

European gas: how to derisk next winter and accelerate independence from Russia

By Jacob Nell and Borys Dodonov

Overview

In 2022, Europe adjusted away from Russian gas, successfully reducing gas consumption and sourcing gas from other places, notably additional LNG. In a measure of the success of this adjustment, European gas storage is around a record high for this time of year, and gas prices have fallen sharply. However, there continue to be concerns that a cold winter in 2023-24 could leave Europe and Ukraine low on gas, and drive another period of elevated prices. To derisk next winter, and give Europe the confidence to make further progress towards complete energy independence from Russia this year, we propose that the EU purchase and store a further reserve buffer of gas in Ukraine, above and beyond the 13.5 bcm commitment already made under the joint gas purchasing mechanism¹.

1. The impressive adjustment in Europe's gas market

Chart 1. Supply adjustment

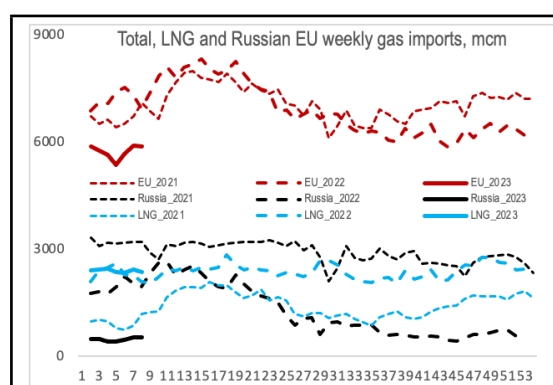
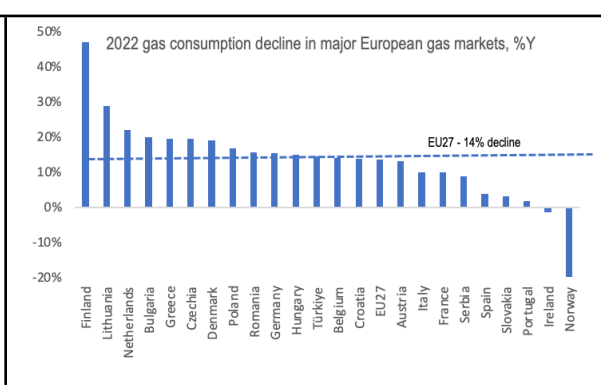


Chart 2. Demand adjustment:



Source: GIE, Brueghel

Source: Eurostat

Chart 3. Gas storage at record

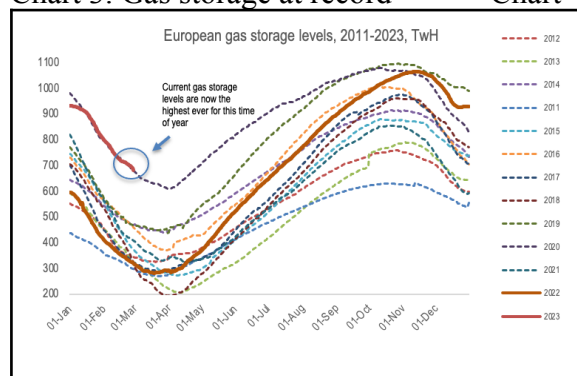
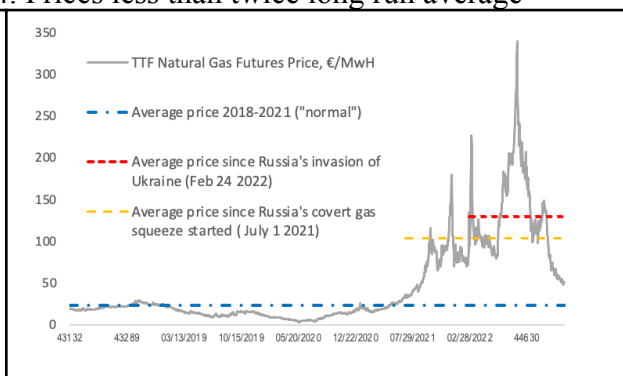


Chart 4. Prices less than twice long run average



Source: GIE

Source: ICE

¹ See EU Council, 24 November 2022:

<https://www.consilium.europa.eu/en/press/press-releases/2022/11/24/further-measures-to-tackle-the-energy-crisis-council-agrees-on-joint-purchases-of-gas-and-a-solidarity-mechanism/>

2. Turning the tables: Ukraine as the sole channel for Russian gas sales to Europe

At the same time, although Russia's role in European gas supply has been significantly reduced, and both the Yamal and Nordstream pipelines are out of action, Russia continues to supply significant volumes of gas to Europe via LNG, Turkstream and the Ukrainian Gas Transmission System (GTS). This generates significant export earnings – annualised at the current rate at just above 40 bcma of exports, which at current prices generates nearly \$20 bn in earnings. This revenue helps to support the Russian economy, fund the Russian budget and finance Russia's invasion of Ukraine.

Chart 5. The main Russian gas transport routes to Europe



Source: Naftogaz of Ukraine 2021 Annual Report

As part of our proposed “sanctions for victory” package of measures², we are proposing to turn the tables on Russia, which has long been focused on sending Russian gas to Europe without going through Ukraine, and instead require all Russian gas sales to Europe to flow through the single channel of Ukraine. First, we propose that the EU ban the supply of Russian gas via Russia-controlled pipelines – arguably, in line with the policy intention of the EU regulation on unbundling supply from distribution, as reflected in the Third Energy Directive and elsewhere. This will have the effect of banning sales of Russian gas to the EU via the Turkstream pipeline, and preventing any supplies restarting through the Yamal and Nordstream pipelines. We also propose that European countries who still buy Russian LNG – including France, Spain, Belgium, Italy and the Netherlands - follow the example provided by the UK and Germany and end their purchases of Russian LNG. At the same time, we propose that customers of Russian gas can continue to buy volumes which are supplied through the Ukrainian GTS, which provides economic and energy security benefits for Ukraine.

Since the capacity of the GTS is up to 140 bcma, and total Russian pipeline and LNG flows to the EU are currently running at around 40 bcm, the GTS could in theory accommodate

² See [One Year of War: Sanctions Impact Assessment and Action Plan for 2023](#), KSE Institute, March 2023.

more than three times over the volume of gas currently supplied by Russia to Europe. At the moment, we propose to cap the allowable volume of Russian gas which can flow through Ukraine at the 40 bcma agreed in the current Russia-Ukraine gas supply agreement for 2021-24. Looking ahead, making the GTS Russia's sole channel of gas supply to Europe will facilitate the imposition of a levy on all Russian gas sales to Europe to finance Ukrainian reconstruction and compensation.

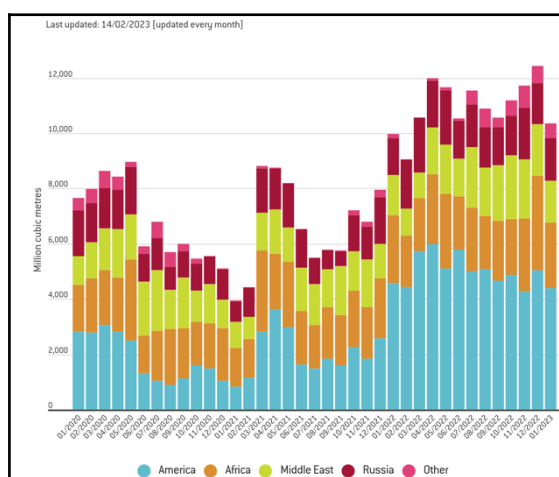
In addition to the strategic impact of thwarting Russia's efforts to diversify its gas supply routes to Europe to avoid Ukraine, making Ukraine the sole channel for Russian gas sales to Europe would squeeze Russian export earnings. We see three plausible scenarios:

First, Russia could respond by cutting all gas supplies to Europe. In this case, Russia loses around 20 bcma of gas pipeline sales and we estimate around one third of LNG export revenues, given the costs of reassigning contracts – a total loss of around \$13 bn in export earnings. At the same time, assuming that the EU and Ukraine implement policies to reduce gas demand energetically, as recommended by the IEA, we estimate – as laid out in more detail below - they should have enough gas to cover even a stress scenario.

Second, Russia could respond by continuing to flow volumes through Ukraine at the current level. In that case, Russia would lose half its remaining pipeline exports to the EU, and one third of LNG export revenues as a result of having to redirect LNG cargoes. In this case, the annualised fall in Russia's gas export earnings revenue would be around \$8 bn.

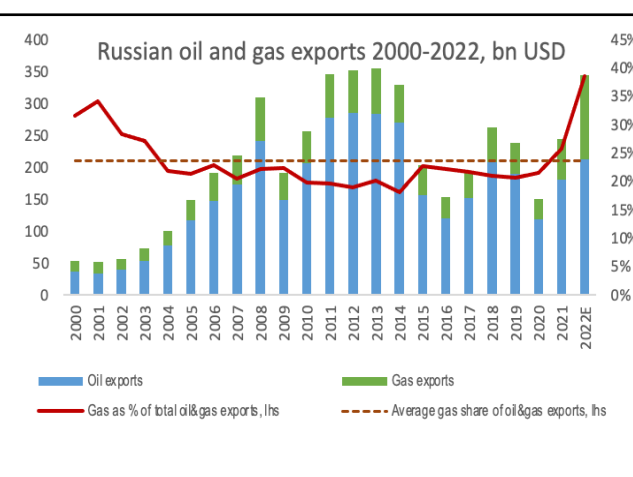
Third, Russia could respond by trying to increase flows through Ukraine to compensate for the lost Turkstream and LNG volumes, up to the negotiated 40 bcm annual level for 2023. In this case, Ukraine and its allies would have negotiating leverage. They could then choose to prioritise filling gas storage in Ukraine and across the EU, putting downward pressure on European gas and power prices, or they could levy an additional charge on Russian gas, to help finance Ukrainian reconstruction – or both.

Chart 6. Monthly European LNG imports



Source: Brueghel from Bloomberg

Chart 7. Russian oil and gas exports since 2000

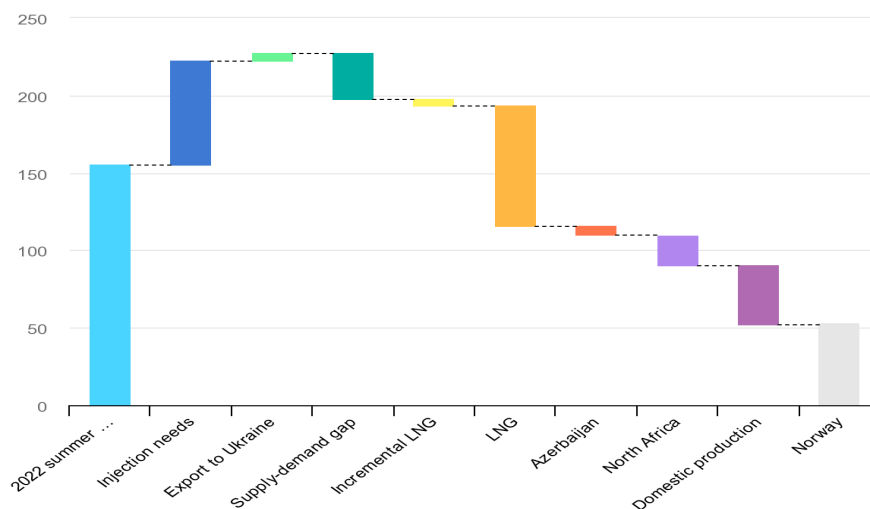


Source: CBR, 2022 from IEA

3. The winter 2023-24 risk

The main reason for Europe's hesitancy in reducing purchases of Russian gas is concern that Europe may struggle without Russian gas in winter 2023-24, despite the impressive adjustment seen so far since the Russian invasion of Ukraine. This concern was most prominently raised by the IEA³, which warned in November 2022 of shortages in winter 2023-24 if Russian cut off supplies and Chinese LNG demand rebounded.

Chart 8: Breakdown of the summer 2023 natural gas balance of the European Union and the United Kingdom in case of full cessation of Russian flows and limited LNG availability



Source: IEA

However, since this analysis was done, European consumption has continued to be low, supply from other sources high, and Russian gas has continued to flow to Europe via Turkey and Ukraine. As a result the IEA calculated in mid-February that the potential shortfall in a stress scenario had declined from 57 to 40 bcm, which also includes 10 bcm of exports to Ukraine and Moldova⁴. Moreover, the IEA identified 40 bcm of gas savings from other policy measures which could cover this shortfall. In other words, the IEA – although they continued to counsel caution about winter 2023-24 – estimate that Europe would be able to compensate for a gas shortfall even in a stress scenario, provided it continued energetically to implement measures including improving energy efficiency, continued expansion of renewables power generation, deployment of heat pumps and behavioural changes.

We think that the IEA have undermined the case for their own caution in reducing imports of Russian gas, in estimating that Europe can implement policies to fully offset the loss of the remaining 40 bcm of Russian gas supply. Moreover, in addition to the high levels of storage and recent evidence of demand elasticity, we also think that last year showed much more supply elasticity than expected, since it showed that most countries which buy LNG are price-sensitive, implying that in a stress scenario, Europe would be able to outbid others for

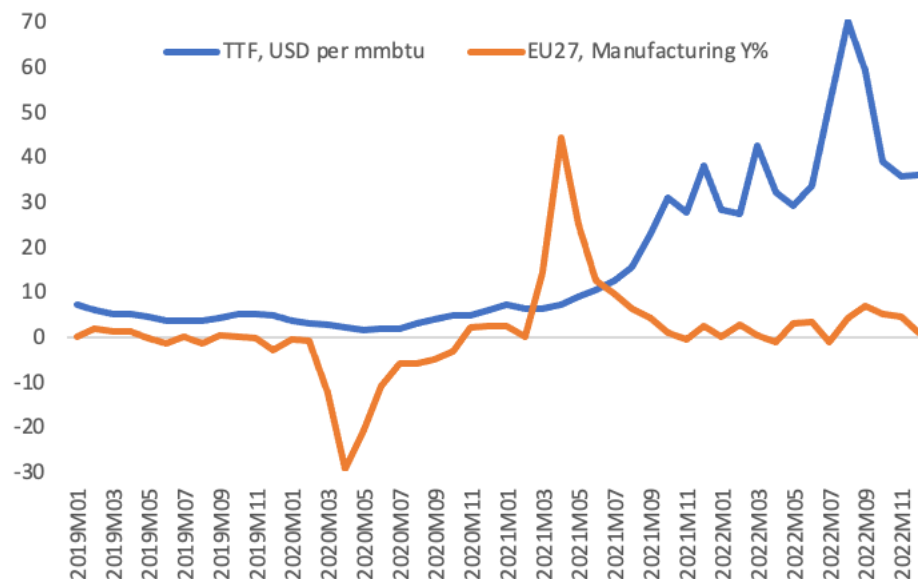
³ See [Never Too Early to Prepare for Next Winter](#), November 2022

⁴ See [Natural gas supply-demand balance of the European Union in 2023](#). IEA, February 2023

gas. In particular, Europe increased LNG purchases by 63%, while price-sensitive India and Bangladesh decreased imports by 17% and Pakistan by 18% in 2022.

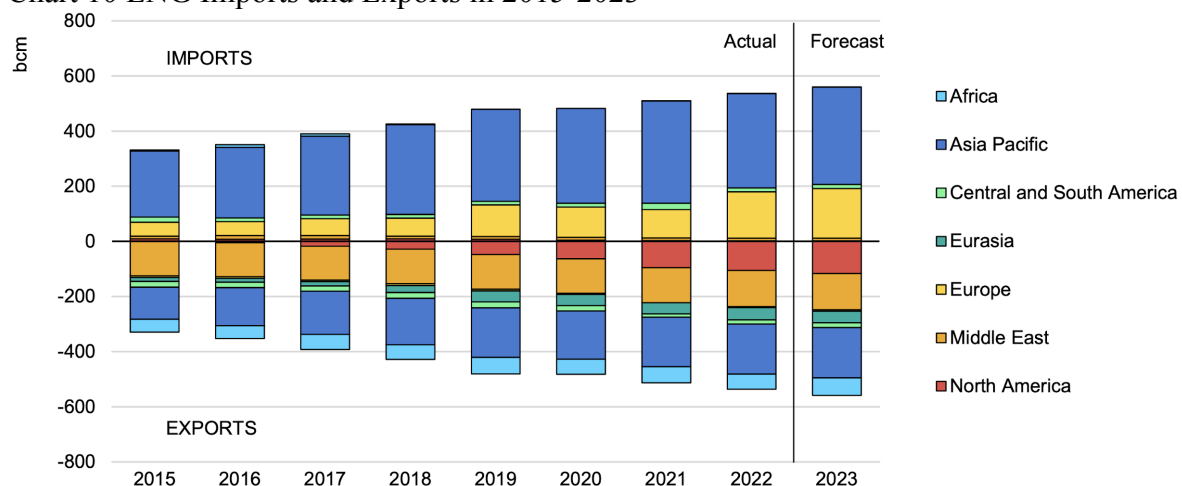
In its Q1-23 Gas Market Report⁵ the IEA does not project LNG imbalances in 2023. It forecasts the volume of LNG trade to increase by 4.3% led by a continuing rise in European imports to an all-time high of 180 bcm while the demand recovery in Asia is projected to be modest. LNG export growth is projected to grow at 4.3% after the return of the 20 bcm Freeport terminal to full production in Q1-23.

Chart 9: Not so essential. EU27 manufacturing grew in 2022 despite record gas prices



Source: Eurostat, World Bank

Chart 10 LNG Imports and Exports in 2015-2023



IEA. CC BY 4.0.

Source: IEA Natural Gas Market Report Q1 2023

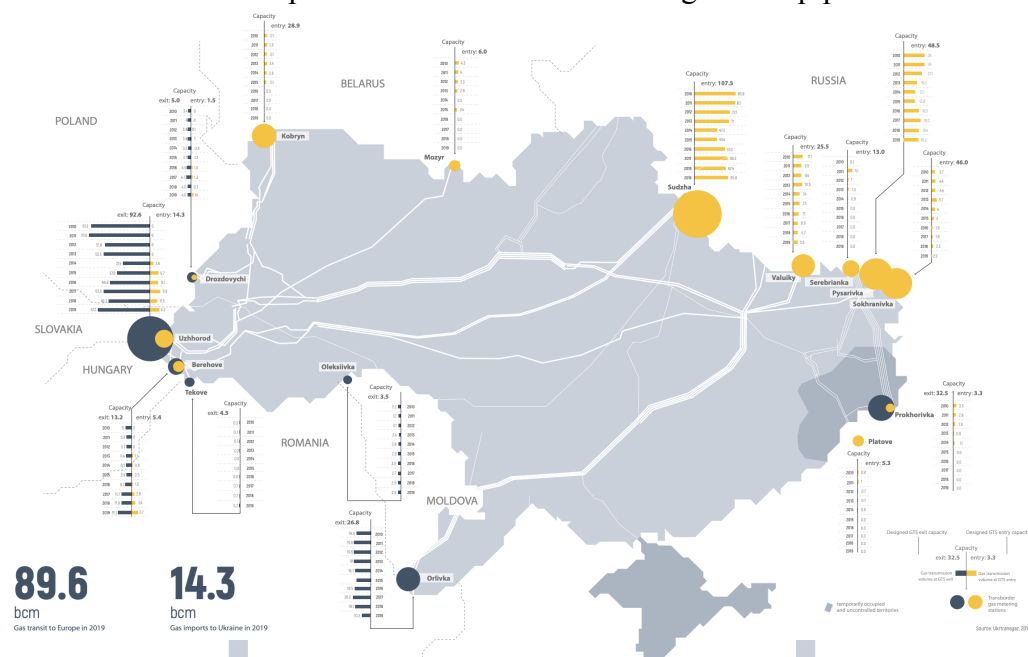
Further, we assume that winter 2024-25 will no longer pose such a risk. This partly reflects the expected strong pickup in EU regasification capacity. In particular, European Commission Vice President Maros Sefcovic said Europe is on track to expand LNG receiving capacity from the current 178 bcm to 227 bcm by 2024.⁶ It also reflects a pickup in global LNG liquefaction capacity, with three large US projects – Golden Pass, Plaquemines and Corpus Christi III – with a combined capacity of an additional ~60 bcm per annum expected online by 2025⁷.

4. Derisking winter 2023-24 with a reserve buffer of gas in Ukraine

To reduce the residual risk associated with European gas supply in winter 2023-24, and provide an additional buffer of storage, we propose to incentivise European gas operators to store gas in Western Ukraine, building on existing arrangements, and using the Joint Gas Purchasing Arrangements.

In particular, the EU currently has a target to fill its gas storage – which amounts to 105 bcm - 90% full by November 2023. We propose that Europe raise its target gas storage level – which must be filled by November 2023, to 100% of existing storage, ie by about 11 bcm, while allowing gas stored in UkrTransgas's storage facilities – and in particular the vast Bilche-Volytsko-Uherske UGS facility with its capacity of over 17 bcm, and the largest part of the 25 bcm storage capacity in Western Ukraine close to the EU border – to count towards the target. Given that Ukraine should exit winter with around 8 bcm in storage out of 33 bcm, and domestic production will allow injection at a pace of around 1 bcm per month through the summer, Ukraine can offer at least 15 bcm of capacity to store additional volumes of European gas. Given the daily limit on injection volume (250 mcm), action should be taken now to support injections from early in the filling season.

Chart 11 Map of Ukrainian gas pipelines and storage



Source: Naftogaz annual report 2019

⁶<https://www.reuters.com/business/energy/ukraine-jointly-buy-gas-with-european-union-countries-2023-03-09/>

⁷ See [US LNG capacity to grow as additional three export plans begin construction](#), EIA, September 2022.

Table 1. Underground natural gas storage sites in Ukraine

Operator	Name	Start year	Storage type	Capacity (bcm)	Injection (mcm/d)	Withdrawal (mcm/d)
PJSC Ukrtransgaz	Krasnopopivske	1977	Depleted field	0.42	5	4
PJSC Ukrtransgaz	Olyshivske	1978	Aquifer	0.31	2	2
PJSC Ukrtransgaz	Bohorodchanske	1979	Depleted field	2.3	26	50
PJSC Ukrtransgaz	Uherske (XIV-XV)	1982	Depleted field	1.9	17	17
PJSC Ukrtransgaz	Opanske	1984	Depleted field	1.92	14	14
PJSC Ukrtransgaz	Dashavske	1987	Depleted field	2.15	26	26
PJSC Ukrtransgaz	Solokhivske	1987	Depleted field	1.3	8	10
PJSC Ukrtransgaz	Kahychivske	1988	Depleted field	0.7	7	9
PJSC Ukrtransgaz	Chervonopartyzanske	1989	Aquifer	1.5	11	14
PJSC Ukrtransgaz	Bilche-Volytsko-Uherske	1990	Depleted field	17.05	120	102
PJSC Ukrtransgaz	Proletarske	1991	Depleted field	1	10	10
PJSC Ukrtransgaz	Verhunske	1996	Depleted field	0.4	6	3
Total				30.95	252	261

Source: IEA, 2022, In-depth Energy Policy Review of Ukraine, unpublished draft

At the beginning of March 2023 the UGS stored around 9 bcm of natural gas, which is around 7% higher than 2015-2018 average (typical years). Most of this volume was owned by Ukrainian residents. However, at the beginning of 2021, the volume of gas stored in UGS facilities owned by non-residents amounted to 7.7 bcm, while by the end of 2021 it has fallen to just 0.5 bcm. This net withdrawal of 7.2 bcm is strong evidence that the established system of warehousing gas in Ukraine, combined with the existing short-haul transmission tariff rates applied to Poland, Slovakia and Hungary proved attractive to non-resident traders.

5. Ukraine as a trading hub?

Ukraine has made significant progress in aligning its gas market regulations with European standards. As part of these reforms to the gas market, a virtual trading point (VTP) has been established in Ukraine. However, most gas in Ukraine is still traded directly through bilateral contracts between market participants, so VTP volumes and market liquidity remain rather low. According to the GTSOU, 41.4 bcm of natural gas was traded in 2019 and close to 58 bcm in 2020. This translates into a churn rate of around 2, whereas a market is typically considered liquid with a churn rate above 10.⁸

⁸ The churn rate is usually considered the most important indicator of hub liquidity. It represents the ratio of the total trade volume to the physical volume of gas consumed in the area served by the hub.

An Energy Community position paper⁹ suggests the following ways to increase market liquidity:

- A gas release programme: JSC Ukrgasvydobuvannya could offer volumes to be traded in a transparent manner, with equal access rights for all market participants competing in the supply segment.
- A market maker: JSC Ukrgasvydobuvannya could have free access to UEEX's short-term market, where it could act as a market maker and provide stable price signals, supporting the formation of real market margin prices (solving problems with balancing) and improve liquidity.

In the longer run, setting up a more liquid and active hub in Ukraine could have substantial benefits: it would enhance competition, support effective implementation of the Balancing Network Code, serve as a reference in domestic supply contracts and enhance gas supply security.

We also note that Ukraine's large gas storage in central eastern Europe could be a significant commercial opportunity, since it is well-positioned to serve the area potentially most adversely impacted by the loss of Russian supply - countries such as Slovakia, Hungary, Poland, Czech Republic, Austria. These countries used to have an advantaged location with better access to Russian gas since they were on the pipeline route from Russia, but now they are disadvantaged, since they have worse access to the marginal source of supply, ie seaborne LNG, being furthest from the sea. This is reflected in higher gas prices, trading at a premium rather than a discount to the TTF benchmark. From a trading perspective we think the reserve buffer proposal – buying cheap summer gas, store it in Ukraine and sell it in the peak winter season – may be commercially sound since the summer-winter spread may be particularly wide in a region which has suddenly transitioned from being advantaged to being disadvantaged. From a policy perspective an enhanced buffer of gas in Ukraine will enhance security of supply in the most stressed region in Europe and should help contain the premia.

However, at the moment developing Ukraine as a gas trading hub is not the current priority. Using Ukrainian storage as a reserve buffer of storage for European gas is intended to enhance European energy security, and give Europe the confidence to be more aggressive in reducing its consumption of Russian gas – which can then support Ukraine in its war with Russia by reducing European consumption of Russian LNG and pipeline gas more aggressively, and squeezing the flow of revenues which finances Russia's war.

Summary: Derisking winter 23/24 to accelerate independence from Russian gas

We argue that the Commission should help derisk winter 23/24 by setting a higher storage target – eg 100% full by November 2023 – and allowing gas stored in Ukraine to count towards that target. This in turn should support use of the joint gas purchasing mechanism to purchase an additional reserve buffer of gas - ideally in the 10-15 bcm range – for storage in Ukraine. This enhanced level of storage in Western Ukraine will enhance security of supply for the European gas market. With the additional security of this buffer, Europe can end all purchases of Russian gas, except via the Ukrainian GTS, this spring and be confident in having adequate supply of gas in winter 23/24, even in a stress scenario.