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The Impact of the Russia-Ukraine Crisis on Energy Markets

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Presented at:

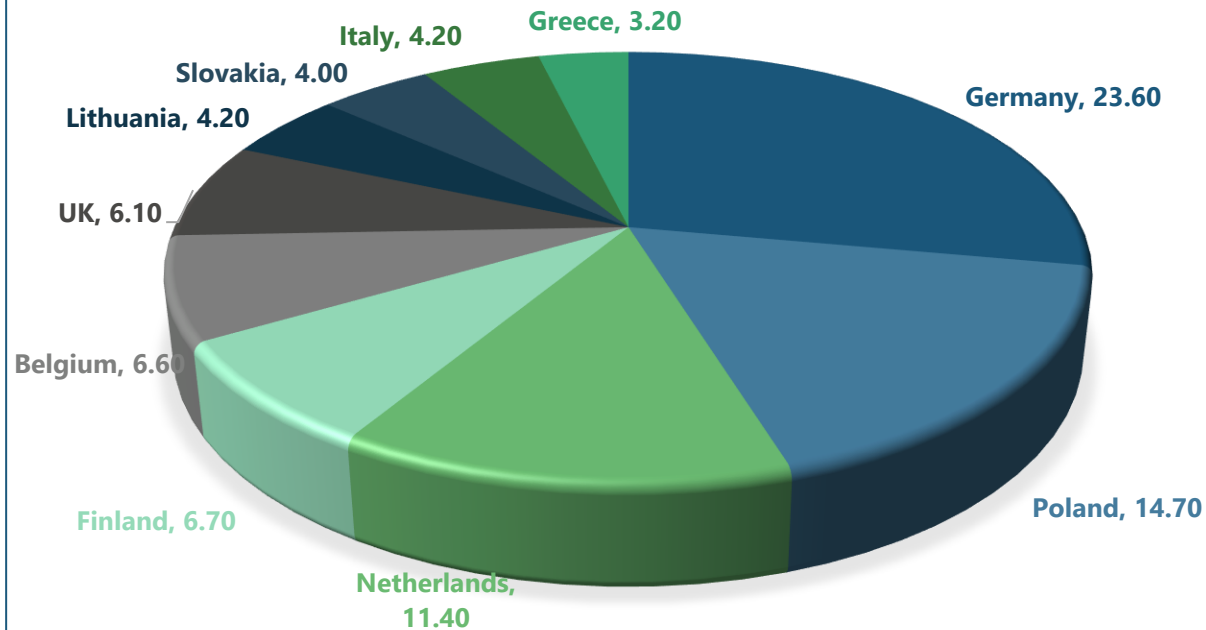


27 April 2022

Europe's Energy Dependence on Russia

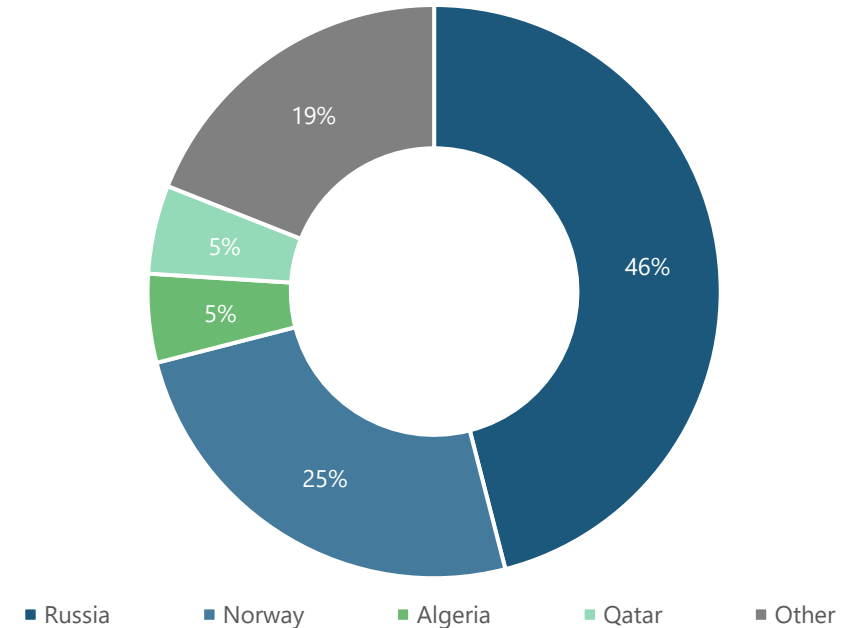
- The EU-27 and the UK together account for more than 63% of Russia's fossil fuel exports.
- Russia is Europe's biggest oil supplier, providing just over a quarter of EU oil imports in 2020.

**EUROPE'S BIGGEST IMPORTERS OF RUSSIAN OIL
(BILLION \$)**



Sources: World Bank, Eurostat, T&E Analysis. 2021 Data Note: Oil includes imports of crude oil, petrol and diesel

EU Gas Imports by Origin (%)

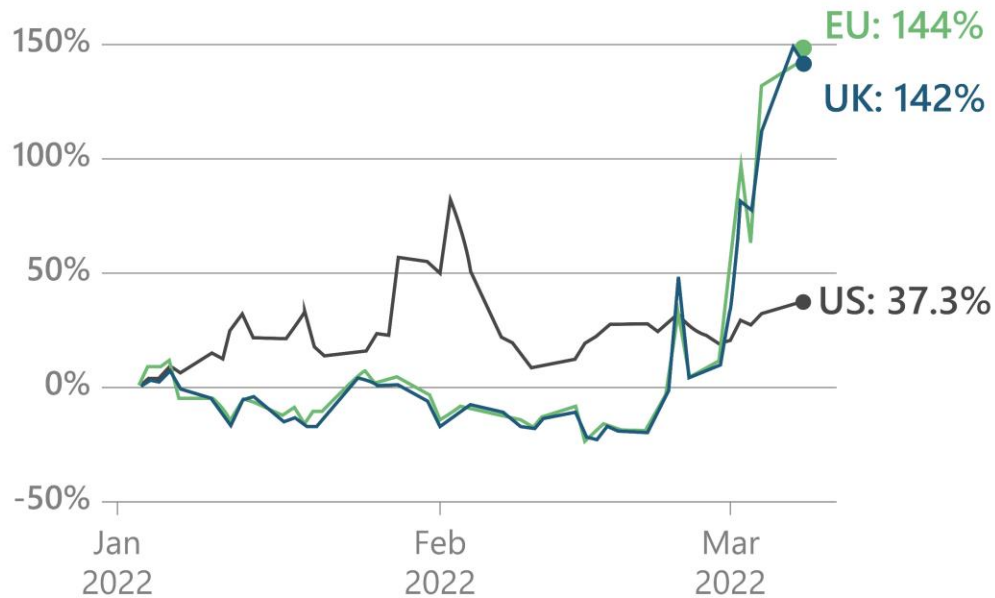


Source: Gazprom, Eurostat, ING Research (2020 data)

The Immediate Impact of the Russia-Ukraine Crisis on Energy Markets- Skyrocketing Prices for Oil and Gas

Change in Gas Prices

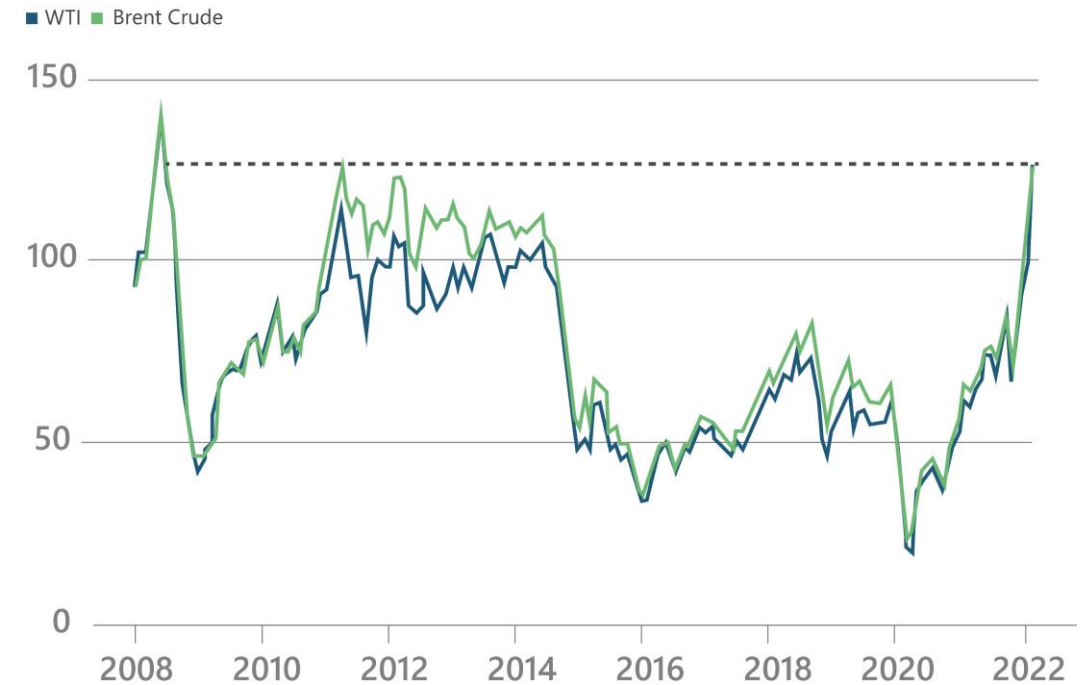
Percentage change since 1 January 2022



Bloomberg. Last update: 8 March 2022 11:00 GMT

Change in Oil Prices

US dollar per barrel



Bloomberg. Last update: 7 March 2022 12:30 GMT

Energy Sanctions- the EU Under Pressure from Allies to Impose Oil Embargo



The U.S. is banning all Russian oil, gas, and energy imports

The UK will phase out Russian oil imports by the end of 2022

The EU stopped imports of Russian coal; pressure to place sanctions on Russian oil and gas

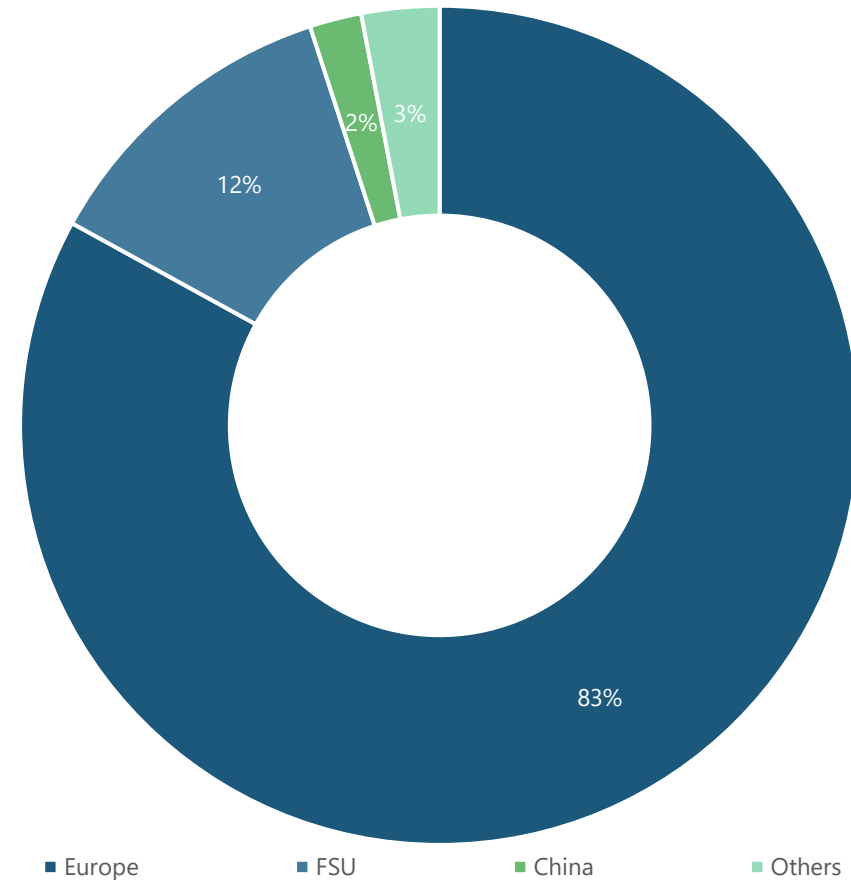
The EU says it will switch to alternative supplies and make Europe independent from Russian energy “well before 2030”

Operating license for Nord Stream II put on hold by Germany

The Effect of Energy Sanctions-major revenue losses for Russia

- Overall, according to the Bloomberg forecast, Russian GDP will fall by 9.6% in 2022 with a peak quarterly GDP decline reaching –15.7% of annual growth rates.
- Since oil and gas are the backbone of Russia's budget and oil payments effectively finance the war in Ukraine; EU sanctions on oil and gas will send a very strong signal to Russia.
- The size of the European market, and the constraints of the transportation infrastructure make it impossible for Russia to simply substitute its oil and gas supplies to China and other countries.
- A study employing ENVISAGE, a computable general equilibrium model, estimated that cumulative export revenue losses from reductions in fossil fuel exports would amount to almost US\$1.4 Trillion for Russia.

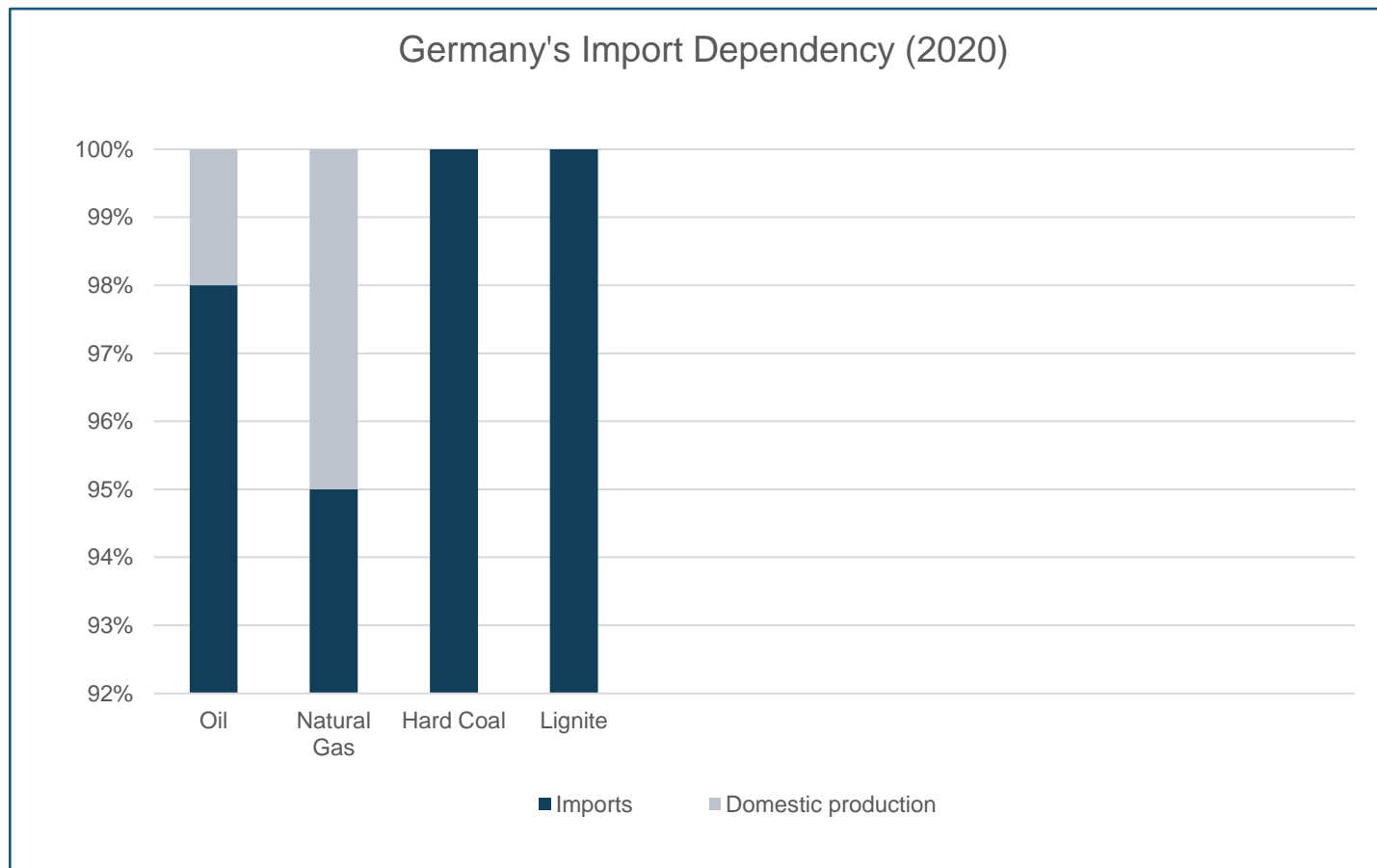
Russian Gas Exports by Destination



Source: Gazprom, Eurostat, ING Research (2020 data)

The Effect of Energy Sanctions- Germany vulnerable

- Approximately 8% of U.S. oil and refined product imports come from Russia.
- Russia makes up about 6% of the UK's oil imports.
- The EU is much more reliant on Russian energy; far more reluctant to impose energy sanctions on Russia.
- Germany remains the major impediment to an EU-wide oil embargo on Russia.



Reducing Europe's Dependence on Russian Gas: The IEA's Ten-Point Plan



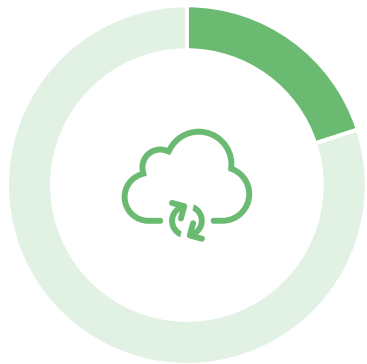
An End to Europe's Energy Dependence on Russia: potential roadblocks



EU Strategic Reserves for gas are not ready: as many as 14 of the 27 EU countries have reserves for less than a month of average imports (over the course of a year).



Replacing Russian oil in Germany and finding alternative trade routes for oil will be a challenge.



Renewable alternatives to Russian gas: Europe would need to build an additional 370 GW of wind to replace this gas (on top of 215 GW installed as of 2020). Alternatively, another 105 GW of nuclear capacity, close to the existing capacity installed in 2021 (115 GW) would need to be added.



The need to reduce demand for gas in Europe.

An End to Europe's Energy Dependence on Russia: short-term pain for long-term gain

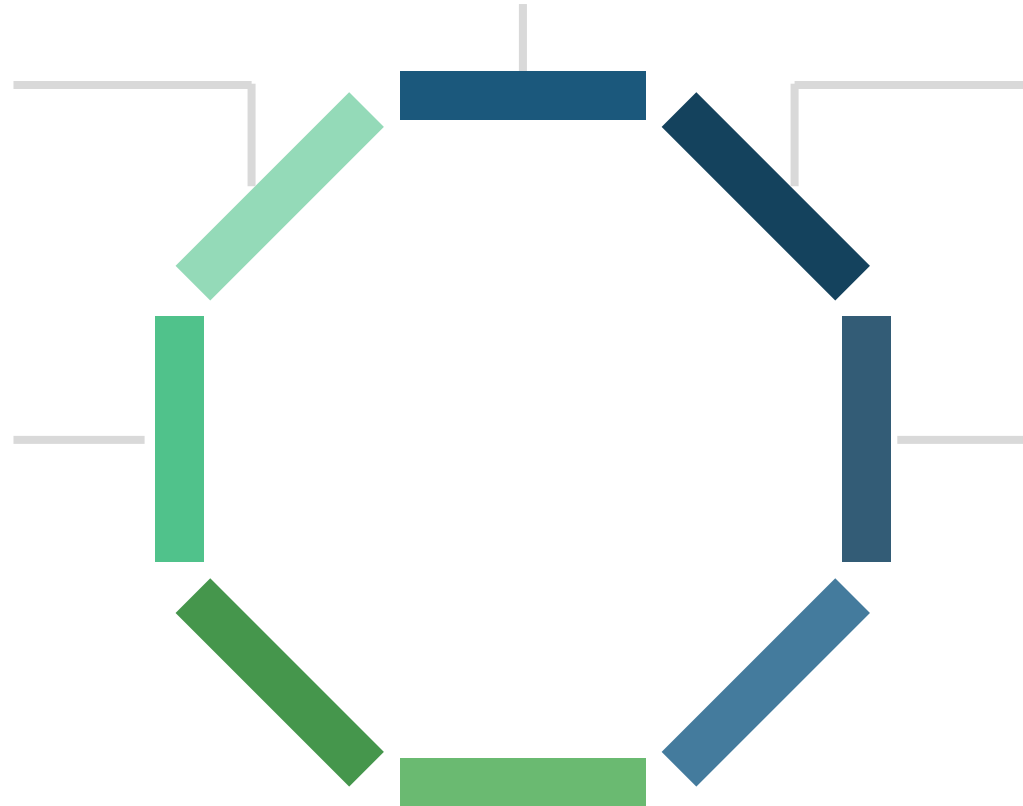
Researchers at the Purdue University predicted that the impact of cutting Russia's fossil fuel exports would be modest for Europe in the long term: income growth rate would only slow down by 0.04% per year from 2022-2030.

Russian gas could be replaced by Europe's coal-fleet in the power sector.

Russian oil can be replaced with emergency stocks.

Pipeline bottlenecks, technical and political feasibility.

Solidarity between EU countries a must in order to move away from Russian fossil fuel



Questions?

PTR's Energy Transition Equipment Market Research

➔ **EV Charging Infrastructure Market**

➔ **Energy Storage Market Monitor**

➔ **Commercial Vehicle Electrification**

➔ **Hydrogen Value Chain and Projects Research**



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