

**Russian gas leverage over Europe
is now forever ruined.**

Here is why #16

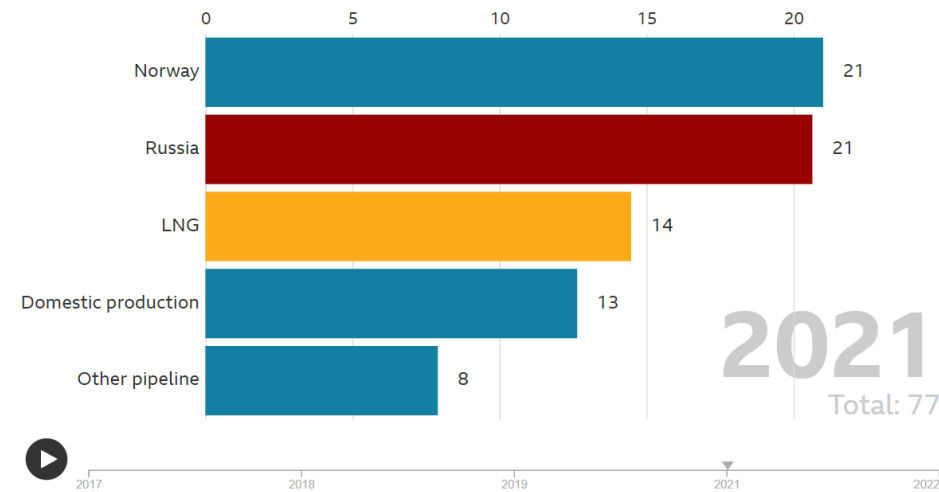


First published March 2023

Europe's gas supply dec 2021 to dec 2022

Where is Europe's gas coming from?

Monthly gas supply to EU 27 plus UK (in million cubic metres)

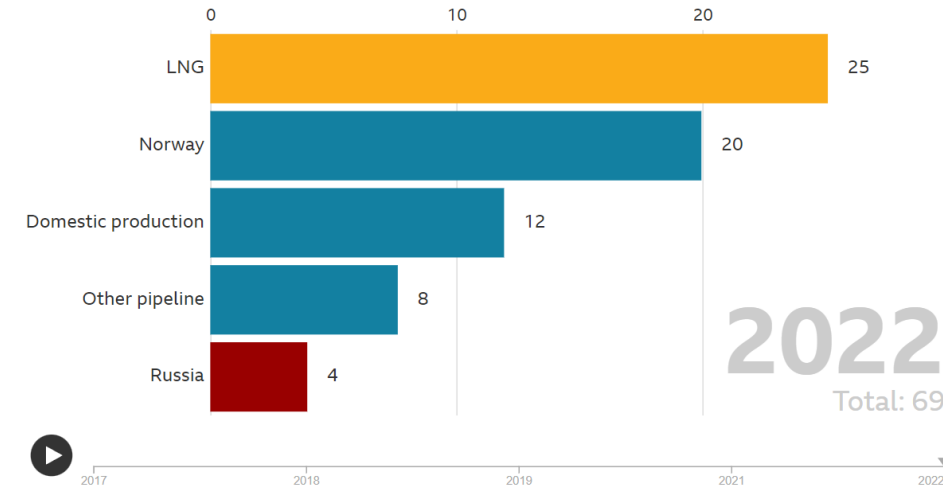


Source: Oxford Institute for Energy Studies

BBC

Where is Europe's gas coming from?

Monthly gas supply to EU 27 plus UK (in million cubic metres)



Source: Oxford Institute for Energy Studies

BBC

- ✓ Russia share of EU gas supply in dec 2021 = 27.3% = 21/77
- ✓ Russia share of EU gas supply dec 2022 = 5.8% = 4/69
- ✓ Reduction in total EU supply from dec2021 to dec22 = 10.4% = (1-69/77)
- ✓ BBC is making an error in the reported measurement unit. It is not million cubic meters per months because I know EU annual gas supply is about 400 billion m3 per year (not sure what it measures as I can't fit data to alternative sources but I think the proportional change is correct.)

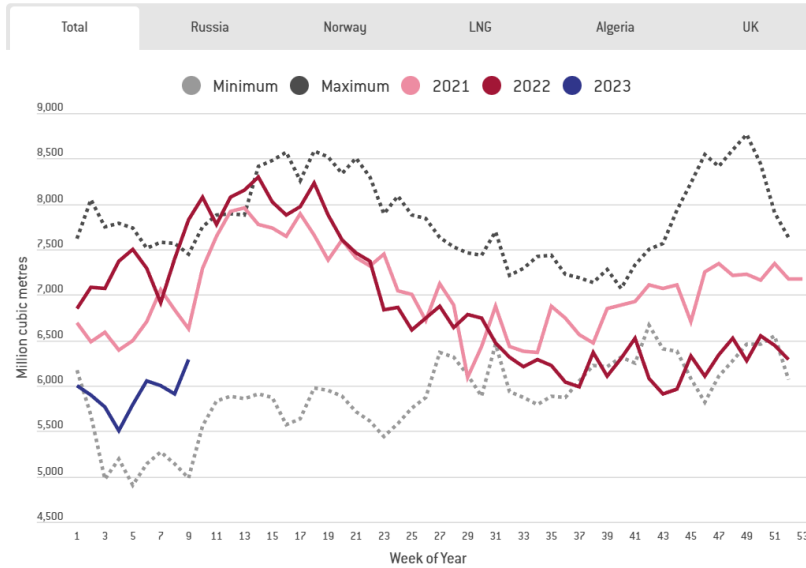
Source and attribution: : <https://www.bbc.com/news/58888451?zephhr-modal-register>



Europe's gas imports not including own supply

Figure 1: EU27 Natural Gas Imports (by source)

Last updated: 09/03/2023 (updated every Tuesday/Wednesday)

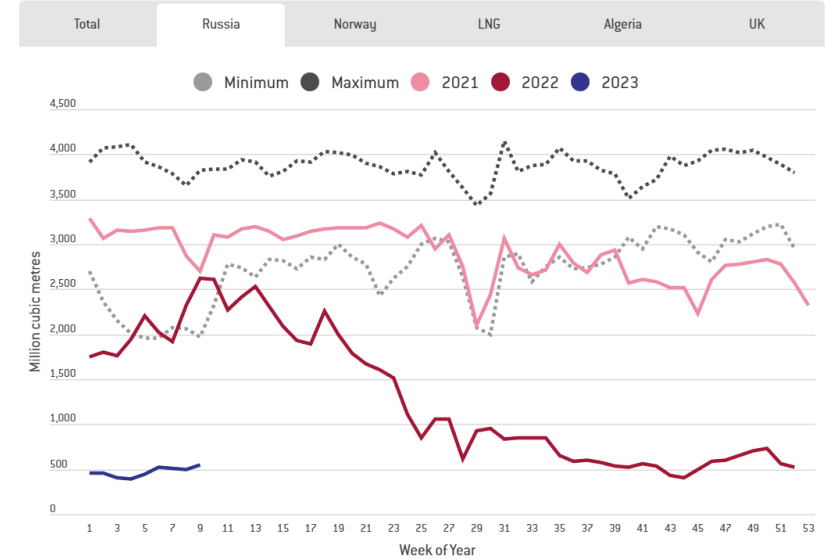


Source: ENTSO-G, <https://transparency.entsog.eu/#/map>

Note: Minimum and Maximum values are calculated from the period 2015-2020.

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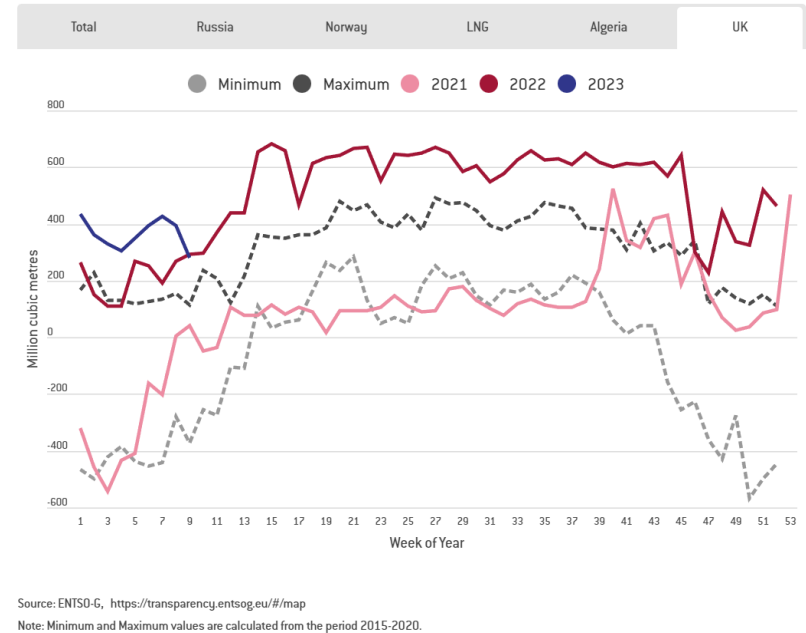
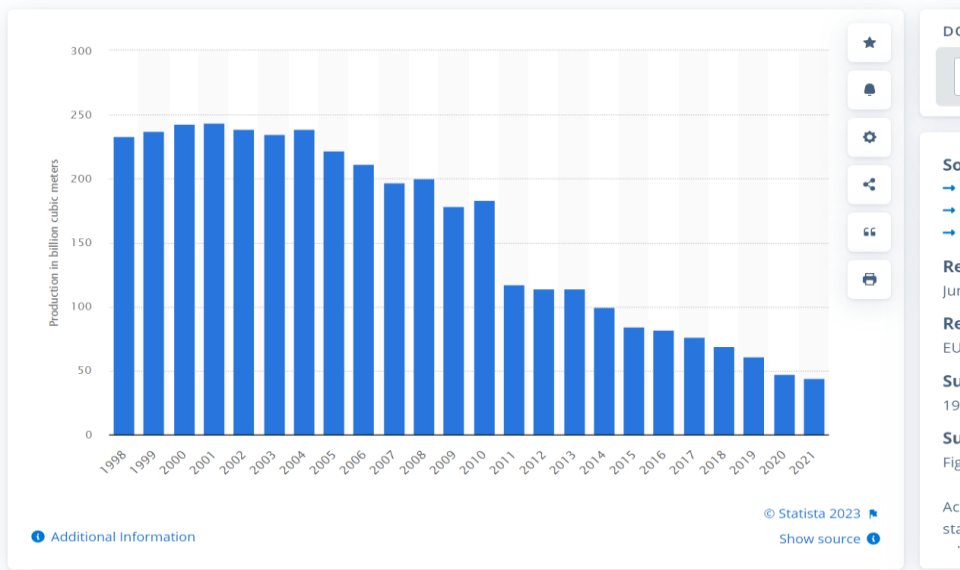
- ✓ Russia share of EU gas imports in week 52, 2021 = 35.8% = 2572/7178
- ✓ Russia share of EU gas imports in week 9, 2023 = 8.8% = 551/6291
- ✓ Reduction in EU gas imports from week 52, 2021 to week 9, 2023 = 12.3% = (1-6291/7178)
- ✓ Data show EU gas imports in 2021 was about 6.7B weekly*52 = 348 billion m3
- ✓ Data show gas imports from Russia in 2021 was about 2.7B weekly*52 = 140 billion m3
- ✓ Data show gas import from Russia in 2023 full year look to be 0.5B weekly *52 = **26 billion m3**

Source and attribution: <https://www.bruegel.org/dataset/european-natural-gas-imports>



Europe's gas production own supply not including UK and Norway

Natural gas production in the European Union from 1998 to 2021
(in billion cubic meters)



- ✓ EU gas production in 2021 was 44 billion m3 and UK gas was 33 billion m3 of which nearly nothing was sold to EU
- ✓ Data show EU gas imports including UK and Norway in 2021 was about 6.7B weekly*52 = 348 billion m3
- ✓ So total EU gas supply including UK in 2021 was 348+44+33= 425 billion m3
- ✓ Data show gas imports from Russia in 2021 was about 2.5B weekly*52 = 140 billion m3
- ✓ So with this data Russia's share of EU gas in **full year of 2021** was **32.9%** = 140/425
- ✓ **Russian share of EU gas supply including domestic supply in week 9, 2023 = 7.1%** = 551/(6.291B+44B/52 +33B/52)

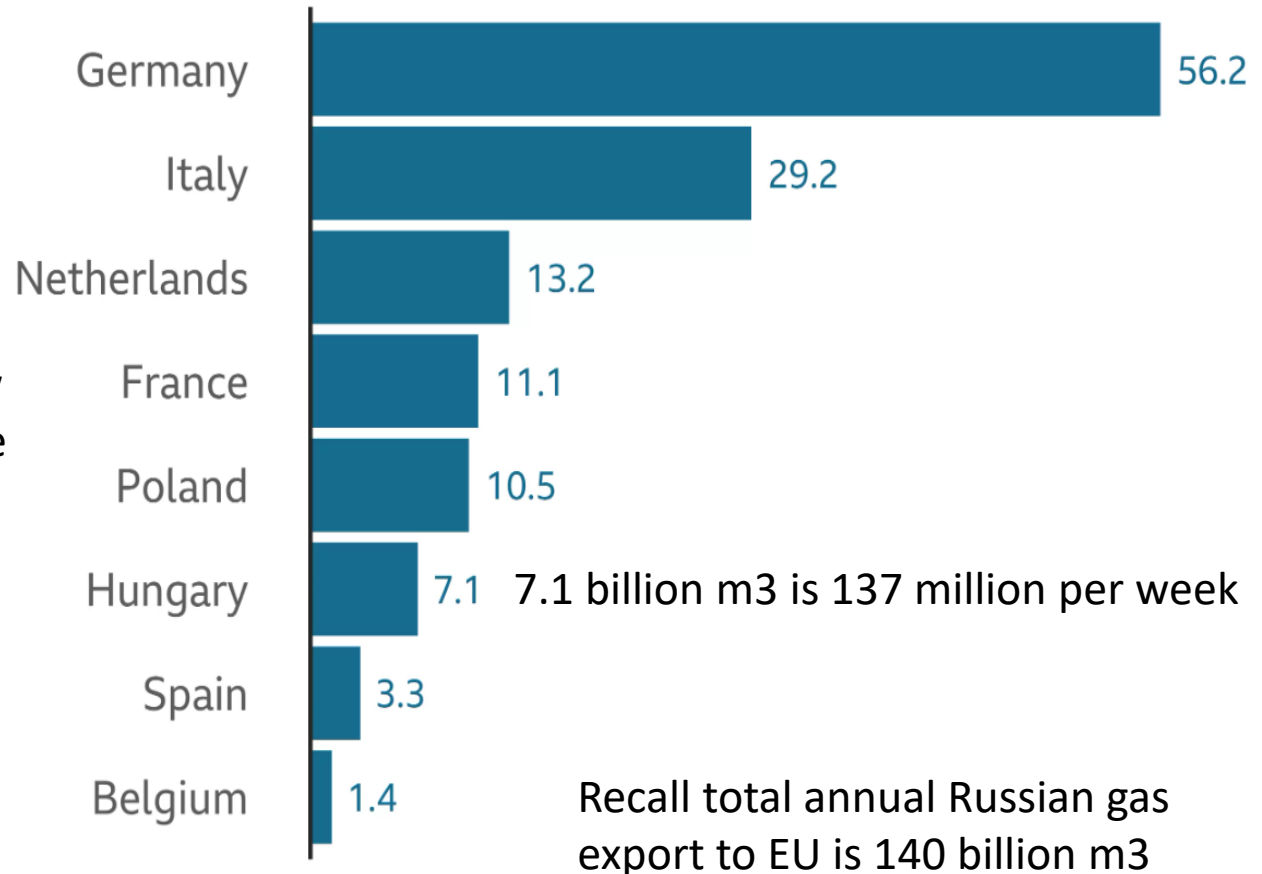
Source and attribution: <https://www.statista.com/statistics/265345/natural-gas-production-in-the-european-union/>



Russia's old 2021 EU gas export by country

Russia's gas exports

Countries by billion of cubic metres imported from Russia



- ✓ Nearly all important EU countries have completely stopped buying Russian gas
- ✓ Hungary is still buying gas from Russia in full (IMO this is treason)
- ✓ Also Russian gas still flow to other EU countries like Greece, Romania (500-137 = 363 million m3 gas weekly)
- ✓ Turkey still import Russian gas full scale

Source: IEA. Estimates for 2021



Source and attribution: <https://www.bbc.com/news/58888451?zephhr-modal-register>

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Europe's gas pipelines

The most important gas pipelines in Europe

- ✓ Russia cut gas to Poland pipeline in early 2022
- ✓ Russia blew up the Nord stream pipelines and hilariously blamed the US
- ✓ Ironically Russia still export gas to Hungary through Ukraine pipeline but Ukraine do not buy gas from Russia
- ✓ Ukraine make their own gas and also import from Poland and Hungary
- ✓ Also Russia export gas to Turkey at full speed



Source: European Network of Transmission System Operators for Gas

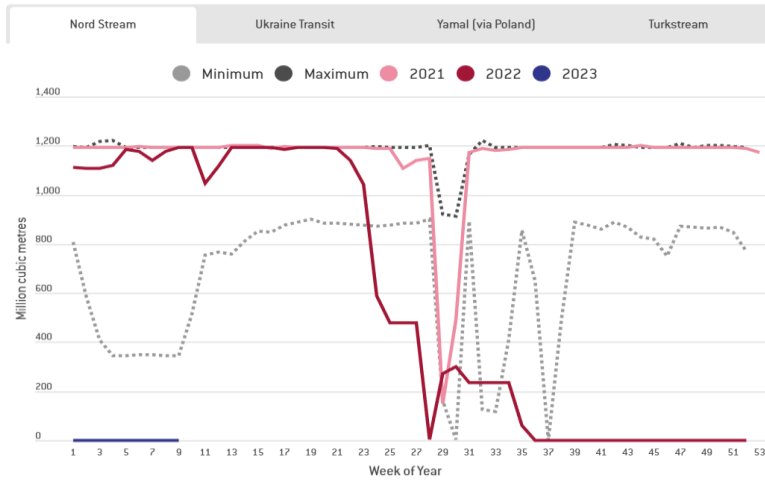


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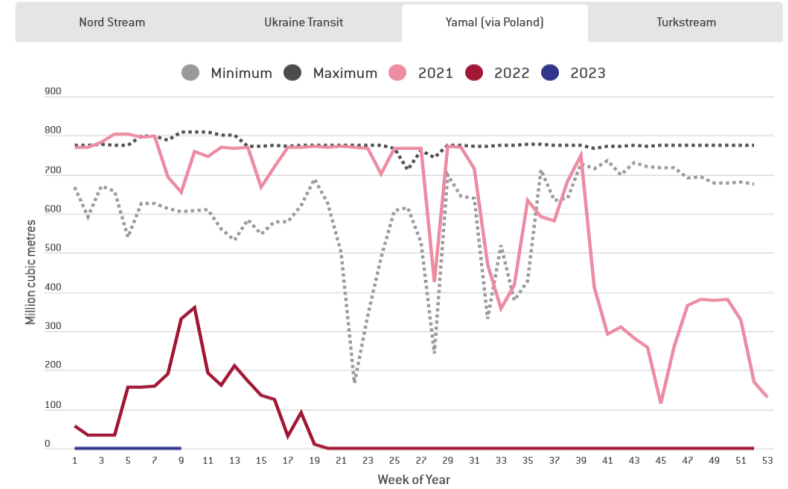
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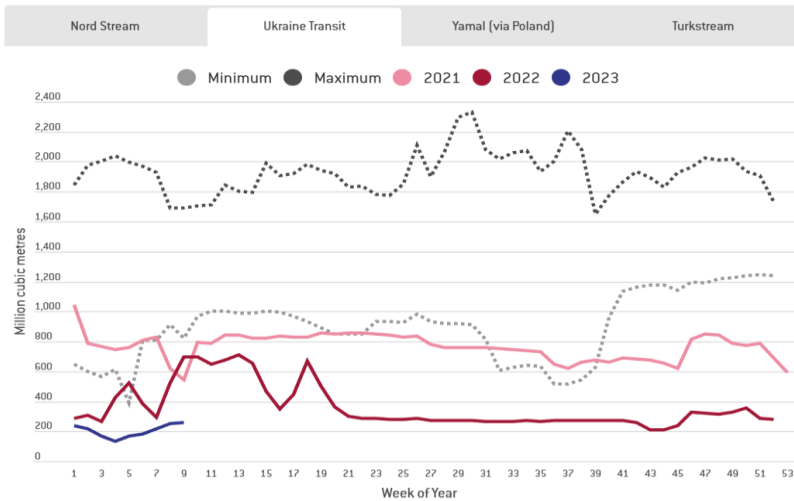
Europe's gas pipelines from Russia



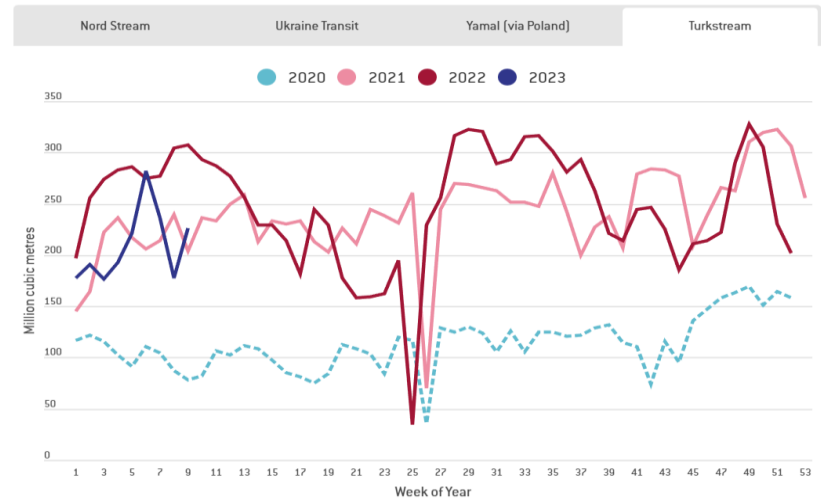
Source: Entso-g, <https://transparency.entso-g.eu/#/map>
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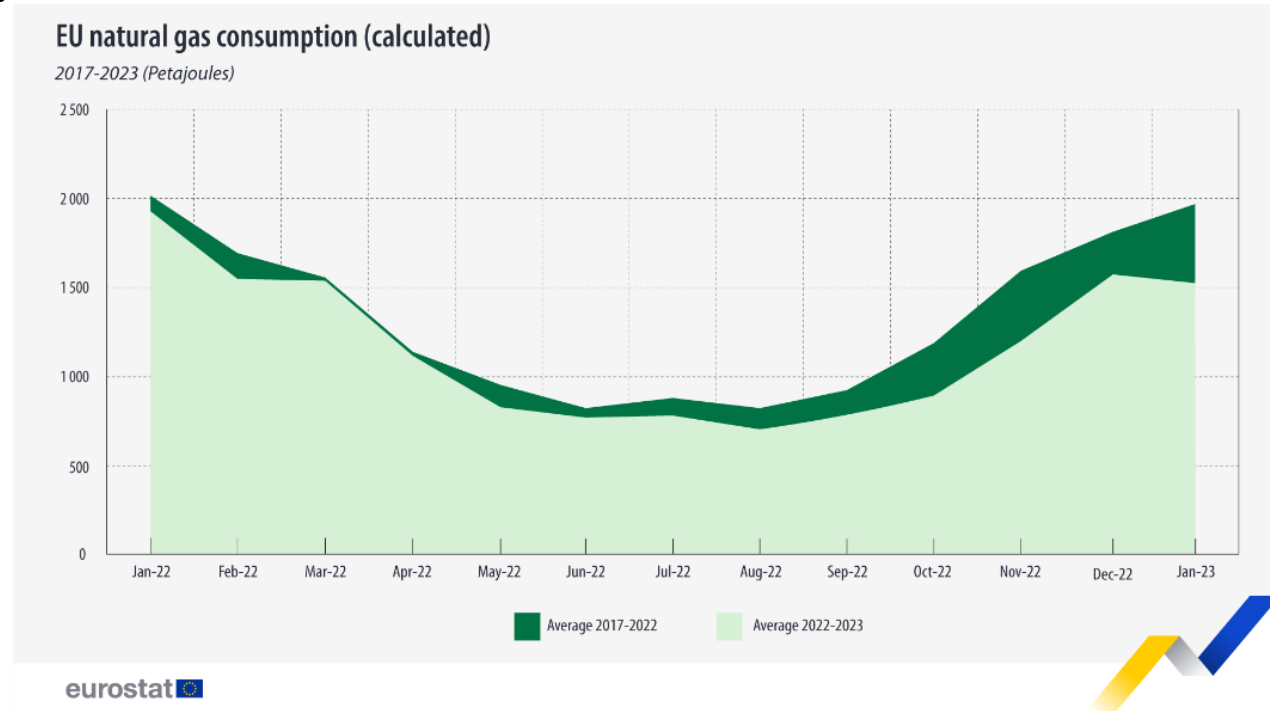


Europe gas consumption dropping Jan. 2022 to Jan. 2023

- ✓ EU gas consumption down 22.1% in Jan. 2023
- ✓ Recall Russia was supplying 27.3% of EU gas supply in Dec. 2021 and 32.9% for all of 2021
- ✓ EU gas supply only down 10.4% in 2022 so EU are in good position to increasing its gas inventory
- ✓ Moreover, Europe is far from done cutting its gas consumption
- ✓ It will eventually drop to zero because Europe got a zero emission strategy
- ✓ Wind, solar, heat pumps are replacing the need for gas in EU (also substitution of gas with coal and oil)
- ✓ Conclusion is Russia's EU gas market will be forever gone

Consumption in December 2022 hit 1 575 PJ, indicating a smaller decrease (-12.6%) than in previous months, but then it dropped further in January 2023 (-22.1%).

January is seasonally a colder month with higher consumption, and still, in January 2023 (1 534 PJ), the reduction in consumption was evident compared with December 2022 (1 575 PJ) and with January 2022 (1 938 PJ).



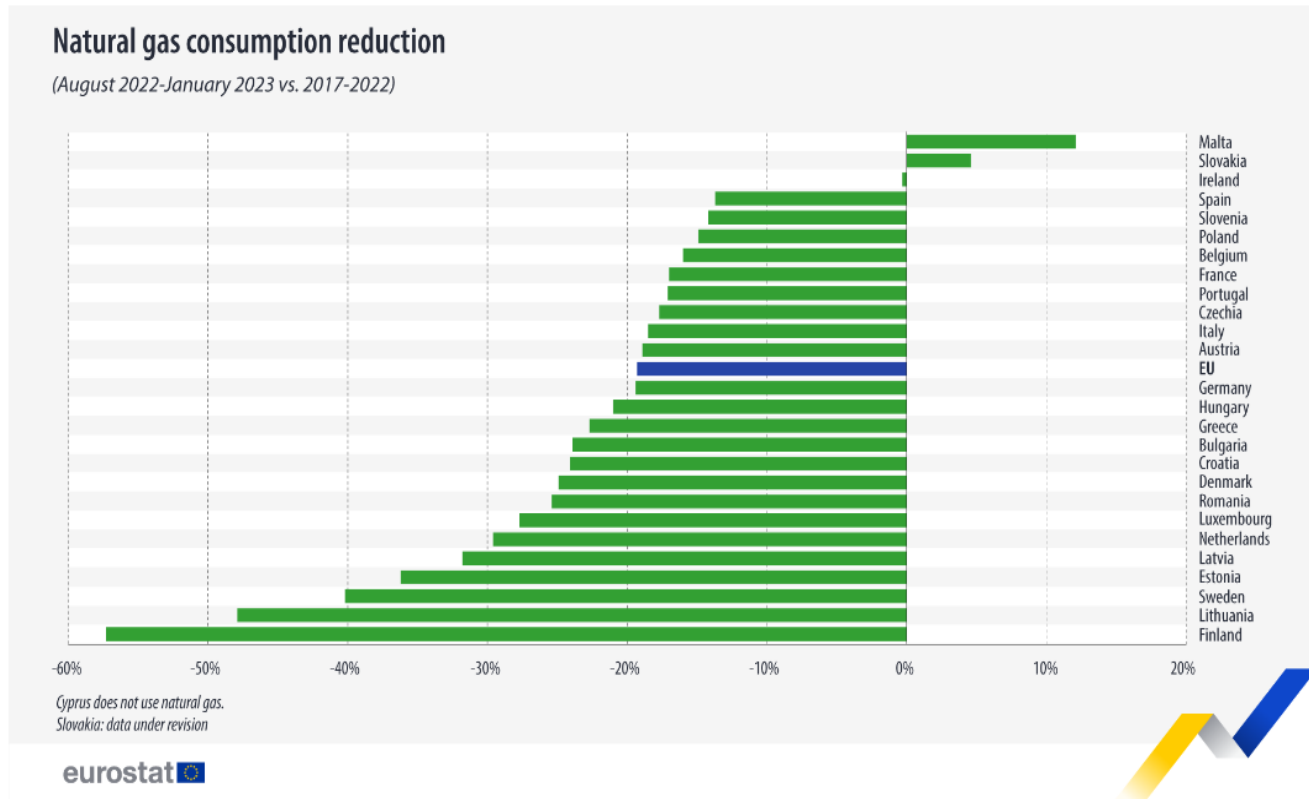
Source dataset: [nrg_cb_gasm](#)

• **Source and attribution:** <https://ec.europa.eu/eurostat/web/products-eurostat-news/w/DDN-20230221-1>



EU gas consumption reduction very uneven

- ✓ Finland, Sweden, Estonia and Latvia reduced their gas consumption 33 to 57%
- ✓ They did not have good options to get gas elsewhere so they had to cut hard
- ✓ Putin have told the Russians that we freeze to death in Europe, another lie
- ✓ Fact is we have barely noticed that Russia cut their gas supplies
- ✓ We did notice prices sky rocket in the summer but that price hike was short lived



Source dataset: [nrg_cb_gasm](#)

Source and attribution: <https://ec.europa.eu/eurostat/web/products-eurostat-news/w/DDN-20230221-1>



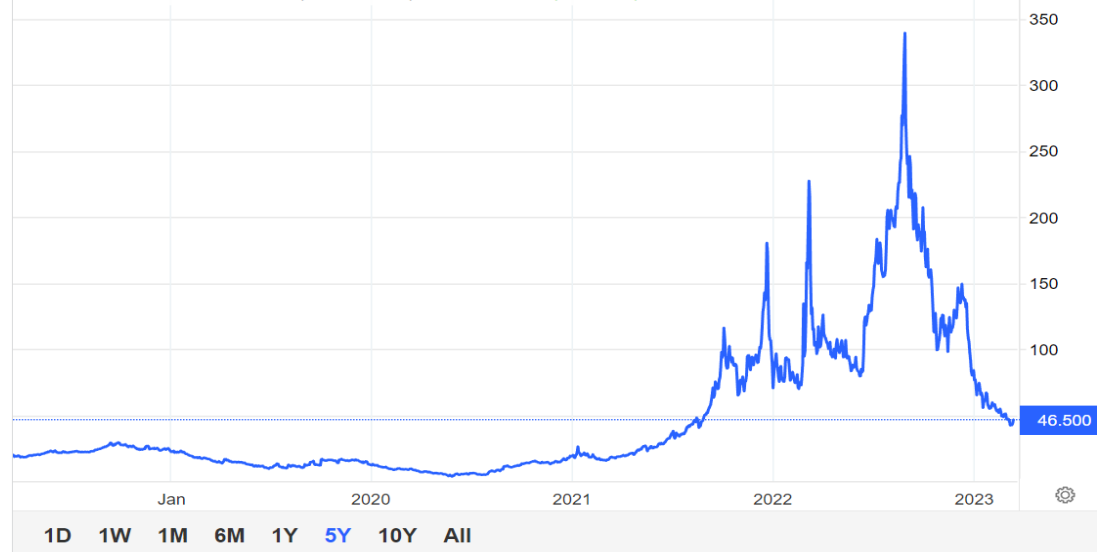
EU gas prices

- ✓ In jan, 2022 UK GBP gas price was about 200 GBp/thm
- ✓ Now on mar. 10, 2023 it is 116 GBp/thm so lower than at the start of Ukraine war
- ✓ Also in jan, 2022 central EU gas TTF was trading at about 80 EUR/MWh
- ✓ Now on mar. 10, 2023 it is 46 EUR/MWh
- ✓ At 46 Euro per MWh Russia's 2021 140 billion m3 export would have earned them **67.4 billion Euro**
- ✓ Now Russia look to sell at most 26 billion m3 gas in all of 2023 and that is worth only **12.5 billion Euro**
- ✓ For calculation see link to spreadsheet below video

Natural Gas UK GBP (GBp/thm) 116.4400 +6.8500 (+6.25%)



Natural Gas EU Dutch TTF (EUR/MWh) 46.5 +2.901 (+6.44%)



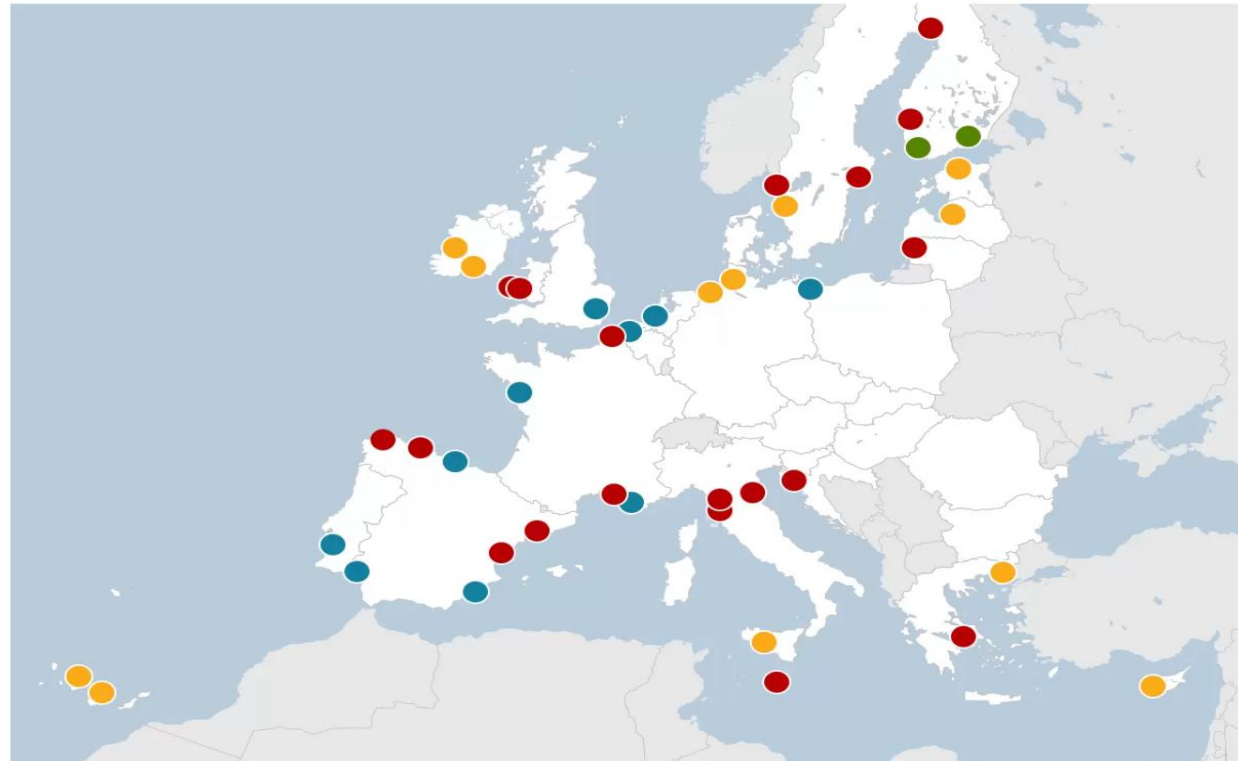
• Source and attribution: <https://tradingeconomics.com/commodity/eu-natural-gas>



Europe's LNG import terminals

- ✓ South Europe has enough LNG import terminals but Germany, Finland, Sweden, Estonia and Latvia need more
- ✓ These countries are all in the process of building new LNG terminals of which some started operation in dec 2022 and the last permanent terminals will be finished by end of 2025
- ✓ Denmark and Poland finished a new gas pipeline in dec 2022 from Norway that can supply all of their gas
- ✓ Again Russia's gas market in EU will be forever gone

LNG ports in Europe



Terminals for LNG

- Operational
- Operational and expansion planned
- Under Construction
- Planned

Source: European Commission, December 2022

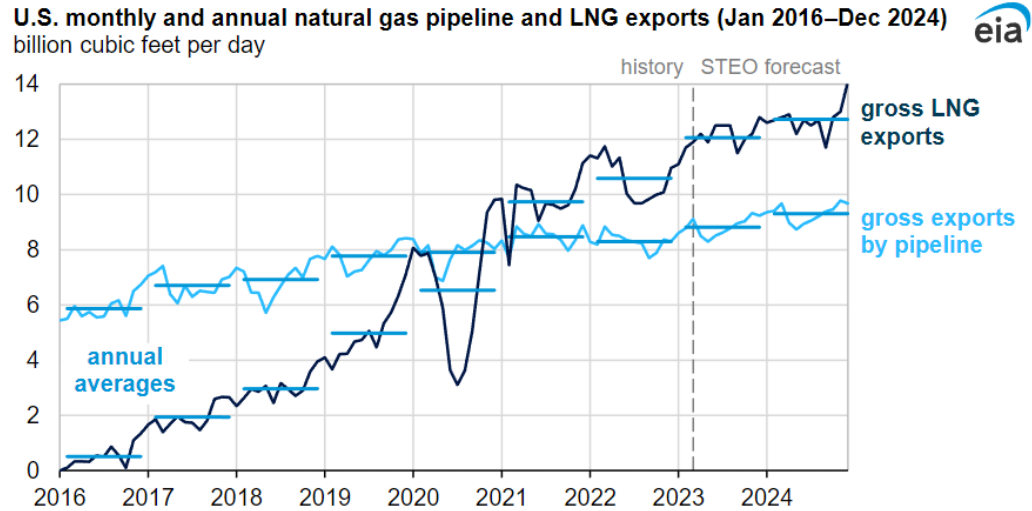


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Who will sell LNG to Europe?

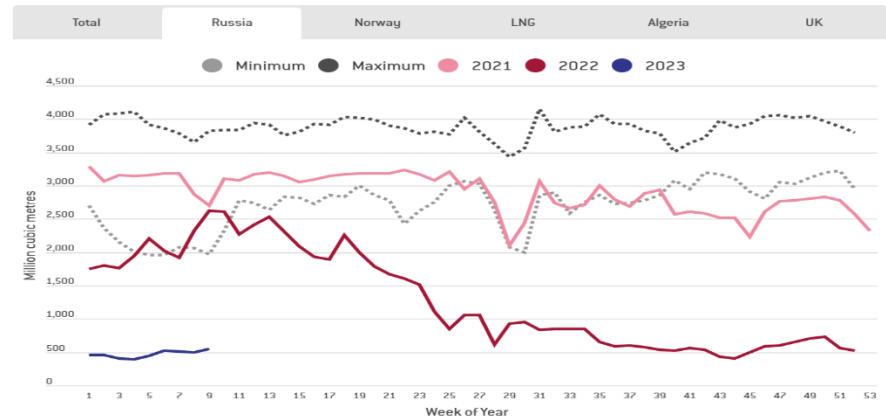
- ✓ **Short answer:** The US LNG export is big enough to replace all Russian gas to Europe
- ✓ The 12 billion cubic ft daily US LNG exported in mar. 2023 is same as 2.37 billion cubic meter weekly export (calculation is in downloadable excel)
- ✓ For comparison, Russia's weekly export to EU is 0.5 billion cubic meter in mar. 2023
- ✓ Also quite remarkable how fast the US LNG export has grown from 0 in 2016 to a massive exporter in 2023
- ✓ Value of US LNG export annualized from 12 billion cubic ft daily level at a Europe TTF price of 46 Euro per MWh is 59.5 billion Euro



Data source: U.S. Energy Information Administration, *Short-Term Energy Outlook* (STEO)
Note: LNG=liquefied natural gas

Figure 1: EU27 Natural Gas Imports (by source)

Last updated: 09/03/2023 (updated every Tuesday/Wednesday)



Source: ENTSO-G, <https://transparency.entsog.eu/#/map>
Note: Minimum and Maximum values are calculated from the period 2015-2020.

Source and attribution: <https://www.eia.gov/todayinenergy/detail.php?id=55741>



Is US selling LNG to Europe good business?

- ✓ **Short answer:** Yes, very good business
- ✓ Gas cost a lot less in the US than it does in Europe so it is good business to produce LNG in the US and ship it to Europe
- ✓ However, hard to see how much because US gas is traded in USD per MMBtu and European gas is traded in Euro per MWh
- ✓ I have done the translation so you do not have to see excel for download
- ✓ **Currently US gas trade for 2.43 USD/MMBtu**
- ✓ **Also currently European gas trade for 46.5 Euro/MWh equal to 14.5 USD/MMBtu!!**
- ✓ **It cost 3 USD/MMBtu to liquify gas and about 0.5 USD/MMBtu to transport LNG from US to Europe**
- ✓ **So US gas export total cost is $2.43 + 3 + 0.5 = 5.93$ USD / MMBtu**
- ✓ **Again Russia's gas market in EU will be forever gone**

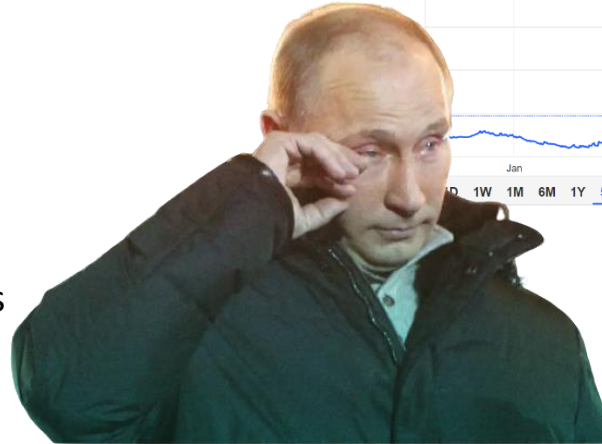


Source and attribution: <https://tradingeconomics.com/commodity/eu-natural-gas>

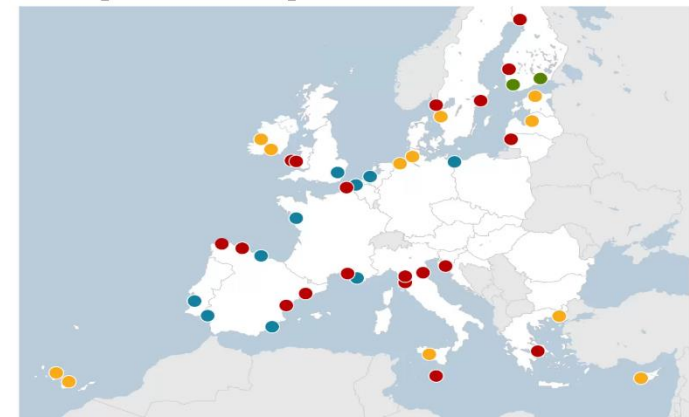


Concluding remarks

- ✓ Europe no longer import important quantities of Russian gas as it has dropped to about 500 million m3 per week or 7% of total gas supply by march 2023 (used to be 33%)
- ✓ Hungary is the only EU country still importing Russian gas in full through pipeline in Ukraine
- ✓ Ukraine accept this (137 million per week) because it prevents Russia from targeting Ukraine gas and electricity infrastructure that is needed for Russian export to Hungary that clearly side with Russia and not NATO or EU
- ✓ Europe has cut its consumption of gas by 20% in March 2023 and will continue to cut gas consumption because price of gas is still too high at 46 Euro/MWh (should be 25 to 30 Euro)
- ✓ Europe already have enough temporary LNG import terminals to cover its needs and will have plenty of permanent terminals by 2025
- ✓ **The conclusion is that Russia has clearly shown Europe they are our arch enemy and cannot be relied upon for supply of anything**
- ✓ **I expect EU to cut all remaining ties with Russia**



LNG ports in Europe



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Source: European Commission, December 2022

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Sources/attribution for previous slides

- Slide2 EU gas imports: <https://www.bbc.com/news/58888451?zeph-modal-register>
- Slide3 EU gas consumption: <https://ec.europa.eu/eurostat/web/products-eurostat-news/w/DDN-20230221-1>
- Import of gas to Ukraine happens from Poland and Hungary despite Ukraine being a large transit country for Russian gas to Europe
Ukraine do not buy any Russian gas directly:
https://en.wikipedia.org/wiki/Natural_gas_in_Ukraine#:~:text=Traditionally%2C%20Ukraine%20imported%20natural%20gas,suppliers%20of%20imported%20natural%20gas.
- TTF and UK EU gas prices: <https://tradingeconomics.com/commodity/eu-natural-gas>
- Data on European natural gas imports: <https://www.bruegel.org/dataset/european-natural-gas-imports>
- Natural gas production in the European Union from 1998 to 2021: <https://www.statista.com/statistics/265345/natural-gas-production-in-the-european-union/>
- Converting billion m3 gas to MWh: <https://www.unitjuggler.com/convert-energy-from-GcmNG-to-MWh.html>
- Converting ft3 to m3: <https://www.metric-conversions.org/volume/cubic-feet-to-cubic-meters.htm>
- US LNG exports: <https://www.eia.gov/todayinenergy/detail.php?id=55741>
- Conversion rate 1 MWh to MMBTU: <https://www.inchcalculator.com/convert/megawatt-hour-to-million-btu/>
- It cost 3 USD/MMBtu to liquify gas and about 0.5 USD/MMBtu to transport LNG from US to Europe:
<https://www.reuters.com/article/us-column-russell-lng-asia-idUSKCN2290D9>
- UK gas production in 2021 of 33 billion m3: <https://www.statista.com/statistics/332211/united-kingdom-uk-natural-gas-production/>

