

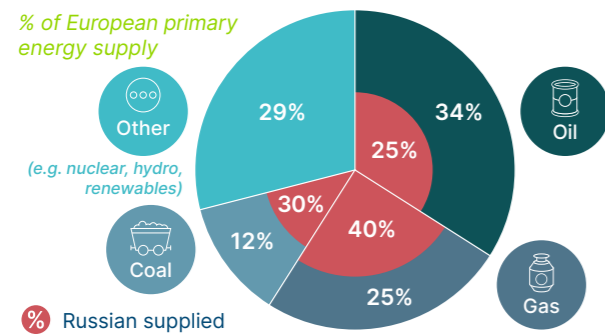
What you need to know about...



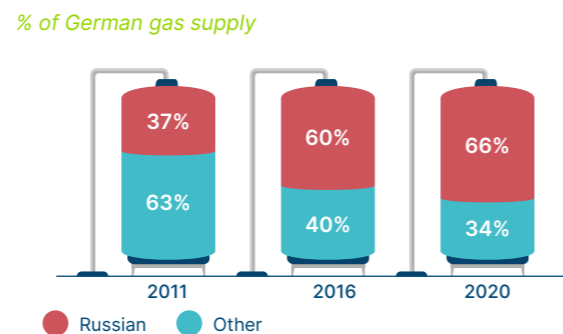
# The energy security implications of Russia's invasion of Ukraine

## How important are Russian energy imports to Europe?

40% of Europe's gas and 25% of Europe's oil comes from Russia



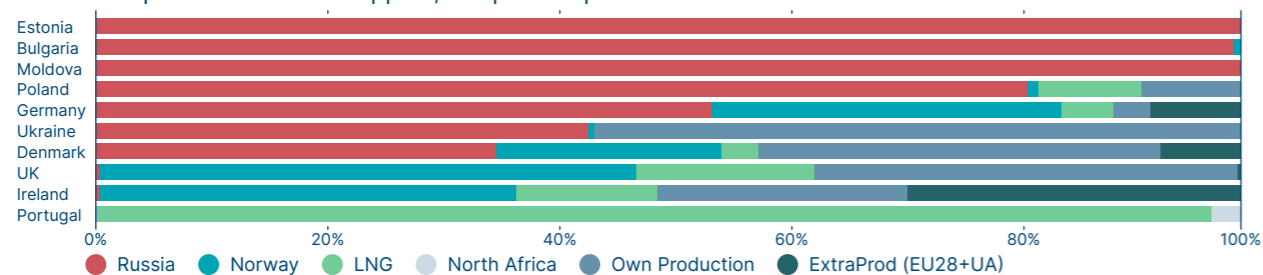
Reliance on Russian gas has been increasing over the last decade, particularly in Germany



- Europe is Russia's largest gas customer, and Germany is the biggest single buyer.
- Imports of Russian gas to Germany have doubled over the last decade, in line with the phaseout of nuclear and coal generation.
- European dependence on Russian gas would have further increased had Nord Stream 2, a new Russia to Europe gas pipeline, been granted regulatory approval.

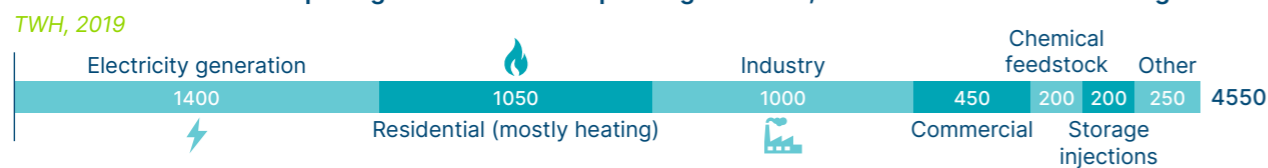
## Which European countries are most dependent on Russian gas?

Some European countries are entirely (or majorly) reliant on Russian gas, and will require coordinated support, but price impacts will hurt all nations.



## What is gas used for in Europe?

Around one third of European gas use is used for power generation, whilst half is used for heating.



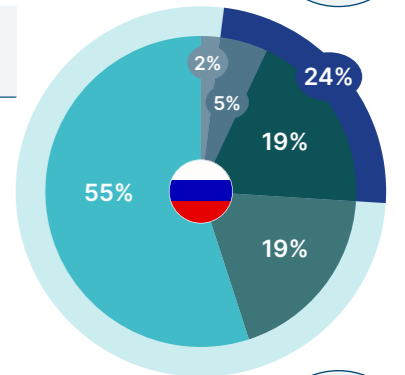
## How important is European energy demand to Russia?

Oil makes up a larger share of revenues but is easier to transport than gas - this makes it easier for Russia to find alternative buyers, and Europe alternative suppliers. Gas markets are less flexible, and therefore have more strategic value.

Sales of oil and gas to Europe make up c. 1/4 of Russia's federal budget

% of federal budget, 2021

- Other Income
- Gas sales to other countries
- Gas sales to EU
- Oil sales to EU
- Oil sales to other countries
- Total Gas & Oil sales to EU

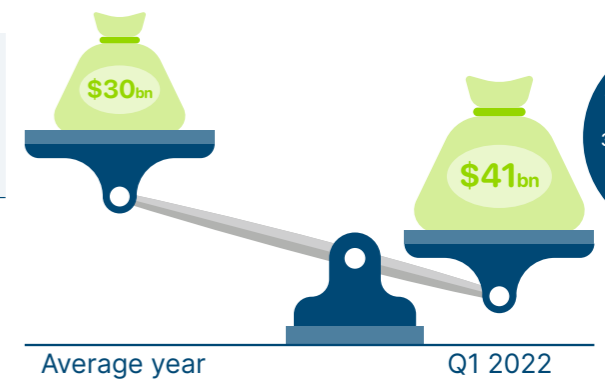


## What has Russia's gas revenue been since the beginning of the war?

Most European sanctions have not targeted gas or oil, and up until end of April gas continued to flow at similar rates to before the invasion.

Russia received more gas revenues from Europe in the first quarter of 2022 than in all of 2021

\$bn per year



Since the start of the war, the EU has paid Russia around 30x more for energy imports than the amount given to Ukraine for aid.

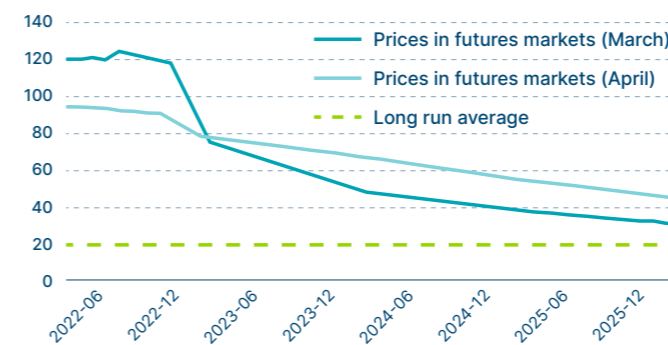
## What happens if the gas is cut off?

- Easier to deal with in summer when less gas is used, but autumn could bring rolling blackouts & industry shut-downs, particularly in those countries most dependent on Russian gas.
- Strong action to reduce demand would become necessary (e.g. energy rationing), with continued gas & electricity price spikes likely.
- The EU must have a clear strategy to protect vulnerable countries & consumers.

## How long will high gas prices last?

Quoted futures markets suggest that European gas prices may stay high and slowly decline to past levels

Dutch TTF natural gas futures, €/MWh



- These prices reflect the limited supply of LNG which Europe will be relying on more for the foreseeable future, where global demand will be high and extra supply limited in the short and medium-term. [see LNG paper]
- High gas prices provide strong rationale for more investment in renewable energy and green hydrogen. [see renewable and green hydrogen paper]