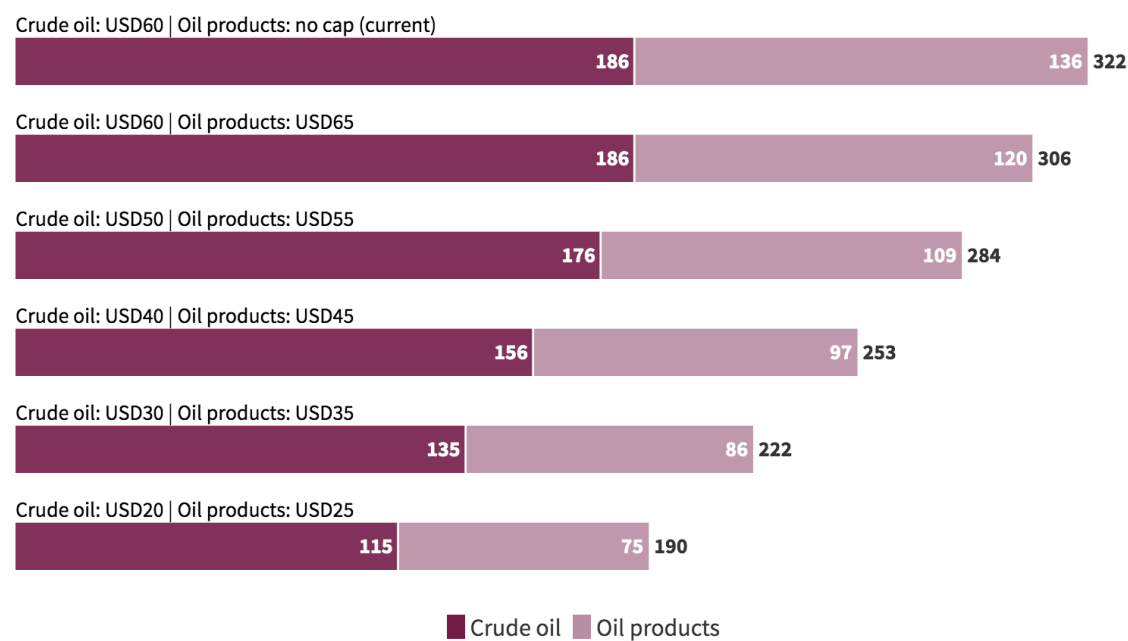
Oil products and chemicals



Source: [CREA analysis](#). • Dotted lines represent the beginning of the war and of EU's oil ban & the wider price cap respectively.

Value of seaborne crude oil and oil products exports under various price caps

Million EUR per day



Estimates of how Russia's total oil export revenue would change with different price cap levels, assuming that export volumes are maintained. We conservatively apply the price cap only to tankers expressly covered by the policy – in reality, there is likely to be a knock-on effect. The price cap for oil products is assumed to be USD5/barrel higher than for crude oil to cover refining costs across the different modeled price caps ([reported](#) at USD3.2/barrel in 2021); we estimate the current average refining margin at USD25/barrel.

Giving the price cap bite in the Pacific

The share of tankers with unknown insurance shipping Russian crude oil has increased after the introduction of the oil price cap, but the share of tankers covered by the cap is still 60%. This has been sufficient to push crude oil prices down below the price cap level in Russia's Baltic and Black Sea ports, but not in the Pacific. As the price cap is revised down, and further attempts by Russia to skirt the price cap can be expected, it's important to be prepared for further steps.

In the Pacific, Russia continues to use UK-insured tankers to sell oil to China, although the market price for the oil is above the price cap level. New measures should be introduced against insurers and tankers engaged in this trade, further increasing the effectiveness of the cap.

The repercussions for tankers violating the price cap were dramatically eased in the last minute before the cap was introduced. The initial plan was for tankers running afoul of the price cap to be banned from being insured in G7 and EU countries in perpetuity. This was however revised to just three months, an almost negligible penalty. The period clearly needs to be lengthened. Besides eligibility for insurance, tankers could be banned from entering EU and G7 ports or territorial waters.

It is however possible that the tankers are not technically violating price cap rules, due to the soft disclosure requirements in the price cap policy. Insurers only need to provide “attestations” from the buyer of the oil. If Chinese or other buyers outside the price cap coalition countries are providing false attestations, the insurers have no responsibility. The policy could be changed so that actual trade records need to be provided, or payments have to happen through an intermediary, providing transparency on prices.

Hard-to-trace oil traders have begun acquire old tankers to be used to skirt the price cap. Restrictions on sales of tankers could be used to prevent this, for example by requiring legal provisions banning the use of tankers sold in ways that violate the price cap. Another option is prohibiting transshipment of Russian oil in territorial waters and exclusive economic zones of price cap coalition countries.

Using old tankers with unknown insurance coverage, or turning ship positioning transmitters (AIS) off, can increase the environmental and navigational risks of oil shipments. Environmental enforcement should be strengthened especially in the Baltic and Black Seas, and tankers without proper insurance should be banned from the territorial waters of countries along these routes. On the Pacific route from Russia to China, the price cap coalition has less leverage to implement these options.

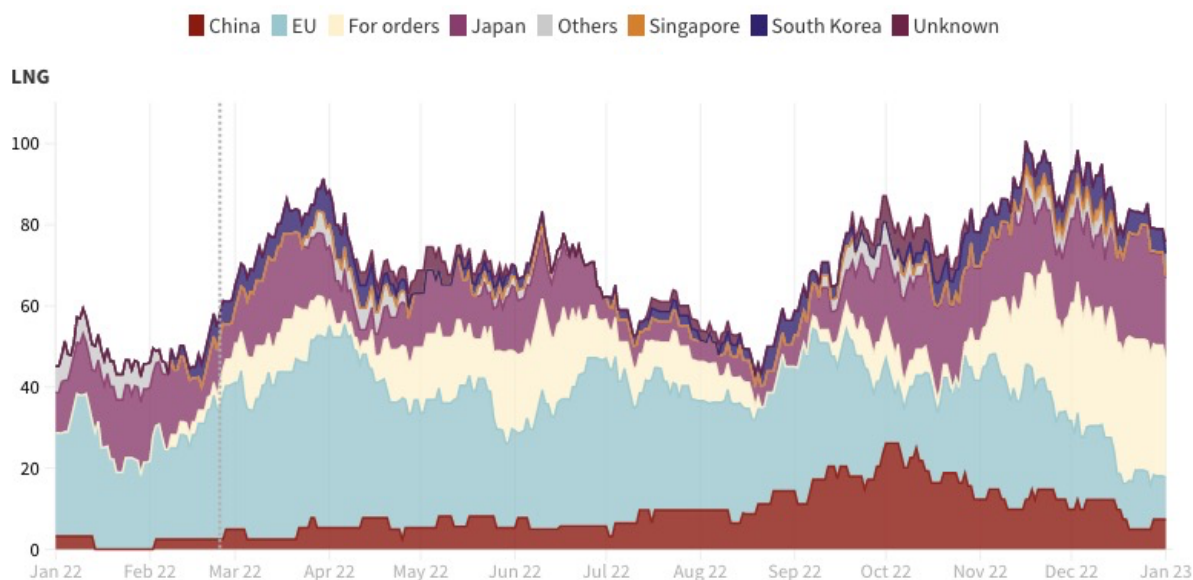
Sanctioning pipeline gas and LNG

The volumes of LNG shipments have decreased since late 2022, with the EU’s storages reaching full capacity. Consequently, the share of LNG shipments “for orders” has increased. Since the EU has now banned the imports of Russian coal and seaborne crude oil, and the ban on oil products enters into force in early February, gas is the only Russian fossil fuel still generating unrestricted revenue for the Kremlin’s war chest. Bans and/or price caps on pipeline gas and LNG imports to the EU would plug this hole in the sanctions regime and squeeze Russia’s second-largest source of fossil fuel revenue after oil.

LNG shipment departures from Russia

By declared destination

Thousand tonnes per day, 30-day running average



Source: [CREA analysis](#). • Dotted line represents the beginning of the war.



FACT BOX: Oil production costs in Russia

The short run marginal cost of producing a barrel of crude oil in Russia is between USD2.7 per [barrel](#) and USD25 per [barrel](#), with an average short run marginal cost likely below USD 15 per barrel and some [marginal](#) fields likely reaching USD50 per barrel or more. Rosneft and Lukoil together account for roughly 60% of Russian oil production and their short run marginal costs, according to Rosneft 2021 annual [report](#), were USD 2.7 and USD 3.5 per barrel. According to [Financial Times](#) analysis, Russia's three main oil companies, Rosneft, Lukoil and Gazprom Neft can turn a profit at oil prices above USD 20 per barrel.

The estimates are based on analyzing Rosneft's annual reports, monthly revenues from the mineral extraction tax and international oil prices for the year [2021](#) where for an average Urals price of USD 70 per barrel, the mineral extraction tax amounted to an average of USD 50 per barrel. On average, for every increase of USD 1 in Ural price, the Russian state captures USD 0.9 through the mineral extraction tax. Thus, the Russian tax system is optimized to extract almost all value above the short run marginal cost of production via the mineral extraction tax and the export duty. The mineral extraction tax takes into consideration the fields' cost of production and international prices, capturing almost all the value in between the two benchmarks. The export duty is an additional tax the Russian

state is levying on exported oil. The tax varies with oil prices, as does the mineral extraction tax, and is on average approximately 11% of the value of the mineral extraction tax. In December 2022, following the oil price cap, [Russia](#) announced a reduction of almost 40% in its export duty tax in a first sign that it is not yet willing to trade volumes for prices following the price cap.

Once the price cap will be reduced below USD 60 per barrel, which we believe should be the case given the low short run marginal costs of producing Russian oil and that the value above is ending in the state coffers of Kremlin, ultimately financing the war against Ukraine, the likely short term outcome is that some marginal and expensive supply will be shut off pressuring international oil prices. However, given the low short run marginal cost and the state of Russia's finances, withholding additional supplies beyond those small volumes made uneconomic by the price cap is a highly unlikely occurrence, as it will put additional pressure on Russia's public finances and make reopening the shut-in fields a very expensive operation.

Policy recommendations

- Reductions in fossil fuel demand have played a key role in enabling the implementation and effectiveness of the import bans. It's essential to make these reductions more sustainable economically and socially by further investing in energy efficiency, energy savings and clean energy.
- Revise down the oil price cap. Our recommended level of oil price cap after evaluating its impact and potential so far is USD25–35 per barrel for crude oil and USD5 per barrel higher for refined products. This level substantially reduces Russian mineral tax revenues while keeping Russian oil production economically viable.
- Strengthen the implementation of the price cap by increasing penalties for tankers violating the cap, as well as strengthening disclosure requirements or requiring payments to be made through an intermediary.
- Introduce additional sanctions to limit Russian seaborne oil trade. This includes restrictions on sales of tankers, to prevent Russia, its allies and related traders from acquiring old tankers to use to circumvent the cap, as well as prohibiting transshipment of Russian oil in territorial waters and exclusive economic zones of price cap coalition countries. Restrict the use of tankers without adequate insurance coverage and ensure the enforcement of environmental norms for tankers in the Baltic and Black Seas.

- Institute price caps and/or import restrictions for pipeline oil, pipeline gas and LNG from Russia to the EU.

About CREA

Centre for Research on Energy and Clean Air (CREA) is an independent research organisation focused on revealing the trends, causes, and health impacts, as well as the solutions to air pollution. CREA uses scientific data, research, and evidence to support the efforts of governments, companies, and campaigning organisations worldwide in their efforts to move towards clean energy and clean air, believing that effective research and communication are the key to successful policies, investment decisions, and advocacy efforts. CREA was founded in December 2019 in Helsinki and has staff in several Asian and European countries. Our work is funded through philanthropic grants and revenue from commissioned research.

In our [statement](#) of support for Ukraine, CREA absolutely condemns the Russian military's unprovoked and unjustified attack against another sovereign nation, Ukraine. The assault goes against the fundamental values of human well-being, safety, and dignity that our organisation seeks to advance. We urgently call for an end to the assault and stand in solidarity with the Ukrainian and Russian people calling for just peace.

About the data

To carry out the research, CREA researchers compiled data on the movements of thousands of cargo ships carrying fossil fuels and other cargo from Russian ports to the rest of the world, to track shipment destinations and volumes on a day-to-day basis. The tracking covers ship-to-ship transfers to the extent possible. The research also incorporates real-time data on gas flows to Europe via pipelines, and estimates other flows using historical monthly trade data and news reporting. To estimate the value of the imports, CREA developed pricing models that estimate the average value of Russian exports based on current spot market prices. The methodology is laid out in more detail [here](#) on the CREA website.