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Energy security and the strategic role of gas in Europe: a reassessment

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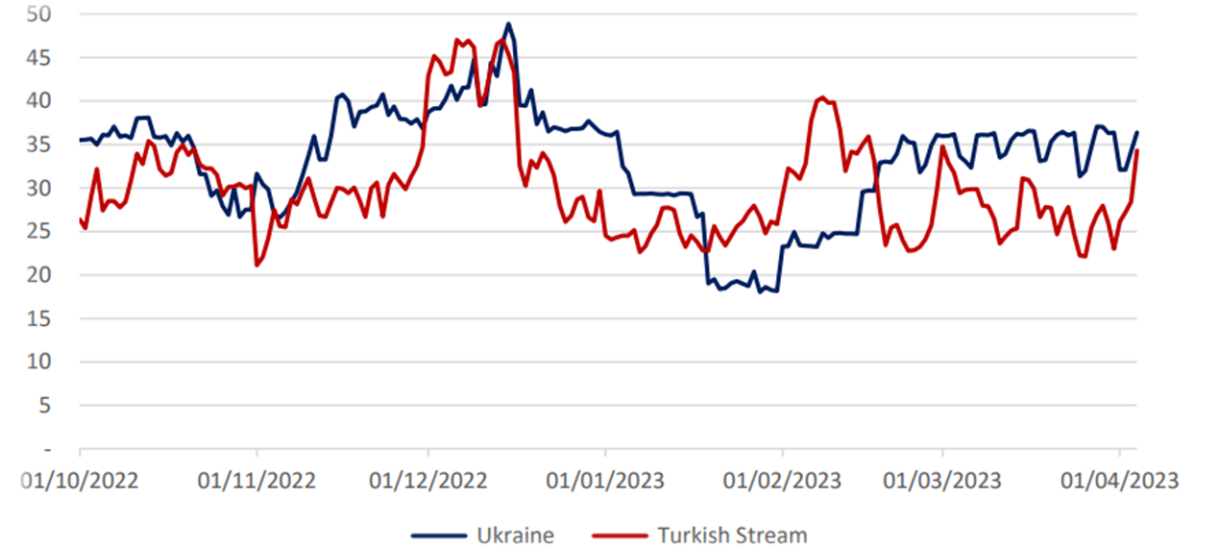
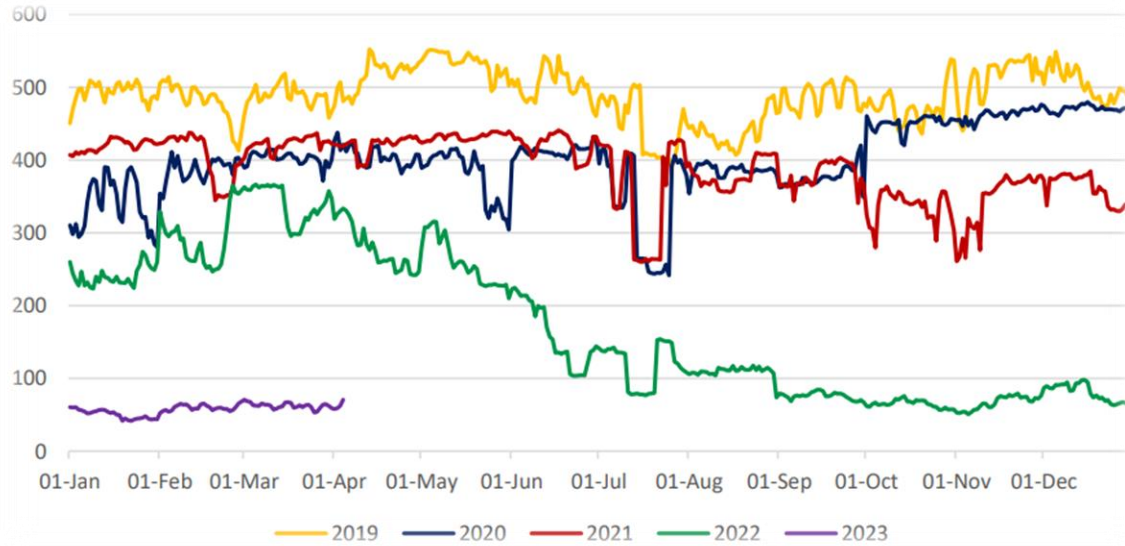


European-Russian gas relationship post-February 2022

- The biggest EU-Russia political crisis since the end of the 'cold war'
- In response to 24/02/2022, Western countries have imposed massive sanctions on various sectors of the Russian economy
- 'Weaponization of Russian gas' became a predominant narrative in Europe, which has made a political decision to eliminate its dependence on Russian gas
- Previously, Europe relied on Russian gas imports for 1/3 of its supplies. In 2022 Russian supplies to Europe fell by 56% and are expected to halve again in 2023. Current flow is less than 20% of pre-crisis (2021) levels
- Prolonged armed conflict and further escalation in Ukraine would lead to further deterioration of political/security – and therefore gas – relationship

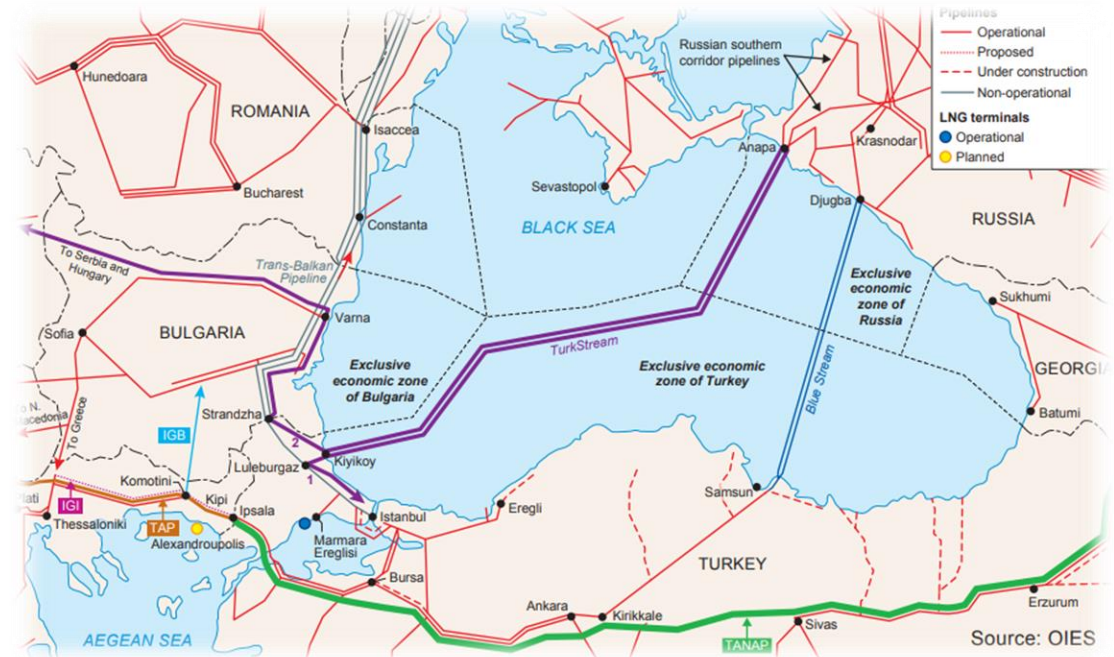
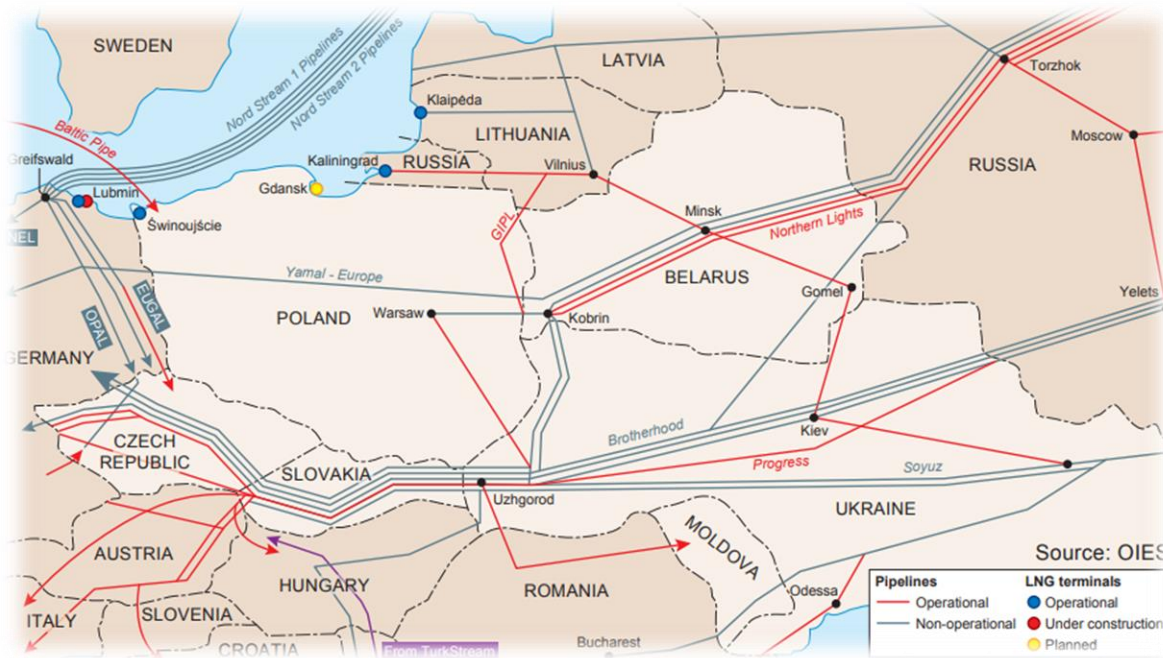
The EU policy went from reducing dependence on Russian gas to cutting by 2/3 in 2022 and phasing out by 2027, but the EU is not in control of either timing or scale of this process

Russian pipeline gas flows to Europe declined dramatically in 2022-23



Gazprom's pipeline gas flows to Europe now constitute less than 20 per cent of pre-crisis level, having decreased sooner and on a larger scale than the EC had wished or prepared for. Will Russian flows across Ukraine continue after 2024, when the current transit contract expires?

Two operational Russian gas export corridors: Ukraine and TurkStream



Yamal-Europe has not transited Russian gas since May 2022. Flows through Nord Stream had started to decline in June 2022 and stopped completely in September 2022 (two strings of Nord Stream and one of Nord Stream 2 were later damaged). Flows through TurkStream (and Blue Stream) have continued normally; flows through Ukraine have continued but at significantly lower levels



REPowerEU: phasing out dependence on Russian gas while accelerating energy transition

- Save and share energy
 - 15% gas **demand reduction** obligation (GDR Reg)
 - 90% **storage filling** requirement for 2023+ by November (SOS Reg amendment)
 - Mandatory **certification of Storage Operators** (Gas Reg amendment)
 - **Solidarity** obligation (SOS Reg and ES Reg)
- Diversify energy sources
 - Accelerated construction of **new LNG import capacity and LNG purchasing** by EU Member States
 - Joint **purchasing platform** Aggregate EU (ES Regulation)
- Accelerate clean energy transition
 - Accelerated **hydrogen production and imports** (revised REDii Directive and RNFBO DAs)
 - Accelerated **hydrogen infrastructure** build up and repurposing of gas infrastructure (RNH Directive and RNH Regulation, TEN-E Regulation, ENTSOG's TYNDP 2022)



Anatomy of the European gas (and energy) crisis 2022-23: prices

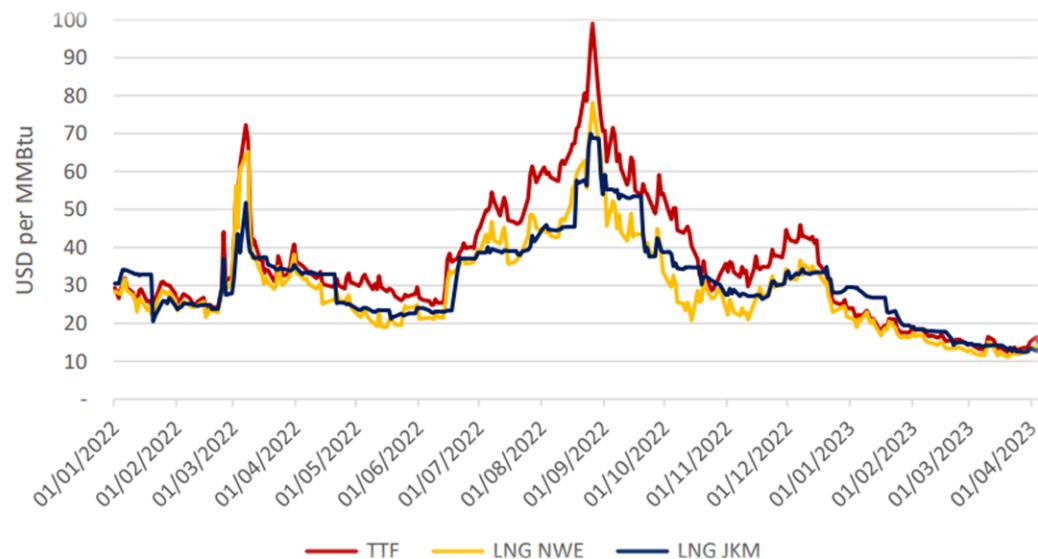
- The crisis started in the second half of 2021, caused by many factors, including a sharp reduction of Russian gas supplies (~56 per cent in 2022) amplifying the crisis
- Prices skyrocketed with historical highs achieved in Feb 2022 (~\$70/mmbtu) (following the start of hostilities in Ukraine) and Aug-Sep 2022 (~\$100/mmbtu) (following a complete halt of gas flows through Nord Stream).
- European governments put in place support measures, extremely costly albeit varied for different countries (Germany, UK, France spending the most) with the total amount for Europe estimated at ~700 bn euros (and globally more than \$1 trln)
- By Feb 2023 prices came down to \$20 (warm winter, depressed demand, full storages) and are hovering around \$15 now (still ~3 times higher compared to pre-crisis) but will rise again (depending on winter weather, increase in Chinese demand)
- Prices are likely to remain in excess of \$15/mmbtu for at least 2 years (and possibly more) on average, there could be periods of much higher and lower prices (volatility).

Prices would decrease when the European gas market will re-balance by 2026-27 (as additional LNG supplies become available) but remain higher than pre-crisis



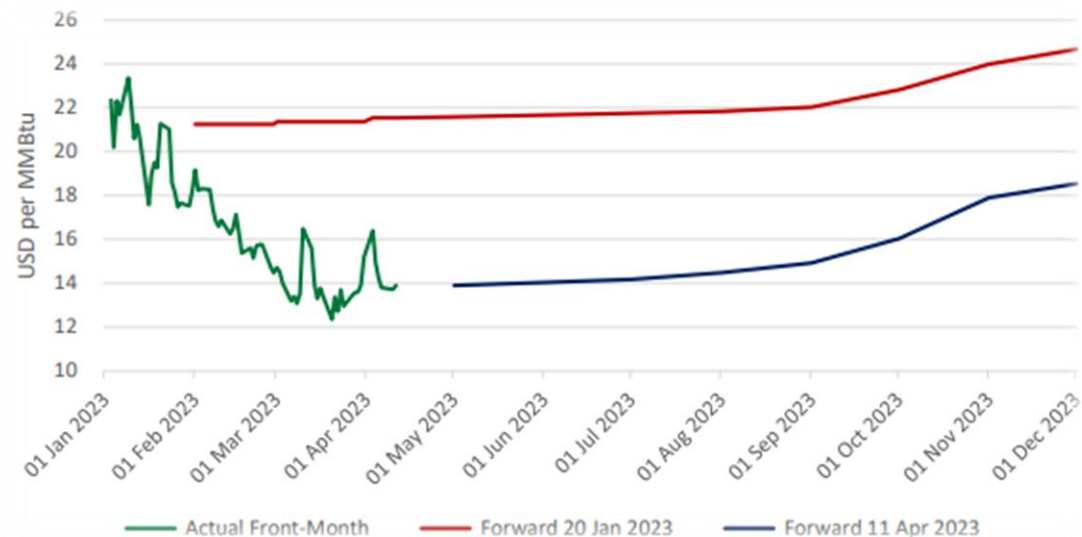
Prices: levels and volatility

Gas prices, Jan 2022 – Mar 2023



Source: OIES Gas Quarterly 21

TTF Actual Front-Month Prices (to 10 April 2023) and Forward Prices as on 20 January 2023 and 12 April 2023



Source: OIES Gas Quarterly 21

Sharp price increases prompted the EU to introduce a 'market correction mechanism' – a price cap, which would be triggered if TTF front month were to exceed €180/MWh (~\$60/mmBtu) for 3 days and be €35 higher than the reference price. Has not been invoked yet as prices have since been below the threshold: significant potential for market distortion if/when invoked

Anatomy of the European gas (and energy) crisis 2022-23: volumes

- Europe has been able to compensate lost Russian volumes by increased LNG imports and decreased demand
- EU gas consumption declined in 2022 by more than 15 per cent compared to the average for 2017-21, mostly due to very high prices (forcing industrial closures) and mild temperatures (leading to lower gas demand for residential heating)
- In terms of physical availability of gas, Europe got through winter 2022-23 relatively unscathed as there was no late winter freeze and Russian supplies did not decline further
- Winter 2023-24 could be more difficult, if Russian supplies are lost – particularly for the CEE region (Germany, Czech Republic, Slovakia, Austria and potentially Hungary) as infrastructure constraints prevent them from importing more non-Russian gas
 - Conclusion and implementation of Solidarity Agreements is of paramount importance as could at least safeguard consumption of solidarity protected customers in the region
 - Germany would play a key role as a gate-keeper for passing imported LNG further to the CEE region

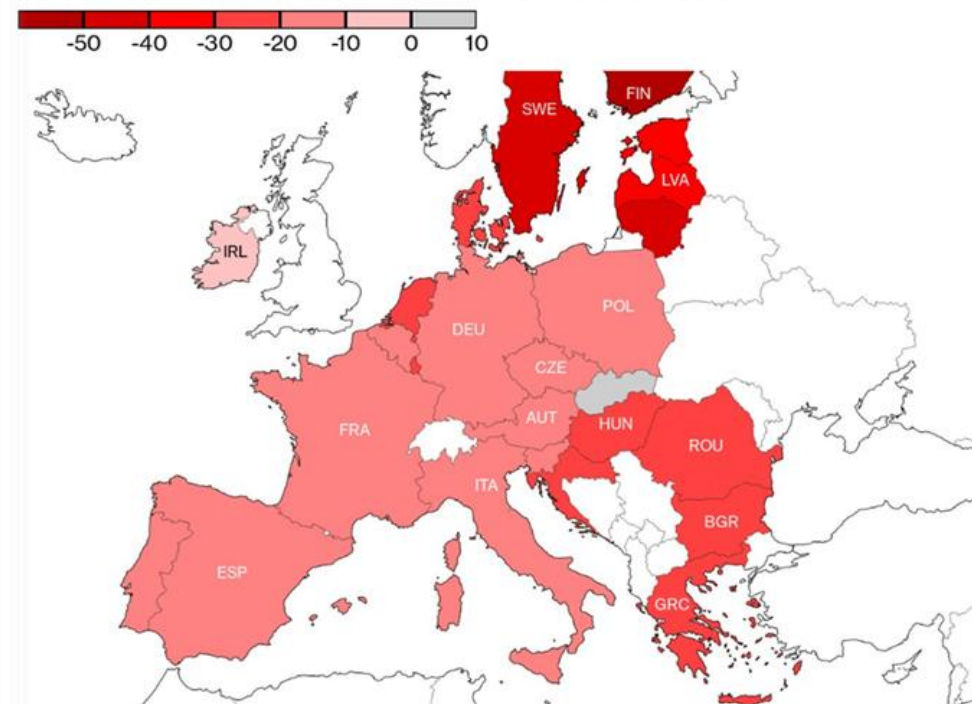


Volumes: gas demand reduction

- Under GDR Regulation voluntary gas demand reduction by 15% becomes mandatory if the Council, on a proposal from the EC, declared a Union alert (on the basis of QMV). The EC is obliged to present the proposal if:
 - there is ‘a substantial risk of a severe gas supply shortage’ or ‘an exceptionally high demand’, or
 - if five or more member states’ competent authorities have declared a national alert under SOS Regulation

EU Slashed Its Demand for Gas, Beating a Voluntary 15% Goal

Gas demand change August-Jan vs past five years (in %)



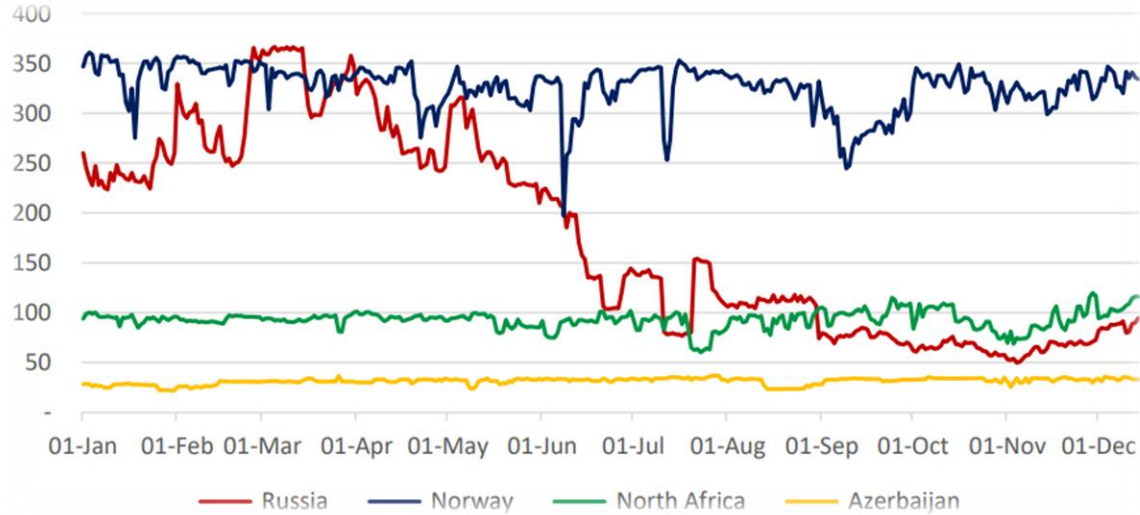
Source: Eurostat

No Union alert was triggered in winter 2022-23 as more than 15% demand reduction was achieved, but it could be triggered in winter 2023-24 if there were to be a significant deviation from the 15% demand reduction trajectory. Implementation would be extremely difficult



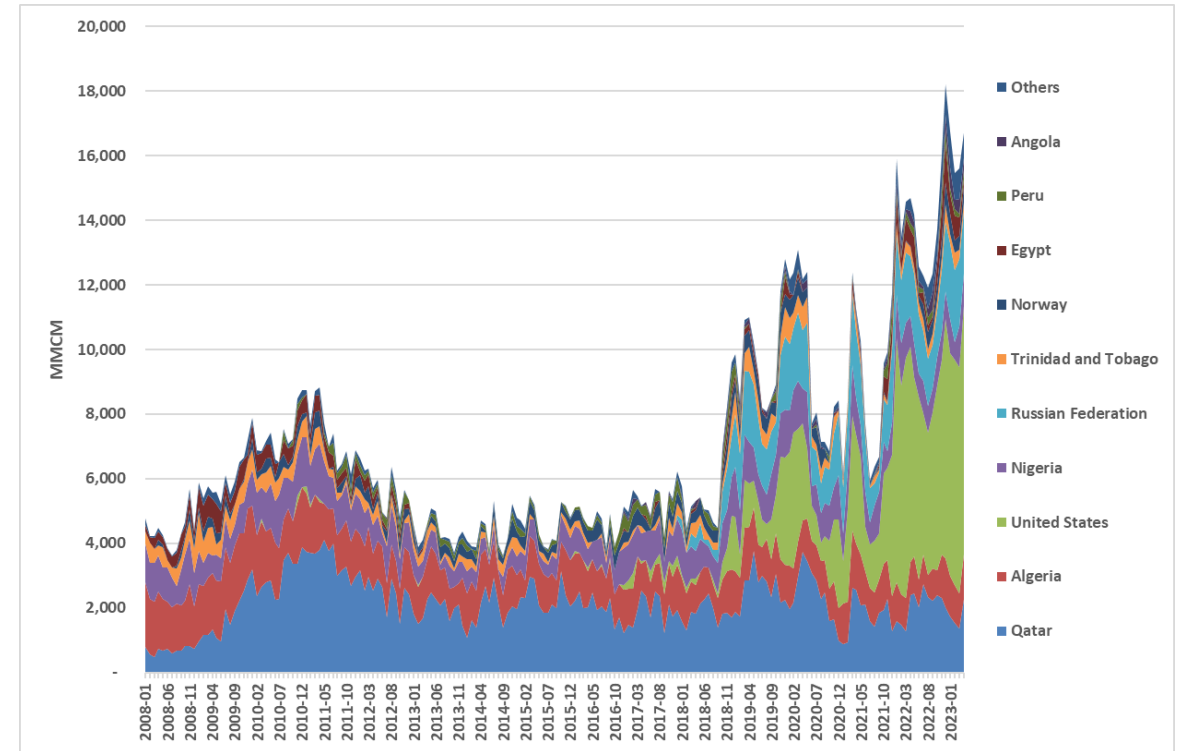
Volumes: pipeline gas and LNG supplies to Europe

Daily pipeline flows to Europe, Jan 2022 – Dec 2022



Source: OIES Gas Quarterly 19

Europe's LNG imports by source



Source: OIES based on Kpler's data

Europe has been able to attract significant volumes of LNG from the global market to compensate for Russian pipeline gas imports, mostly from the US (pricing poorer Asian countries out of the market). The US, Qatar and Russia remain the top suppliers of LNG into Europe



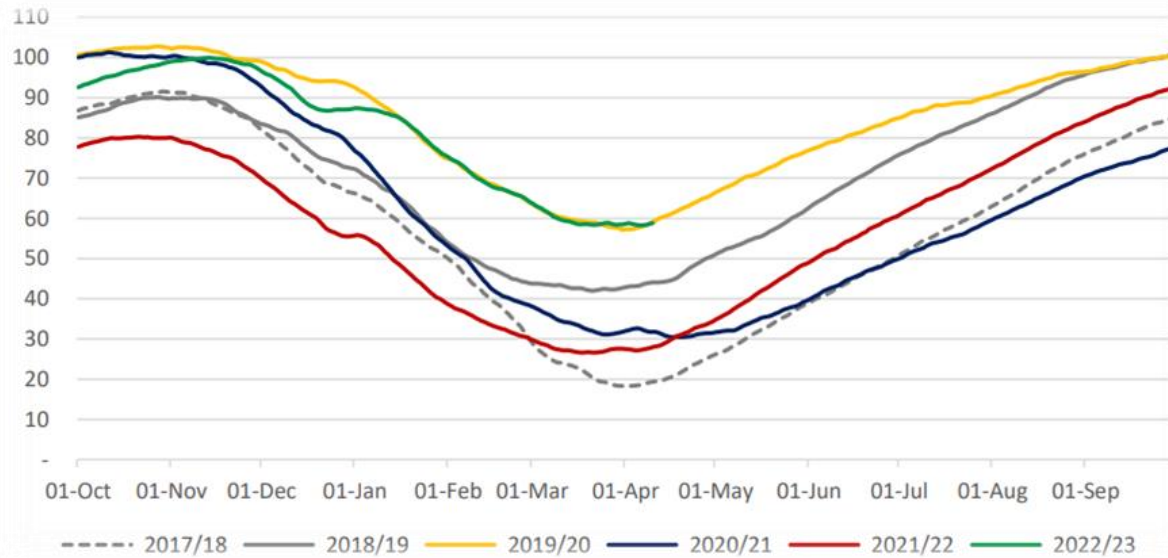
Accelerated increase in European LNG regasification capacity



- EU total LNG regasification capacity pre-crisis ~215 bcma
- Post-crisis EU Member States “hunt” for FSRUs and a surge in new LNG import capacity
 - Estimated additional 50 bcma by end 2023 and another 50 by 2030
- Pre-crisis LNG terminals:
 - 2/3 capacity is regulated, 1/3 – exempted (all UK terminals, Gate, Dunkerque, Adriatic)
- Post-2020 LNG terminals:
 - EU exemptions granted to Brunsbüttel, Lubmin, Stade, Alexandroupolis, EemsEnergy; national exemptions granted to Le Havre.
 - Is all new capacity likely to be exempted?



Volumes: storages levels



Source: OIES Gas Quarterly 21

Europe has been able to re-fill its storages over winter 2022-23 (albeit at sharply increased prices)

- At the end of Q1 2023 Europe had 58.5 bcm of gas in storage (31.1 bcm higher y-o-y) thanks to net injections in late 2022 and slower withdrawals in Jan 2023
- comfortable starting level for refilling storages over Q2 and Q3 with a view of reaching the EU storage target of 90% of capacity (94.2 bcm) by 1 November 2023
- With Russian supplies flows expected to be lower y-o-y and non-Russian supplies (European domestic production and pipeline gas imports) are not expected to be higher y-o-y, the main factors determining the filling trajectory will be European demand and availability of LNG imports



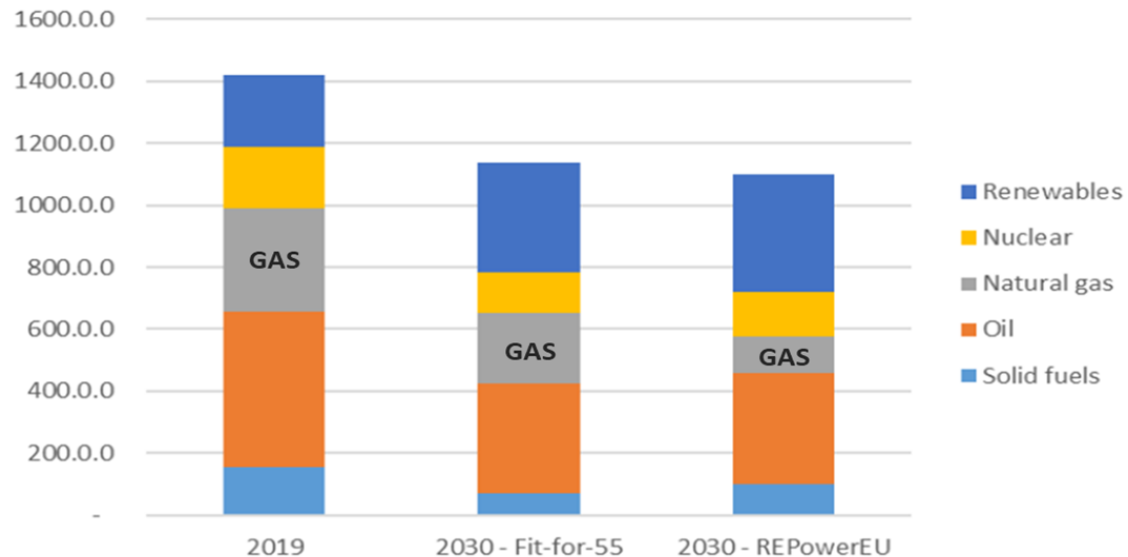
European gas supplies: short- and long-term outlooks

- With nearly full storages and continued strong LNG imports, Europe has passed through winter 2022-23 relatively unscathed (thanks to warm temperatures and full storages)
- This has bought Europe more time to prepare for winter 2023-24 which could be more difficult and could see curtailments due to lower availability of Russian gas for refilling storages over summer 2023 and a potentially stronger pull-back of LNG into Asia. Central and east European region – Germany, Czechia, Slovakia, Austria, and Hungary – would be most affected. EU solidarity measures would help but only have limited impact
- In the longer term, Europe's dependence on imported LNG will increase dramatically – it will have to compete fiercely with Asia, certainly in the next few years (with prices high and volatile) and possibly even after the market rebalances by 2026-27, with prices decreasing but still higher than pre-crisis, with adverse impact on European industry

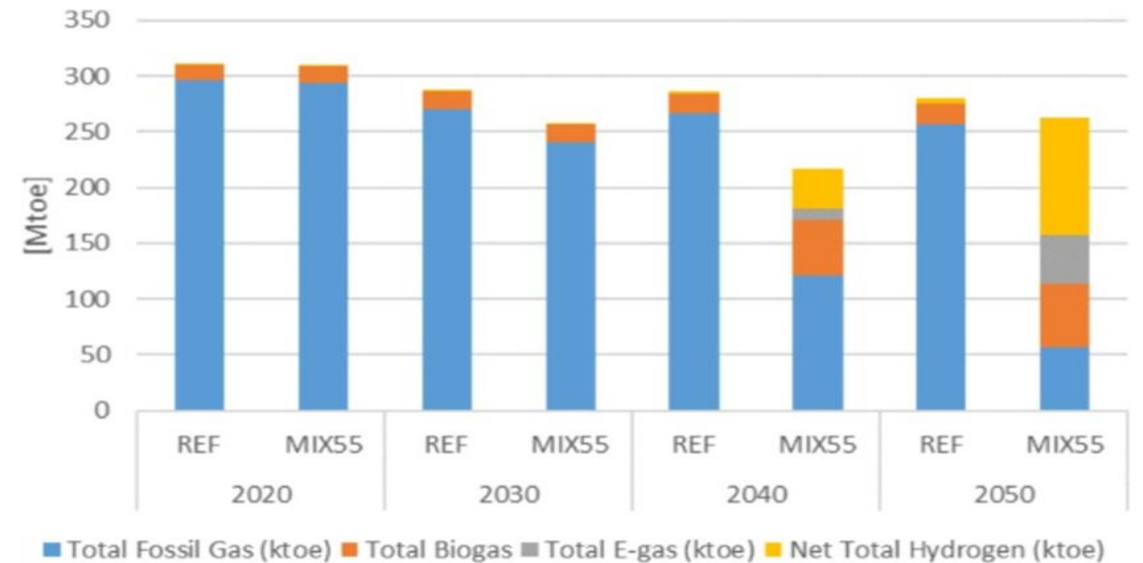


Europe does not know how much natural gas it will need after 2030

REPowerEU & Fit-for-55 scenarios: gross inland consumption



Composition of gaseous fuels in the EU by 2050: scenarios



REPowerEU more than doubles the Fit-for-55 gas demand reduction target to 310 bcm but this is hardly realistic. All net-zero compatible scenarios suggest a sharp reduction in demand for natural gas after 2030 but the extent is uncertain. Conclusion of new long-term contracts that would enable the next generation of LNG supplies is proving difficult



Thank you!

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For publications see <https://www.oxfordenergy.org/authors/katja-yafimava/>

