



ENTSOG WINTER SUPPLY OUTLOOK

2026/2027

INCLUDING SUMMER 2027 OVERVIEW

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Executive Summary

In line with Art. 26 (3)(g) of Regulation (EU) 2024/1789, ENTSOG has undertaken an assessment of the European gas network for the upcoming winter (1 October 2026 to 31 March 2027). The analysis investigates the possible evolution of supplies and underground gas storage facilities' (UGS) inventory during the season as well as the ability of the gas infrastructure to meet the demand, under different demand scenarios, including Reference Winter and Cold Winter conditions, and during high-demand events.

Winter preparedness remains an important consideration for energy stakeholders and, following the findings of previous analyses, should be addressed as early as possible. To supplement the winter assessment, ENTSOG also provides an overview of summer 2027, covering the period from 1 April to 30 September 2027.

EU underground gas storage facilities are entering winter 2026/27 with historically low inventory levels following a challenging injection season. EU storage facilities are 72% full as of 1 October 2026.

The ongoing conflict in the Middle East continues to have a significant impact on global LNG markets, particularly through reduced LNG supply from the region and disruptions to shipping through the Strait of Hormuz, a key transit route accounting for around 20% of global LNG trade. Shipping through the Strait remains significantly constrained, limiting LNG exports from Qatar and the UAE and tightening global LNG availability. The prolonged disruption has intensified competition for available cargoes between Europe and Asia and contributed to higher and more volatile global gas prices.

For the EU, direct exposure to Qatari LNG is relatively limited, with Qatar accounting for around 8% of EU LNG imports in 2025, although exposure varies across Member States. Nevertheless, Europe remains strongly affected by developments in the global LNG market.

The analysis evaluates the role of LNG in Europe under different availability scenarios. In addition to the LNG Optimal scenario, grounded in historical data, a sensitivity analysis considers lower availability in the LNG Tight scenario, reflecting limited LNG supply attraction to Europe.

For the first time, Ukraine's gas system topology is fully implemented in the modelling perimeter, providing a more comprehensive representation of the regional gas system.

This assessment additionally covers two disruption scenarios originally defined in the Union-Wide simulation Report¹, namely the disruption of the largest offshore infrastructure supplying continental Europe and the disruption of all pipeline imports from Algeria, in both cases assuming no Russian pipeline gas supply.

¹ <https://www.entsog.eu/security-of-supply-simulation#union-wide-simulation-of-supply-and-infrastructure-disruption-scenarios-2024>

Winter Supply Outlook 2026/27 main findings

- > On 1 October 2026, the EU's UGS facilities reached an average filling level of 72%, corresponding to approximately 811 TWh/~74 bcm, compared with 83% on 1 October 2025, corresponding to approximately 940 TWh/~85 bcm. This initial storage level is an average, as filling levels vary significantly between countries. During winter 2025/26, EU storage covered approximately 26% of total EU gas consumption and around 30% during winter 2024/25. At the start of the injection season on 1 April 2026, storage facilities were 28% full following withdrawals of around 620 TWh/~56 bcm during the winter season. This highlights the important role of storage in ensuring sufficient gas availability and supporting security of supply throughout the winter season. Depleting storages too deeply over the winter may constrain the ability to refill them during the following summer.
- > Storage levels in the North-Western Region remain comparatively low at the onset of winter. Therefore, from a security of supply perspective, **continued storage injections at the beginning of the winter season are encouraged, together with continued monitoring of storage levels and overall system conditions throughout the winter.** The analysis indicates that storage injections can continue in October, supporting storage levels ahead of the main withdrawal period.²
- > **Maintaining strong LNG deliveries throughout the winter remains important to support the European gas balance and preserve storage levels.** If LNG availability remains limited, storage levels could fall well below 30% by the end of the winter, increasing exposure to potential cold spells later in the season. **Under tight LNG supply conditions, high prices may also trigger a response from price-sensitive demand** highlighting the importance of securing sufficient LNG imports and maximising storage levels ahead of and during the early stages of the winter season. These challenges would be further amplified in the event of a Cold Winter, with higher demand and faster storage withdrawals.
- > Existing European gas infrastructure, including newly commissioned LNG terminals, is enhancing import capacity and system flexibility, enabling higher LNG inflows and improved cooperation among Member States. Overall, the **system remains sufficiently flexible**, with European LNG regasification capacity of approximately 1,600 TWh per winter season/~145 bcm, which can partially compensate for lower storage levels at the beginning of the withdrawal season and support meeting winter demand. However, under specific circumstances, some possible supply limitations and bottlenecks may occur and foremost **adequate supply needs to be secured.**

² In this context, the EU Gas Storage Regulation (Regulation (EU) 2025/1733 of the European Parliament and of the Council of 18 July 2025 amending Regulation (EU) 2017/1938 as regards the role of gas storage for securing gas supplies ahead of the winter season), maintains the binding 90% storage filling target, to be met within the period from 1 October to 1 December, while allowing for additional flexibility in the case of difficult conditions that limit the ability to ensure that the underground gas storages are filled in accordance with this Regulation.

Winter Demand	RU Supply	LNG Scenario	Demand Response Needs	Final UGS Filling Level
Reference Winter	Minimised	Optimal	No	29%
		Tight	No	13%
		High	No	31%
	Disrupted	Optimal	No	21%
		Tight	2%	11%
		High	No	26%
Cold Winter	Minimised	Optimal	7%	11%
		Tight	12%	11%
		High	No	20%
	Disrupted	Optimal	9%	11%
		Tight	15%	11%
		High	3%	18%
5YA -15%	Minimised	Optimal	No	32%
		Tight	No	29%
	Disrupted	Optimal	No	32%
		Tight	No	22%

Table 1. Winter Supply Outlook Results Summary³

Reference Winter⁴ scenario (1 October 2026 to 31 March 2027)

- > Under Reference Winter demand and with Russian pipeline supply minimised, the European gas network enables demand to be met. However, the aggregated EU UGS filling level falls to 29% under LNG Optimal supply and down to 13% under LNG Tight supply by 31 March 2027. To meet Reference Winter demand while maintaining a 30% UGS filling level at the end of the winter season, approximately 1,060 TWh/~96 bcm of LNG would be required over the winter.
- > LNG supply and supply from Norway represent the largest sources of gas supply in Europe, accounting for approximately 40% and 27% of total supply, respectively, under the LNG Optimal scenario. Underground gas storage provides the main source of seasonal flexibility during the winter season.
- > In the event of a disruption of Russian pipeline imports, an additional 96 TWh/~9 bcm of LNG would be required to maintain a 30% UGS filling level at the end of the winter season.

³ The 5YA-15% reduced-demand sensitivity assumes a 15% reduction relative to the average demand observed over the five summer seasons from 2017 to 2021, in the spirit of the coordinated gas demand-reduction measures set out in the Council Recommendation of 25 March 2024.

⁴ The Reference Winter demand is based on TSOs' estimates.

Regional impacts may vary, with landlocked countries in Central and Eastern Europe (CEE) and South-Eastern Europe (SEE) potentially facing greater challenges in securing sufficient LNG deliveries. These results demonstrate the importance of coordination and cooperation by countries.

- > Under tight LNG supply conditions, high gas prices may also lead to a response from price-sensitive demand, highlighting the importance of securing sufficient LNG imports and maximising storage levels ahead of and during the early stages of the winter season.
- > Under high-demand events⁵, comprising a 2-Week Cold Spell and a Peak Day under Reference Winter conditions, demand can be fully met with an initial UGS filling level of 50%, including in the event of a complete disruption of Russian pipeline supply. For the Peak Day case, reducing the initial UGS filling level to 35% results in limited localised demand response or potential uncovered demand in the event of a complete disruption of Russian pipeline supply. This highlights the importance of maintaining sufficient storage levels and withdrawal capability, particularly towards the end of the winter, to support the European gas system during potential high-demand events.

Cold Winter⁶ scenario (1 October 2026 to 31 March 2027)

- > In the Cold Winter case with Russian pipeline supply minimised, additional LNG supply would be required to fully meet demand. The analysis shows that the European gas infrastructure provides sufficient flexibility to accommodate and transport these additional LNG volumes. At the European level, under the assumed LNG Optimal and LNG Tight supply levels, demand response or potential uncovered demand is observed, amounting to approximately 7% of total Cold Winter demand under LNG Optimal supply, equivalent to 237 TWh/~22 bcm. Under LNG Tight supply, demand response needs or potential uncovered demand increase to approximately 12%, equivalent to 437 TWh/~40 bcm. In both cases, the aggregated EU UGS filling level falls to 11%, corresponding to the remaining strategic-storage reserves⁷. Additional use of strategic UGS reserves could further mitigate demand response needs in some countries, while higher LNG availability would help mitigate the identified risks.
- > To meet Cold Winter demand while maintaining a 20% storage level at the end of the winter, Europe would require additional LNG supply, with approximately 1,364 TWh/~124 bcm of LNG required over the winter.
- > In the event of a full disruption of the remaining Russian pipeline supply during a Cold Winter, demand response needs or potential uncovered demand reach 9% under LNG Optimal supply, and 15% under LNG Tight supply. Additional demand response measures or potential uncovered demand and/or extra supplies would be required to compensate for the disruption.

⁵ The simulations do not assume simultaneous occurrence of the highest demand across all European countries, as country-level demand peaks may occur at different times during the winter season.

⁶ Cold Winter is based on demand assumptions considered in ENTSG's Union-wide Security of Supply Simulation Report 2024, i.e., the historical highest winter demand since the winter 2009/10 on country level revised by TSOs.

⁷ These reserves are not freely available on the market under normal conditions and represent 11% of all EU UGS working gas volume. Some European countries are reserving a part of their own gas stock to be constituted as strategic UGS reserves and used only for the purpose of mitigating demand curtailment. The availability of strategic UGS reserves is depending on the country's specific regulation.

- > Under high-demand events⁸, comprising a 2-Week Cold Spell and a Peak Day under Cold Winter conditions, demand can be fully met with an initial UGS filling level of 50%. Under a full disruption of Russian pipeline supply, demand can still be fully met during a 2-Week Cold Spell at this initial level, while a Peak Day results in demand response needs/potential uncovered demand of approximately 7% in South-Eastern Europe. When the initial filling level is reduced to 35%, demand response needs/potential uncovered demand during a Peak Day reach approximately 6% across Europe and 12% in South-Eastern Europe in case of full Russian pipeline disruption. This highlights the importance of maintaining sufficient storage levels and withdrawal capability, particularly towards the end of the winter, to support the European gas system during potential high-demand events.

Winter supply dependence assessment – SoS disruptions

- > The assessment also examines two disruption scenarios previously considered in the 2024 Union-wide simulations⁹ of gas supply: the disruption of the largest offshore infrastructure to continental EU, and disruption of all imports from Algeria. In both disruption scenarios there is no supply from Russia.
- > Under Reference Winter demand and LNG Optimal supply, additional withdrawals from European storage are required. The aggregated EU UGS filling level falls to 13% following the Europipe 2 disruption and to 11% following the disruption of Algerian supplies, compared with 21% without an additional SoS disruption. The Algerian disruption also results in average demand response needs or potential uncovered demand of 3%. LNG High supply allows higher end-of-winter storage levels, although these remain below the 30% target, reaching 23% following the Europipe 2 disruption and 19% following the Algerian disruption.
- > Under Cold Winter demand and LNG Optimal supply, demand response needs or potential uncovered demand reach 12% following the Europipe 2 disruption and 15% following the disruption of Algerian supplies. Under LNG High supply, demand response needs or potential uncovered demand are reduced to approximately 6% under the Europipe 2 disruption and 11% under the Algerian disruption.
- > Combinations of high-demand events, such as a Peak Day or a 2-Week Cold Spell, with low storage levels and supply disruptions indicate bottlenecks¹⁰ preventing cooperation from west to east and constraining the ability to deliver gas to Central, Eastern and South-Eastern Europe. These results demonstrate the importance of coordination and cooperation between countries.

Summer 2027 overview main findings

- > Starting from an average EU UGS filling level of 72% on 1 October 2026, the full-year simulation shows that, with Russian pipeline supply minimised, the European gas network is capable of enabling market participants to meet Reference demand and reach an aggregated UGS filling level of 90% by the end of September 2027 under LNG Optimal

⁸ The simulations do not assume simultaneous occurrence of the highest demand across all European countries, as country-level demand peaks may occur at different times during the winter season.

⁹ <https://www.entsog.eu/security-of-supply-simulation#union-wide-simulation-of-supply-and-infrastructure-disruption-scenarios-2024>

¹⁰ Detailed information can be found in Chapter 3.9: *High demand events supply dependence assessment – SoS disruptions*

supply. Under LNG Tight supply, available supply is insufficient to reach the 90% target, with EU storage reaching 65% by the end of September 2027.

- > The European gas infrastructure provides sufficient capacity to import, transport and store the volumes required to reach a 90% storage level ahead of the following winter under adequate supply conditions.
- > However, the storage level at the beginning of the injection season remains an important factor. Starting from the low 13% level resulting from the winter simulation limits the storage filling level at the end of the injection period in September to 80% under LNG Optimal supply and to 86% with increased LNG availability. This highlights the importance of the end-of-winter storage position for storage refilling ahead of the following winter.
- > In the event of a full disruption of Russian pipeline supply, starting from an average EU UGS filling level of 72% on 1 October 2026, demand can be met while EU storage reaches an average filling level of 81% by the end of September under LNG Optimal supply and to 88% with increased LNG availability. Under LNG Tight supply, the filling level is limited to 55%. Regional impacts may vary, with landlocked countries in Central and Eastern Europe (CEE) and South-Eastern Europe (SEE) potentially facing greater challenges in refilling storage.

Conclusions

- > The Winter Supply Outlook 2026/27 confirms that the **European gas infrastructure remains sufficiently flexible to meet demand.**
- > Low storage level at the beginning of the winter and uncertainty around LNG availability require continued attention throughout the season.
- > **Continued storage injections at the beginning of the winter, together with strong LNG deliveries, are encouraged to preserve storage inventories and maintain system flexibility later in the season.** Storage plays an essential role to ensure security of supply, providing seasonal flexibility needed during the winter season. It is shown that during winter 2025/26, EU storage covered approximately 26% of total EU gas consumption and around 30% during winter 2024/25. Insufficient storage levels and early significant withdrawal from storage facilities will result in low storage levels at the end of the winter season. This might have a negative impact on the flexibility of the gas system, especially during high demand events. From the security of supply perspective, it would be important to keep storage at an adequate level until the end of the winter. However, some European countries are reserving a part of their own gas stock, constituted as strategic reserves, and using this only for the purpose of mitigating demand curtailment. The availability of strategic storage reserves depends on each country's applicable regulatory framework.
- > **LNG availability remains a key factor for the winter gas balance.** Strong LNG deliveries throughout the winter and continued access to LNG supplies from the global market support the European gas balance and help preserve storage inventories. Approximately 1,060 TWh/~96 bcm of LNG would be required over the winter to meet Reference Winter demand while maintaining a 30% end-of-winter storage level. **In tight LNG supply conditions, high prices may also trigger a response from price-sensitive demand,** highlighting the importance of securing sufficient LNG imports and maximising storage levels ahead of and during the early stages of the winter season.
- > **Cold Winter conditions and potential disruptions could significantly increase pressure on the European gas system.** A combination of higher demand and faster storage withdrawals would increase the need for additional LNG supply and/or demand response, otherwise the risk of uncovered demand would be materialised. Approximately 1,364 TWh/~124 bcm of LNG would be required over the winter to meet Cold Winter demand while maintaining an average EU end-of-winter storage level of 20%. Potential supply disruptions would put additional pressure. **Regional constraints could also emerge, particularly in landlocked countries in Central and Eastern Europe (CEE) and South-Eastern Europe (SEE), where access to sufficient LNG supplies may be more constrained,** highlighting the importance of effective coordination and cooperation between countries.
- > **The end-of-winter storage levels have an important impact on storage refilling during the following injection season.** Very low storage levels at the end of winter can limit the ability to rebuild inventories ahead of the following winter because of the injection limitations, even with increased LNG availability, highlighting the importance of maintaining adequate storage levels throughout the winter season.

Important:

ENTSOG's Winter Supply Outlook 2026/27 with Summer 2027 overview is an assessment of the readiness of the gas infrastructure to cope with the upcoming winter and summer seasons under different scenarios, but this assessment is not a forecast of the expected gas supply situation and the actual availability of gas from different sources is not guaranteed. The actual utilisation of the gas infrastructure, including the development of the gas storage levels, will be determined by the decisions of the market participants and influenced by external factors such as policy decisions.

Outlooks are not forecasts of the future. Rather, they identify potential resource adequacy risks at a specific point in time for the upcoming season which can be addressed proactively by preparation or mitigation measures. The identified risks are based on the assessment of a reference scenario and a variety of sensitivities, which consider uncertainties that could materialise.

1. INTRODUCTION

The Winter Supply Outlook 2026/27 with Summer 2027 overview aims to assess the ability of the European gas infrastructure to provide enough flexibility to meet different demand situations during the UGS withdrawal season and sufficient flexibility to shippers during the UGS injection season.

Winter preparedness remains an important consideration for energy stakeholders and, following the findings of previous analyses, should be addressed as early as possible. To supplement the winter assessment, ENTSG also provides an overview of summer 2027, covering the period from 1 April to 30 September 2027.

The report covers two different weather demand scenarios for the winter season: Reference Winter and Cold Winter. The Reference Winter demand is based on TSOs' estimates. The assessments of the Cold Winter case are based on the demand data assumptions of ENTSG's Union-wide Security of Supply Simulation Report 2024¹¹. In addition, a reduced-demand sensitivity is considered, assuming a 15% reduction relative to the average demand observed over the five summer seasons from 2017 to 2021, in the spirit of the coordinated gas demand-reduction measures set out in the Council Recommendation of 25 March 2024¹².

EU underground gas storage facilities are entering winter 2026/27 with historically low inventory levels following a challenging injection season. EU storage facilities are 72% full as of 1 October 2026. This level is broadly in line with that observed at the beginning of winter 2021/22 and below the levels recorded at the start of more recent winters.

The ongoing conflict in the Middle East continues to have a significant impact on global LNG markets, particularly through reduced LNG supply from the region and disruptions to shipping through the Strait of Hormuz, a key transit route accounting for around 20% of global LNG trade. Shipping through the Strait remains significantly constrained, limiting LNG exports from Qatar and the UAE and tightening global LNG availability. The prolonged disruption has intensified competition for available cargoes between Europe and Asia and contributed to higher and more volatile global gas prices.

For the EU, direct exposure to Qatari LNG is relatively limited, with Qatar accounting for around 8% of EU LNG imports in 2025, although exposure varies across Member States. Nevertheless, Europe remains strongly affected by developments in the global LNG market. Reduced global LNG availability, competition for flexible cargoes and continued uncertainty surrounding Middle Eastern supply have contributed to substantially higher and more volatile European gas prices.

The analysis evaluates the role of LNG in Europe under different availability scenarios. In addition to LNG Optimal scenario, grounded in historical data, a sensitivity analysis considers lower availability in the LNG Tight scenario, reflecting limited LNG supply attraction to Europe.

In accordance with Regulation (EU) 2026/261 of the European Parliament and of the Council on the phasing out of Russian natural gas imports by November 2027 at the latest, the Winter

¹¹ <https://www.entsog.eu/security-of-supply-simulation>

¹² https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:C_202402476

Supply Outlook 2026/27 with summer 2027 overview assumes that the maximum supply potential of Russian pipeline gas reflects volumes under existing long-term contracts and is set at 192 TWh per year/ $\sim 17\text{bcm}^{13}$, with flows limited to the TurkStream route. In addition, ENTSOG has assessed the EU's dependence on Russian supply during the winter 2026/27 and summer 2027 seasons.

Ukraine and Moldova are included in the modelling perimeter, with exports to both countries considered in the simulations. After the transit contract between Ukraine and Russia expired in December 2024, ENTSOG seasonal supply outlooks also include the gas demand on the left bank of the Dniester River in Moldova.

Furthermore, ENTSOG has enhanced its model and topology to include the full Ukrainian gas system, including specific national targets for their storage facilities, based on information from Ukraine's TSO. The transit of EU gas through Ukraine (considering technical firm capacities available) can be utilized by EU shippers.

This assessment additionally covers two disruption scenarios originally defined in the Union-Wide simulation Report¹⁴, namely the disruption of the largest offshore infrastructure supplying continental Europe and the disruption of all pipeline imports from Algeria, in both cases assuming no Russian pipeline gas supply.

2. ASSUMPTIONS

The Winter Supply Outlook 2026/27 with summer 2027 overview is based on assumptions specific to the upcoming winter and summer seasons and short-term trends as detailed in the annexes. In any case, the actual withdrawal, injection, and supply mix will result from market behaviour and other external factors such as policy decisions.

The detailed model description, as well as the data used in the simulations, are available in the annexes.

2.1. Infrastructure

A significant number of new gas infrastructure facilities were commissioned over the past years, with a notable emphasis on the buildup of new LNG import capacities, boosting energy security in the EU. The topology of the network model considers the existing European gas infrastructure, the firm technical capacities¹⁵ provided by TSOs, which include maintenance plans known as of September 2026 and new upcoming projects as of their respective expected start of commercial operations. For example:

- Expansion of Gate LNG terminal in The Netherlands;
- Expansion of capacity from Southern Import Points and from OLT LNG / Livorno and Ravenna LNG Terminal in Italy;

¹³ ACER report on Russian gas import contracts and diversification

<https://www.acer.europa.eu/sites/default/files/documents/Publications/ACER-Report-Russian-gas-imports-2026.pdf>

¹⁴ <https://www.entsog.eu/security-of-supply-simulation#union-wide-simulation-of-supply-and-infrastructure-disruption-scenarios-2024>

¹⁵ According to EC Regulation 2024/1789 of 13 June 2024 'technical capacity' means the maximum firm capacity that can be offered to the network users, taking account of system integrity and the operational requirements of the transmission system operator; 'firm capacity' means natural gas and hydrogen transmission and distribution capacity contractually guaranteed as uninterruptible by the transmission system operator.

- Tarvisio / Arnoldstein IP increments from Italy to Austria;
- Moffat IP capacity upgrade.

In relation with the storage capacities, in order to capture the influence of the UGS inventory level on the injection and withdrawal capacities, ENTSG used injection and deliverability curves that were provided by GIE¹⁶. These curves represent a weighted average of the facilities (salt caverns, aquifers or depleted fields) of each area (see **Annex A**).

In the case of regasification capacities, all the LNG offshore facilities have been restricted to a maximum utilization of 90% of their send-out capacity (DTRS in GIE ALSI¹⁷ platform) for the monthly simulations as this limitation has been observed from the average historical utilization.

2.2. Seasonal Demand

The Reference demand (from 1 October 2026 to 30 September 2027) is based on TSOs' estimates and is provided with a monthly granularity. An average daily demand has been considered within each month per country at European level, this is including the EU plus the United Kingdom, Switzerland, North Macedonia, Serbia, Bosnia Herzegovina, Ukraine and Moldova (see **Annex B** for country details).

The demand for the Cold Winter is based on demand assumptions considered in ENTSG's Union-wide Security of Supply Simulation Report 2024¹⁸, i.e., the historical highest winter demand since the winter 2009/10 on country level revised by TSOs.

The average historical demand of the five summer seasons from 2017 to 2021 reduced by 15% in the spirit of the coordinated demand reduction measures defined in the Council Recommendation of 25 March 2024 on continuing coordinated demand-reduction measures for gas. The 5-year average demand values have been updated for the simulations in this report to consider the latest market conversions from L-gas to H gas in Germany, France, and Belgium. An average daily demand has been considered for each month.

For comparison, **Figure 1** shows the European aggregated daily demand for the Reference Winter compared with the historical aggregated daily demand over the last five winters. The estimated demand is compared with the winter 2025/26 for the two assessed winter 2026/27 demand cases. Compared to Winter 2025/26 historical demand, the Reference Winter Demand and the Cold Winter Demand are +3% and +19% higher respectively.

¹⁶ <https://www.gie.eu>

¹⁷ <https://alsi.gie.eu/#/>

¹⁸ <https://www.entsog.eu/security-of-supply-simulation>

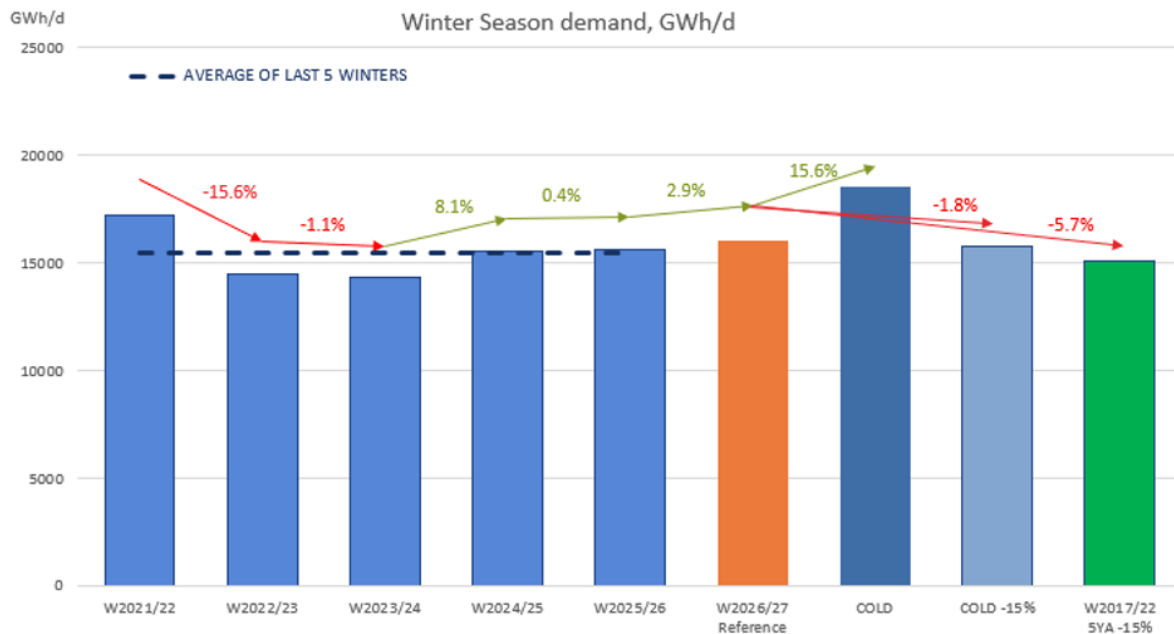


Figure 1. European daily average winter demand with forecasted Reference, Cold Winter and 5-year average -15% demand for Winter 2026/27, GWh/d

For comparison purposes, **Figure 2** shows the European aggregated daily demand for the Summer 2027 overview and the historical daily demand over the summers of the years 2021 to 2025.

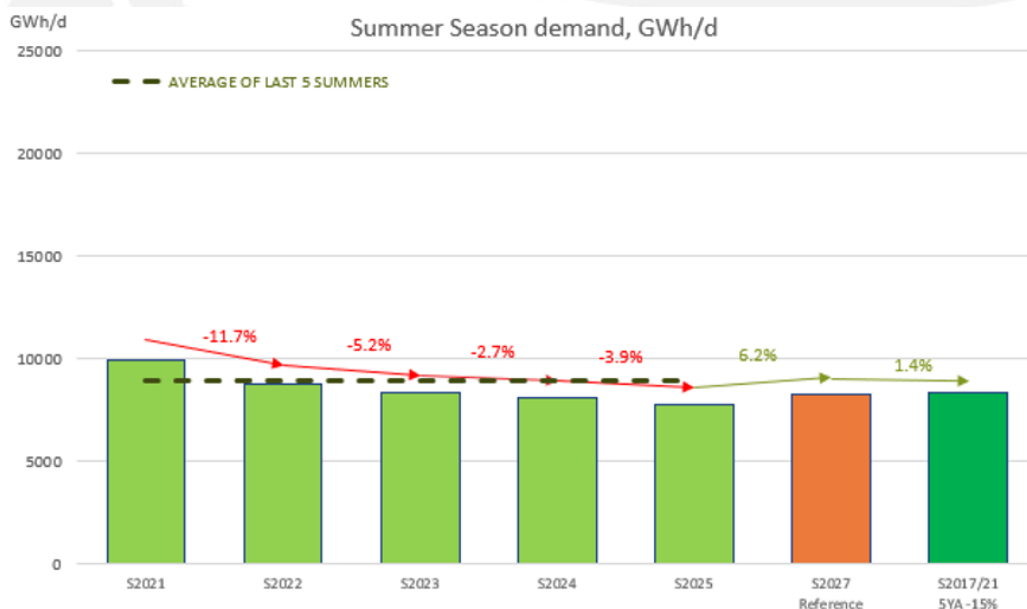


Figure 2. European daily average summer demand comparison with Reference and 5-year average -15% demand, GWh/d

2.3. Peak Demand

Two high demand situations are considered in this report, Peak Day demand and 2-Week Cold Spell as defined in the table below:

Period	Occurrence of the demand provided by TSOs
Peak Day	One day (peak day) of exceptionally high demand, occurring with a statistical probability of once in 20 years
2-Week Cold Spell	A period of two weeks of exceptionally high demand, occurring with a statistical probability of once in 20 years

Table 2. Peak Day demand and 2-Week Cold Spell

The Peak Day and 2-Week Cold Spell demands are used to check if the withdrawal capacity from the UGS is sufficient during such events when the storage levels are reduced, and their maximum withdrawal capacity is therefore not available.

Figure 3 shows the European aggregated 2-Week Cold Spell demand. Reference Winter¹⁹ and Cold Winter²⁰ demand values are compared with the historical demand over the last five winters. It is important to note that the historically highest winter demand did not occur simultaneously across all European countries.

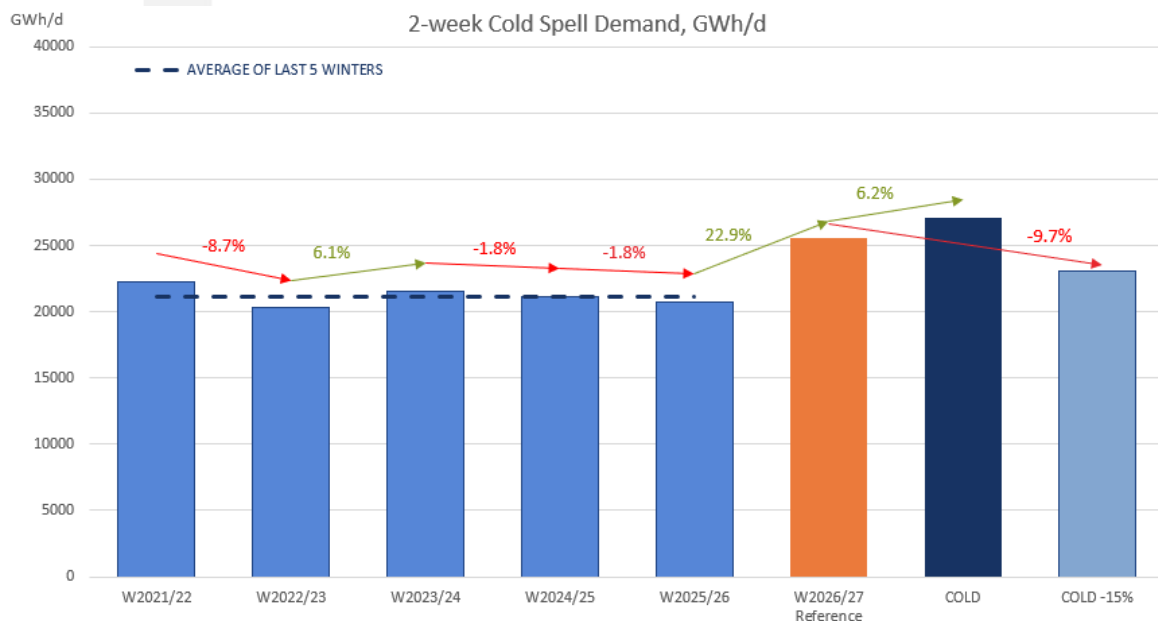


Figure 3. European 2-week cold spell demand history comparison with forecasted Reference Winter demand for winter 2026/27 and Cold Winter 2-Week Cold Spell demand, GWh/d

The 2-Week Cold Spell demand for the Reference Winter is higher than the highest two weeks of demand observed during the previous winter (+23%). In the event of a 2-Week Cold Spell during a Cold Winter, the demand could be +6% higher than in Reference winter.

Figure 4 shows the European aggregated Peak Day demand. Reference Winter²¹ and Cold Winter²² are compared with the historical demand over the last five winters. It is important to

¹⁹ The 2-Week Cold Spell demand for Reference Winter is based on TSOs' estimates.

²⁰ The 2-Week Cold Spell demand for Cold Winter is based on demand assumptions considered in ENTSG's Union-wide Security of Supply Simulation Report 2024.

²¹ Peak Day demand for Reference Winter is based on TSOs' estimates.

²² Peak Day demand for Cold Winter is based on demand assumptions considered in ENTSG's Union-wide Security of Supply Simulation Report 2024.

note that the historically highest winter demand did not occur simultaneously across all European countries.

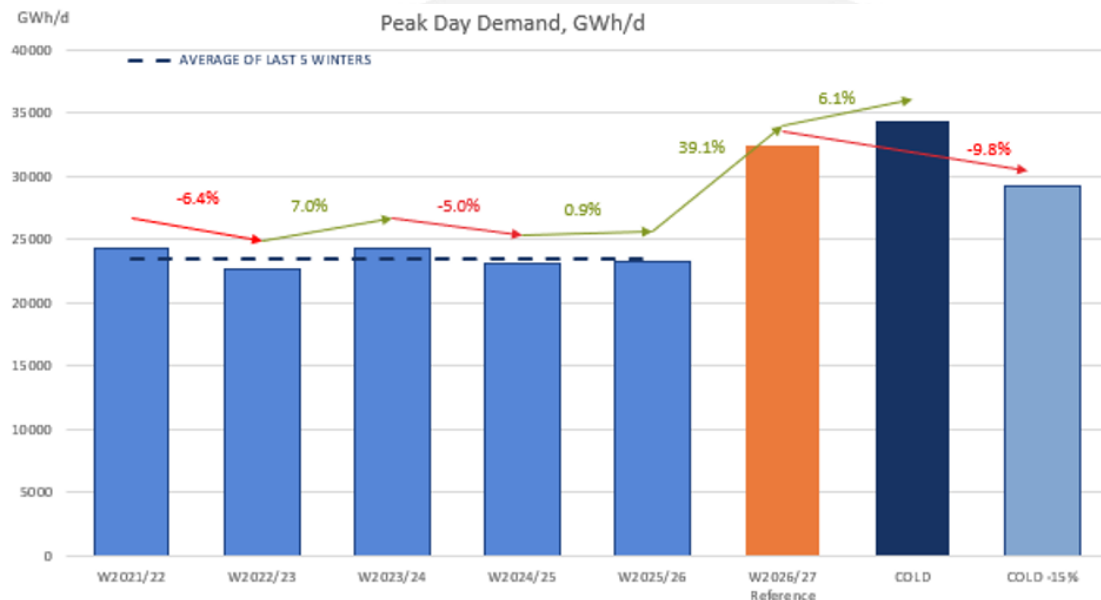


Figure 4. European Peak Day demand history comparison with forecasted Reference Winter Peak demand for winter 2026/27 and Cold Winter Peak demand, GWh/d

Peak Day demand for the Reference Winter could reach higher levels (+39%) than the ones registered during the last winter and the average of the last five winters. In the event of a Peak Day during the historical highest winter demand (Cold Winter demand assumptions considered in ENTSG's Union-wide Security of Supply Simulation Report 2024), the peak demand is even higher.

European domestic production

Domestic production is following a long-term dwindling trend, primarily due to the end of production in October 2023 of the largest gas production in the EU, i.e., the Netherlands' Groningen field.

After this sharp drop following the Groningen shutdown, domestic production partially recovered between summer 2024 and summer 2025, mainly driven by the reactivation and ramp-up of the Tyra field in Denmark with smaller contributions from incremental increases in Romania's Black Sea.

Romania reports incremental increases from its offshore projects in the Black Sea, while Mediterranean producers such as Italy have managed to stabilise parts of their output. These gains remain modest compared to the losses from the larger fields, and overall European domestic production is expected to remain on a declining path in the short to medium term.

Regarding the European domestic production included in the assessment, **Figure 5** and **Figure 6** provide a comparison between the last five winter and summer seasons and the national production forecasted by the TSOs for winter 2026/27 and summer 2027 (see **Annex B** for monthly details).

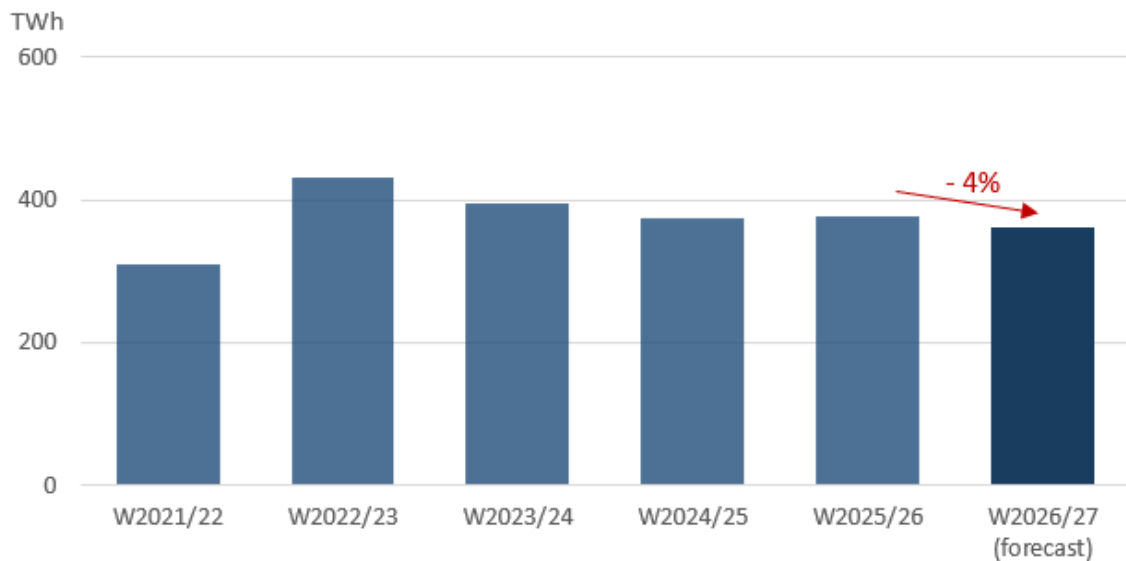


Figure 5. Historic European national gas production during winters compared with forecasted European national production in Winter 2026/27, TWh

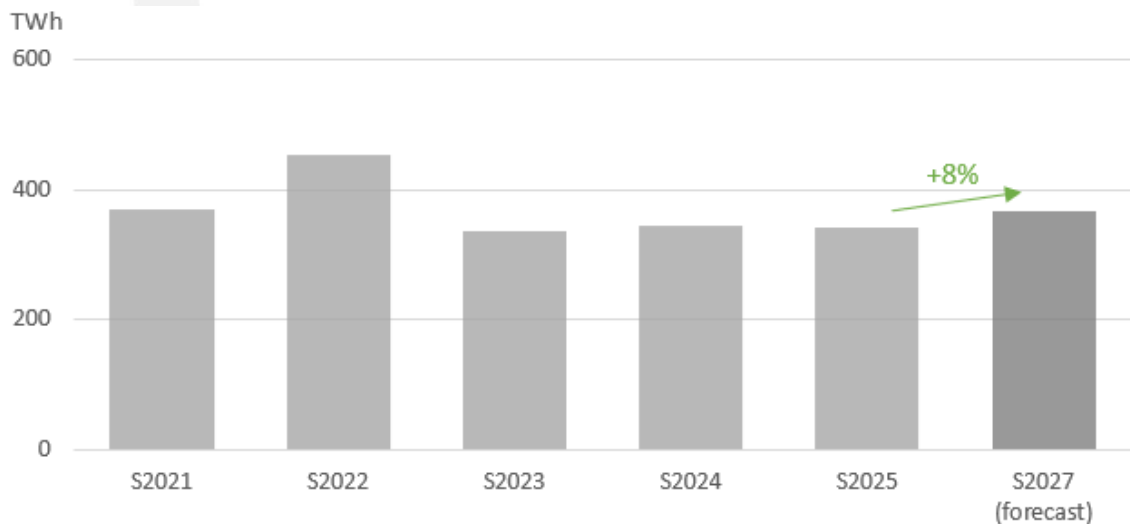


Figure 6. Historic European national gas production during summers compared with forecasted European national production in Summer 2027, TWh

In the winter 2026/27, domestic production is estimated to decrease by 4% compared to the previous winter, while for summer 2027, it is forecasted to increase by approximately 8% compared to summer 2025.

2.4. Import supply potential

Supply limitations are set for the different simulation cases (monthly values for winter and summer seasons, weekly values for the 2-Week Cold Spell case, daily values for the Peak Day case) so that the maximum flows from each source cannot exceed reasonable levels based on historical observations.

The maximum supply potentials of the different sources providing gas to the Europe used in the seasonal assessments are, by default, calculated as the maximum 30-days rolling average supply from this source over the last five years per season (Caspian Sea, Algeria, LNG) or based on TSOs information (Libya, Norway). Maintenance works on Norwegian gas fields are considered in the report in line with the maintenance plan published in September 2026²³.

National Production		UGS	LNG	Caspian, Algeria, Norway, Libya
Winter Season	TSO forecast for winter	Limited for each country (or zone) by the stored volumes and the deliverability associated with the inventory level.	Limited for the whole winter period at monthly level to the maximum 30-days rolling average of the last 5 winters. For LNG, different cases of supply availability are considered: (1) LNG Optimal supply, (2) LNG Tight supply and (3) LNG High supply.	
2-Week Cold Spell	TSO forecast for high demand situations		Week 1	Limited to the maximum 14 days rolling average of the last 5 winters.
			Limited to the observed February flow in the model plus additional LNG that can be taken from the tanks to be shared with week 2.	
			Week 2	
			Limited to the maximum 14 days rolling average of the last 5 winters plus additional LNG that can be taken from the tanks to be shared with week 1.	
Peak day		Limited to the observed February flow in the model plus additional LNG that can be taken from the tanks.	Limited to the maximum daily supply of the last 5 winters.	
Summer Season	TSO forecast for summer		Limited for the whole summer period at monthly level to the maximum 30-days rolling average of the last 5 summers. For LNG, different cases of supply availability are considered: (1) LNG Optimal supply, (2) LNG Tight supply and (3) LNG High supply.	

Table 3. Gas supply maximum availability definitions

For LNG, three different cases of supply availability are considered: (1) LNG Optimal supply, (2) LNG Tight supply and (3) LNG High supply. In line with the REPowerEU objective of reducing and ultimately ending the EU's reliance on Russian energy, LNG is modelled as a global supply source, without distinguishing volumes by country of origin. The modelling therefore assumes that LNG volumes previously supplied from Russia can be substituted by alternative LNG supplies available on the global market.

The LNG Optimal supply case is calculated as explained above (maximum 30-days rolling average), while the LNG Tight supply is reflecting a severe global LNG deficit where missing volumes cannot be substituted, forcing a 20% reduction in available imports to the European market. The LNG High supply case is only limited by the European infrastructure (LNG terminal regasification capacities and TSO network capacities).

²³ Gassco website: <https://umm.gassco.no/>

The pipeline supply potential of Russian gas is representing the minimum volumes remaining under long-term contracts during the transition period until 30 September 2027 for pipeline gas, under the phased prohibition on imports of Russian gas into the European Union, according to ACER report on Russian gas import contracts and diversification²⁴. To assess the EU dependence on Russian gas, all simulations minimised the use of this supply source to the possible extent. Other supply sources are therefore prioritized in the merit order. There is also a sensitivity assuming a total disruption of Russian pipeline supply.

The maximum supply potential for assessments of the 2-Week Cold Spell cases is, by default (if not specified by TSOs or Russian pipeline supply or an LNG sensitivity), calculated as the maximum 14-days rolling average supply from this source over the last five years, including LNG Optimal supply. The LNG Tight supply is reflecting a severe global LNG deficit where missing volumes cannot be substituted, forcing a 20% reduction in available imports to the European market also for the 2-Week Cold Spell case. In 2-Week Cold Spell case, the modelling accounts for the additional amount of LNG that can be withdrawn from the tanks (see **Annex A**).

The maximum supply potential for assessments of the Peak Day cases is, by default (if not specified by TSOs or Russian pipeline supply or an LNG sensitivity), calculated as the daily maximum from this source over the last five years, including LNG Optimal supply. The LNG Tight supply is reflecting a severe global LNG deficit where missing volumes cannot be substituted, forcing a 20% reduction in available imports to the European market also for the Peak Day case. In peak day demand case, the modelling accounts for the additional amount of LNG that can be withdrawn from the tanks (see **Annex A**).

For each of the winter and summer demand profiles and high demand situations in the winter season, specific maximum gas supply availabilities are used in the report as defined in **Table 4**.

Supply Potential				Algeria	Libya	Caspian Sea	Norway	LNG Optimal	LNG Tight	Russia
Winter Season	Max per 30 days		GWh/day	1,125	60	390	3,850*	5,500	4,400	525
			TWh/season	205	11	71	701	1,001	801	96
			bcm/season	19	1	6	64	91	73	9
Summer Season	Max per 30 days		GWh/day	1,155	60	375	3,850*	5,300	4,250	525
			TWh/season	211	11	69	705	970	778	96
			bcm/season	19	1	6	64	88	71	9
High Demand ***	2-Week Cold Spell	Week 1**	GWh/day	1,190	125	395	3,910	**	**	525
		Week 2	GWh/day	1,190	125	395	3,910	5,600	4,500	525
	Peak day Cold Spell **		GWh/day	1,265	165	400	3,910	6,125	4,900	525

* Supply is reduced some months according to Gascos's maintenance plan

** Limited to the observed February flow in the model results

*** Additional LNG can be taken from the tanks

Table 4. Maximum supply potential, GWh/d and TWh/season

Note: The supply assumptions (supply potentials) are based on the supply observed in the past and should not be considered as a forecast. The actual supply mix will depend on market behaviour and other external factors. Moreover, the model does not factorize commercial supply agreements.

²⁴ <https://www.acer.europa.eu/sites/default/files/documents/Publications/ACER-Report-Russian-gas-imports-2026.pdf>

LNG Global Market

LNG has become a strategically important and balancing component of gas supply to Europe. **Figure 7** presents indicative parameters of the LNG market situation in 2025.

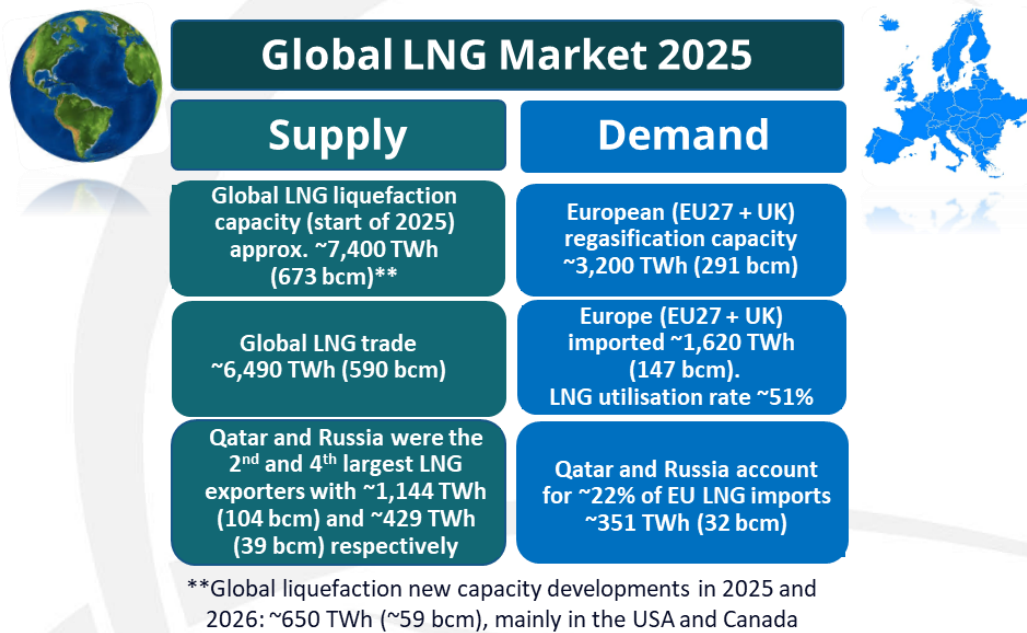


Figure 7 – Global LNG Market 2025 overview²⁵

Global LNG liquefaction capacity is projected to increase in 2026, with the United States leading new investment activity. Global demand growth remained subdued, particularly in Asia, whereas Europe emerged as the primary driver of LNG demand due to its structural shift away from Russian pipeline gas, increased storage refilling requirements, and lower renewable power generation in 2025.

The United States remained the largest LNG supplier to Europe, while Russia continued to represent a secondary but notable source of supply. Qatar maintained a significant role in the global LNG market, although its share in European imports remained comparatively limited.

It is also important to note that 30% of total LNG trade is imported on a spot basis, representing a crucial component of market liquidity²⁶.

Finally, according to the latest ENTSG Winter Review 2025/26, LNG deliveries to Europe reached record highs, with regasification terminals across the EU and the UK processing a combined 914 TWh (~83 bcm). This brought the European region's average import volume to approximately 5,000 GWh/d throughout the season, from October 2025 to March 2026.

²⁵ The data are sourced from multiple references, including the ENTSG Gas Flow Dashboard, ACER Analysis of the European LNG Market Developments (2025 Monitoring Report), S&P Global (Platts), GIIGNL, IEEFA, and other publicly available sources, and should be interpreted as indicative rather than precise.

Conversion factor: 1 Mt LNG ≈ 1.38 bcm ≈ 15 TWh

²⁶ GIIGNL Annual LNG Report 2025

2.5. Storage inventory

UGS behaviour in the modelling is defined as follows:

- **Winter Supply Outlook 2026/27.** The actual UGS stock level on 1 October 2026 is taken from the AGSI+ platform²⁷ as the data input for the storage's initial levels. A target UGS stock level of 30% should be reached at the end of the withdrawal season (31 March 2026) and is defined for each storage facility. This target is not mandatory, i.e., the UGS stock level goes below 30% if other supply sources cannot otherwise satisfy demand.

Sensitivity analyses were also conducted with a mandatory storage target. In these analyses, the model enforces the achievement of a minimum 30% storage level at the end of the winter by reducing demand as necessary, thereby quantifying the level of demand response or potential uncovered demand required to meet the target.

Some European countries could be reserving a part of their own gas stock constituted as strategic UGS reserves to be used only for the purpose of satisfying their own demand. The model assumes the actual constraints on the utilization of the strategic UGS and strategic reserves²⁸. Therefore, these strategic UGS cannot be depleted to avoid/reduce demand curtailment in the simulations. The availability of strategic storage reserves is depending on the country's specific regulation.

- **Summer 2027 overview.** The UGS stock level target for the injection season (30 September 2027) is by default defined for each storage facility at 90%. This target is not mandatory, i.e., the storage level cannot be achieved if other supply sources otherwise cannot satisfy demand. This assumption is made to check that infrastructure is not limiting this possibility. Sensitivity simulations are performed for the summer season, starting with an initial storage filling level of 30% for each storage facility, as well as with lower initial storage levels derived from the winter simulation results as of 1 April 2026.

The model assumes cooperative behaviour among EU Member States. These concerns (i) an equal sharing of eventual demand curtailments between all the Member States if technically possible, (ii) LNG supply distribution between terminals according to security of supply needs, and (iii) storage utilisation according to security of supply needs. However, the model does not factorize commercial supply agreements.

Figure 7 below illustrates the percentage of gas in storage (filling level) recorded on the first day of each month.

²⁷ <https://agsi.gie.eu>

²⁸ The methodology used for strategic reserves and strategic UGS is explained in the Annex A.

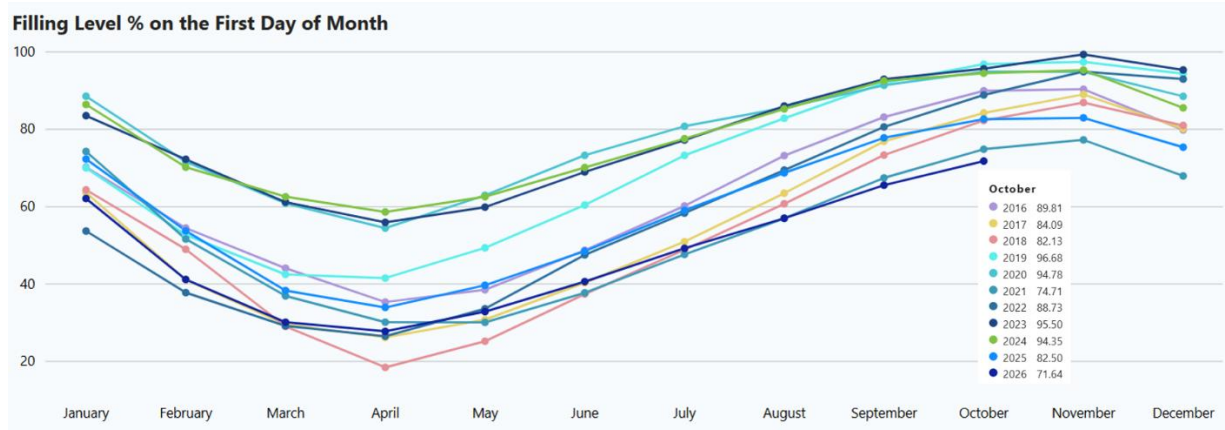


Figure 8. Monthly UGS stock level development since 2016, %

On 1 April 2026, the EU UGS stock level reached the minimum of the range of the past 4 years with 314 TWh. The increase in gas consumption (with relatively colder winter weather) contributed to the record low volume of gas in storage. **Figure 8** shows the total WGV, the initial gas in the storages on 1 April and the gas injected during the summer season (until end of September) between 2012 and 2026.

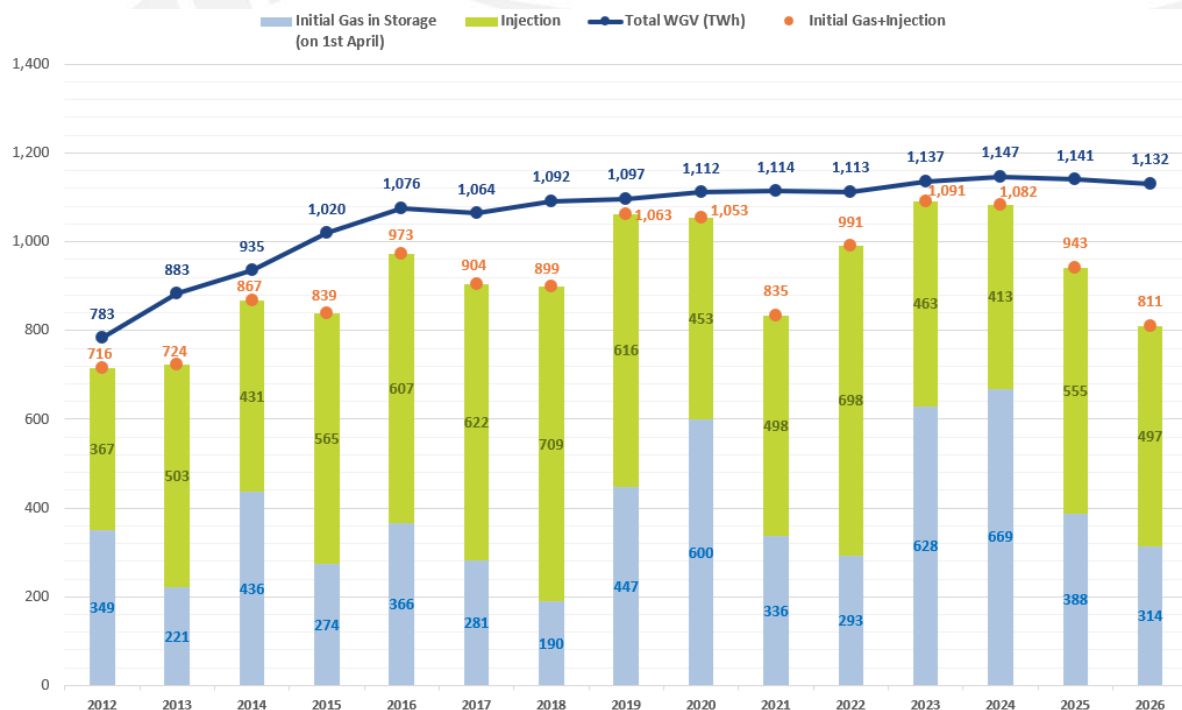


Figure 9. Situation of the storage during summer seasons (2012 to 2026)

- Initial storage level on 1 October 2026

EU underground gas storage facilities are entering winter 2026/27 with relatively low inventory levels following a challenging injection season. On 1 October 2026, EU underground gas storage reached 72% of WGV, equivalent to 811 TWh. This level is broadly in line with that

observed at the beginning of winter 2021/22 and below the levels recorded at the start of more recent winters. In this context, the EU Gas Storage Regulation²⁹, maintains the binding 90% storage filling target, to be met within the period from 1 October to 1 December, while allowing for additional flexibility in the case of difficult conditions that limit the ability to ensure that the underground gas storages are filled in accordance with this Regulation.

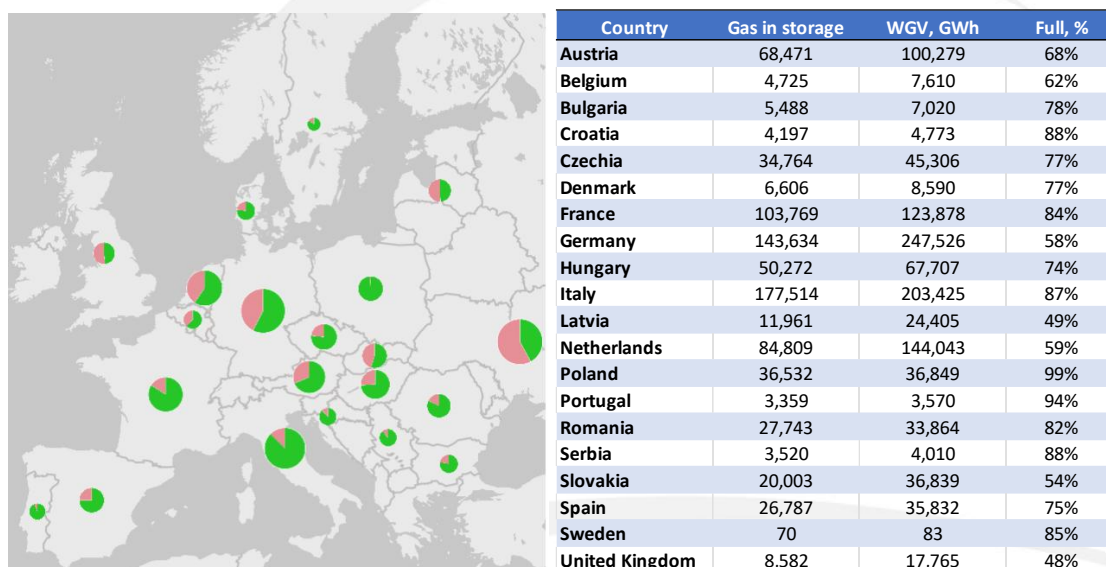


Figure 10. Actual UGS stock levels per country on 1 October 2026, GWh and Full %³⁰

For the modelling of the different scenarios, the Winter Supply Outlook 2026/27 considers the UGS stock level per country on 1 October 2026 as the initial situation as shown in Figure 10. In relative terms, the storage level of is higher than 90% in Poland and Portugal, the lowest filling levels being in Latvia (49%) and Slovakia (50%). In absolute terms, the largest gas volumes on 1 October 2026 are stored in Italy, Germany and France.

2.6. Seasonal spreads

The seasonal spread is defined as the price difference between natural gas contracts with future deliveries across seasons, particularly between summer and winter, and serves as an important market signal for participants. Specifically, the summer–winter spread (summer price vs winter price) indicates incentives for injections, while the winter–summer spread (winter price vs the following summer price) guides withdrawal strategies.

A wide summer–winter spread, with lower summer prices, typically supports higher storage levels ahead of winter by creating an economic incentive to inject gas in summer and sell in winter. This spread should also be sufficient to cover infrastructure-related costs, including storage fees and transportation tariffs. However, actual injection decisions are also dependent on other factors such as, market liquidity, supply security considerations, capacity limitations, and regulatory targets in place.

²⁹ Regulation (EU) 2025/1733 of the European Parliament and of the Council of 18 July 2025 amending Regulation (EU) 2017/1938 as regards the role of gas storage for securing gas supplies ahead of the winter season

³⁰ The gas in storage on 1 October 2025 for each country is based on the AGSI+ platform.

Similarly, a significant winter–summer spread may encourage faster withdrawals to benefit from higher winter prices, provided the price differential covers related costs. Nonetheless, withdrawal strategies are also shaped by weather, supply disruptions, LNG availability, and strategic considerations. In milder winters or when spreads are narrow, withdrawals might be more gradual to preserve flexibility by ensuring there is enough gas in storages in case of unexpected events during the winter season.

Season	EUR/MWh	Season	EUR/MWh
Winter 2026/27	72.350	Summer 2027	53.405
Summer 2027	53.405	Winter 2027/28	49.030
Spread W2026/27 - S2027	18.945	Spread S2027 - W2027/28	4.375

**Figure 11. Comparison of forecast winter and summer Dutch TTF gas prices
as of 30 September 2026, EUR/MWh³¹**

Important: The ENTSOG Winter Supply Outlook 2026/27 with the Summer 2027 overview, provides an assessment of infrastructure readiness to manage different scenarios rather than a forecast of actual supply situations. Furthermore, these seasonal price spreads are not implemented in the model but serve as contextual signals to illustrate potential market incentives. Actual infrastructure utilisation and storage developments ultimately depend on market participants' decisions.

³¹ Source: Global S&P (Platts)

3. MODELLING RESULTS FOR THE WINTER SUPPLY OUTLOOK 2026/27

The following table shows the most relevant results of the Winter Supply Outlook 2026/27 in the different demand scenarios in combination with the possible configurations of the main sensitivity assumptions. The simulation results are explained onwards in this chapter.

Winter Demand	RU Supply	LNG Scenario	Demand Response Needs	Final UGS Filling Level
Reference Winter	Minimised	Optimal	No	29%
		Tight	No	13%
		High	No	31%
	Disrupted	Optimal	No	21%
		Tight	2%	11%
		High	No	26%
Cold Winter	Minimised	Optimal	7%	11%
		Tight	12%	11%
		High	No	20%
	Disrupted	Optimal	9%	11%
		Tight	15%	11%
		High	3%	18%
5YA -15%	Minimised	Optimal	No	32%
		Tight	No	29%
	Disrupted	Optimal	No	32%
		Tight	No	22%

Table 5. WSO Results Summary

3.1 Reference Winter scenario with 30% UGS stock level target for 31 March 2027

For the Reference Winter 2026/27 scenario, the overall winter season withdrawal is defined as the amount of gas necessary to meet demand and reach 30% stock level in each EU UGS on 31 March 2027 when starting at an average EU UGS stock level of 72% on 1 October 2026 (see Figure 10). This corresponds to 811 TWh/ ~74 bcm, compared to 83% in 2025 (on average, which translates to 940 TWh/ ~85 bcm). During winter 2025/26, EU storage covered approximately 26% of total EU gas consumption and around 30% during winter 2024/25. At the start of the injection season on 1 April 2026, storage facilities were 28% full, after following a stock withdrawal of around 620 TWh/~56 bcm during the winter season.

The distribution of withdrawal, demand, and supply over the winter months results from the modelling and the following assumptions:

- The monthly gas demand estimated by TSOs in **Annex B**

- The monthly national gas production estimated by TSOs in **Annex B**
- The monthly capacities provided by TSOs
- The storage withdrawal curves provided by GSE as defined in **Annex A**
- The flexibility given to the model for the definition of the supply potentials derived from the historical supply mix (see **Table 4**)

Based on these assumptions, the modelling has been used to check if any physical congestion or dependence on an import source may limit the satisfaction of gas demand during the withdrawal period, while all European countries cooperate.

The main finding of the Winter Supply Outlook 2026/27 for the Reference Winter scenario in combination with the LNG Optimal supply potential is that the European gas network is capable of enabling market participants to satisfy the demand. However, the aggregated EU UGS filling level falls to 29% under LNG Optimal supply. In the LNG Tight supply scenario, the EU UGS stock level falls to 13% by the end of the winter season (**Figure 12**).

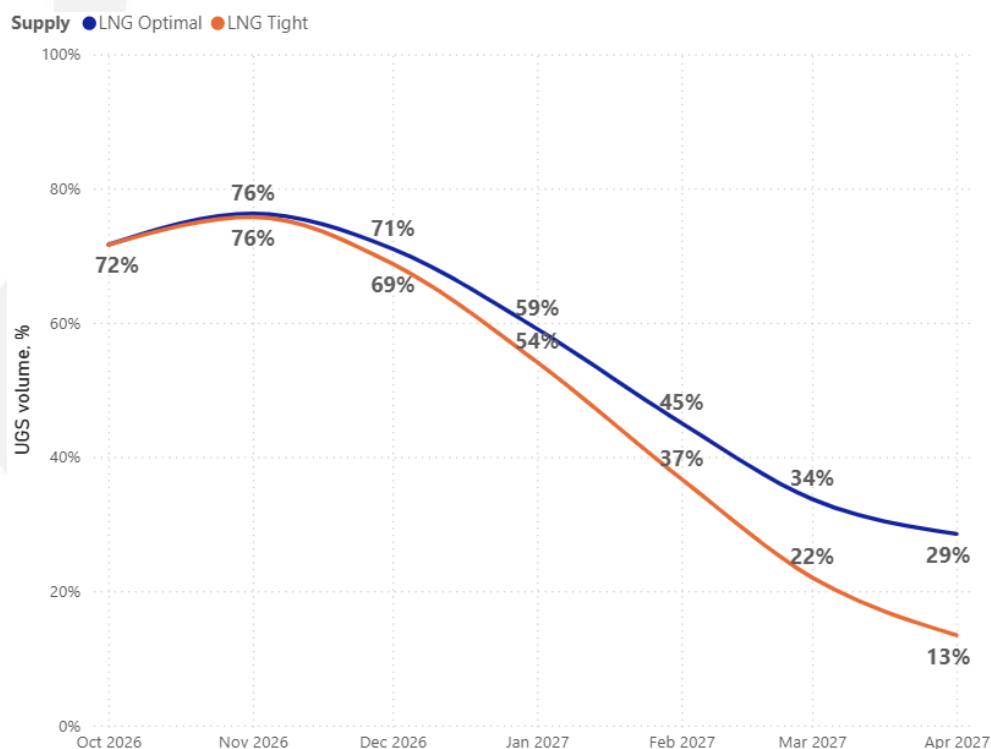
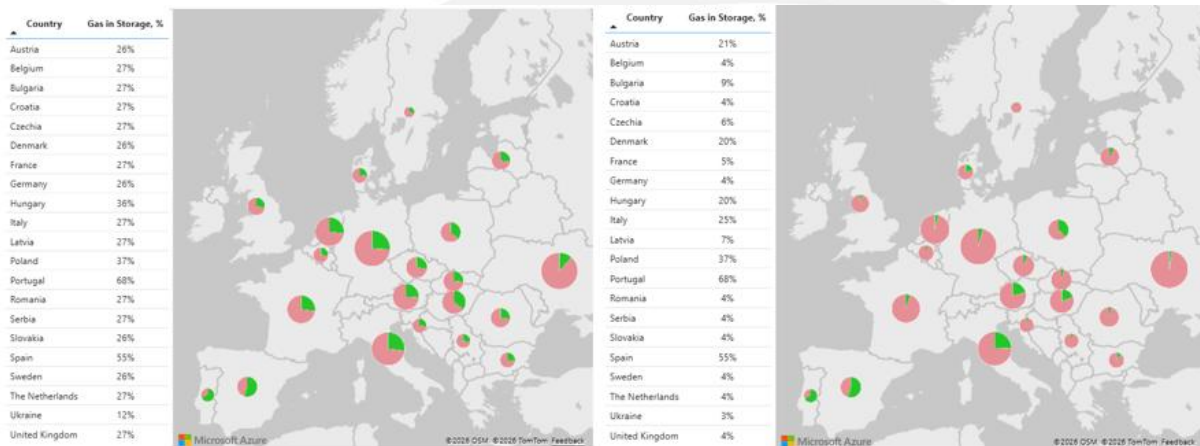


Figure 12. Reference Winter scenario with Russian pipeline supply minimised. Evolution of the aggregated EU UGS stock level under the LNG Optimal and LNG Tight supply scenarios, %

Figures 13 and **14** show the UGS stock level per country on 31 March 2027 under the LNG Optimal and LNG Tight supply scenarios. With LNG Optimal supply, most countries finish the winter season at around 27%, while the aggregated EU UGS filling level reaches 29%. Under LNG Tight supply, storage is further depleted, with several countries falling to around 4% and the aggregated EU UGS filling level reaching 13%, including strategic reserves in some countries. These reserves are not freely available on the market under normal conditions and represent 11% of all EU UGS working gas volume. Some European countries are reserving a

part of their own gas stock to be constituted as strategic UGS reserves and used only for the purpose of mitigating demand curtailment. The availability of strategic UGS reserves is depending on the country's specific regulation.



Figures 13 and 14. Reference Winter scenario with Russian pipeline supply minimised. UGS filling level per country on 31 March 2027 under LNG Optimal and LNG Tight supply, %³²

Figures 15 and 16 show the level and composition of the supply mix in the Reference Winter scenario with LNG Optimal supply and Russian pipeline supply minimised. LNG and Norwegian pipeline supply represent the largest sources of supply, accounting for 40% and 27% of the total, respectively.

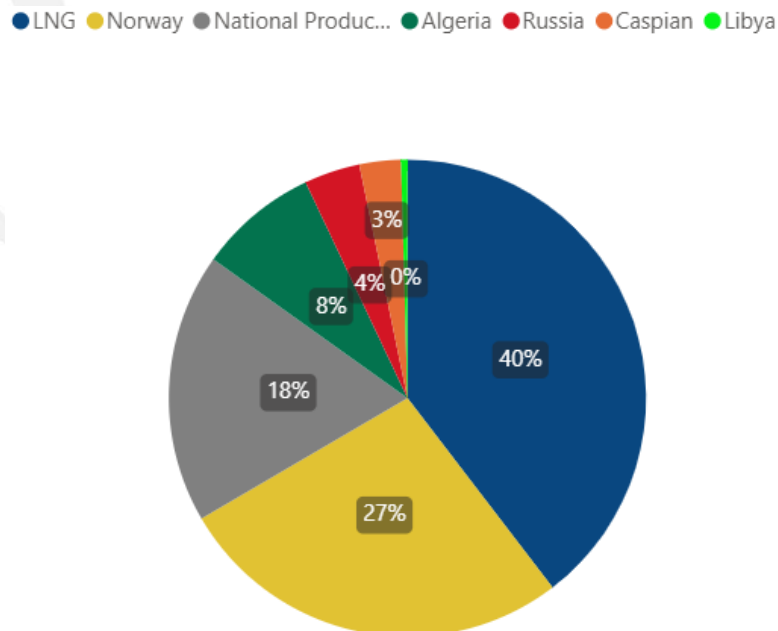


Figure 15. Reference Winter. Supply mix, %

The monthly supply mix remains stable throughout the winter season 2026/27. All available pipeline supply sources, are used up to their maximum potentials, while LNG remains at its

³² Values for Czech Republic include Slovakian storages located on the Czech Republic territory.

assumed maximum potential of 5,500 GWh/d. This shows that capacity restrictions do not limit imports in this scenario. Underground gas storage provides the main source of seasonal flexibility, with net injections in October followed by withdrawals from November to March.

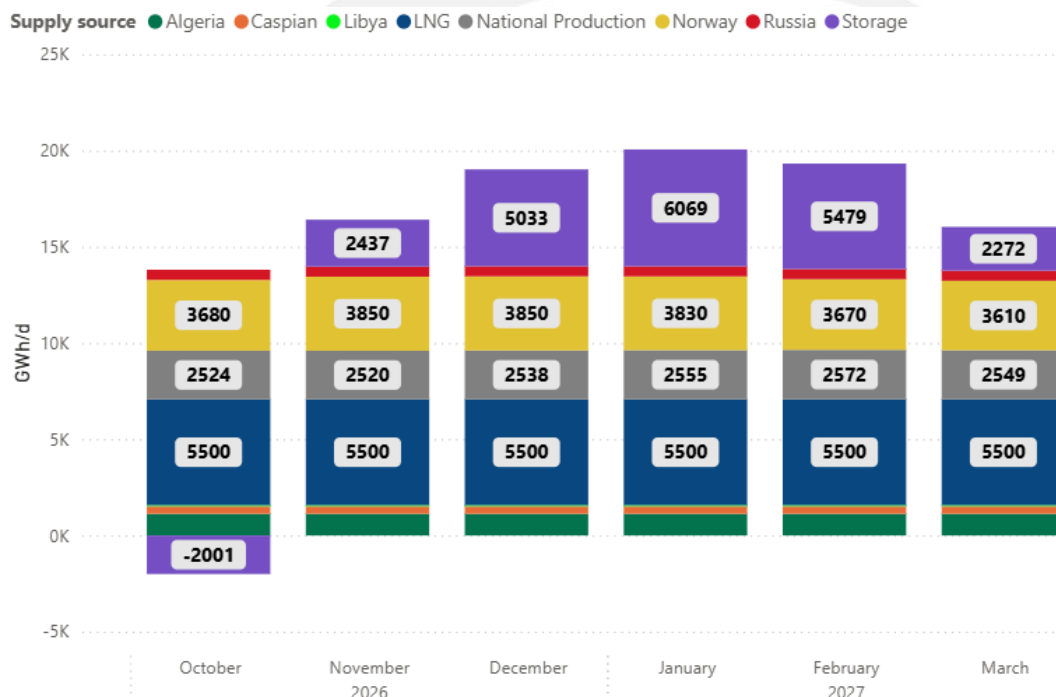


Figure 16. Reference Winter scenario. Monthly supply mix, GWh/d

The import levels shown represent one possible supply mix resulting from the modelling and should not be interpreted as a forecast of actual flows. LNG provides the main source of import flexibility in this scenario. Despite maximising the use of the other available import sources, the 30% end-of-winter UGS stock level target cannot be reached under LNG Optimal supply.

3.2 Reference Winter supply dependence assessment – Russian supply disruption

This section assesses the impact of a full disruption of the remaining Russian pipeline supply via TurkStream during the winter season, while maintaining the Reference Winter demand and the other assumptions described in section 3.1.

With a full disruption of the remaining Russian pipeline supply, the European gas system can satisfy Reference Winter demand under the LNG Optimal scenario. However, the 30% UGS stock level target cannot be reached (Figure 17). Storage falls to 21% under LNG Optimal supply.

Under the LNG Tight supply case, storage is fully depleted, with the aggregated EU UGS filling level falling to 11%, which corresponds to strategic reserves held in some countries. These reserves are not freely available on the market under normal conditions and represent approximately 11% of the total EU UGS working gas volume. Some European countries reserve part of their gas stocks as strategic UGS reserves, to be used only for the purpose of mitigating demand curtailment. The availability of these strategic UGS reserves depends on country-specific regulations. Demand response needs or potential uncovered demand reach approximately 2% on average across Europe.

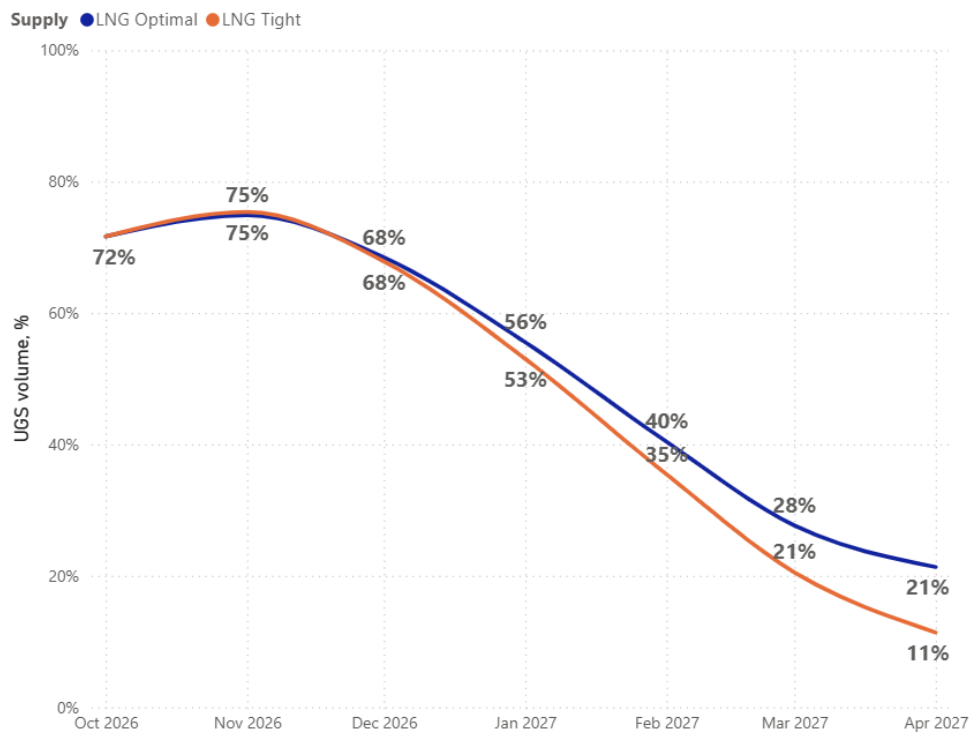


Figure 17. Reference Winter Russian supply disruption assessment. Evolution of the aggregated EU UGS stock level under the LNG Optimal and LNG Tight supply scenarios, %

Figures 18 and 19 show the UGS filling level per country on 31 March 2027 following a full disruption of Russian pipeline supply. Under LNG Optimal supply, the aggregated EU UGS filling level falls to 21%, with most countries ending the winter at around 17%. Under LNG Tight supply, storage is fully depleted in several countries and the aggregated EU UGS filling level falls to 11%.

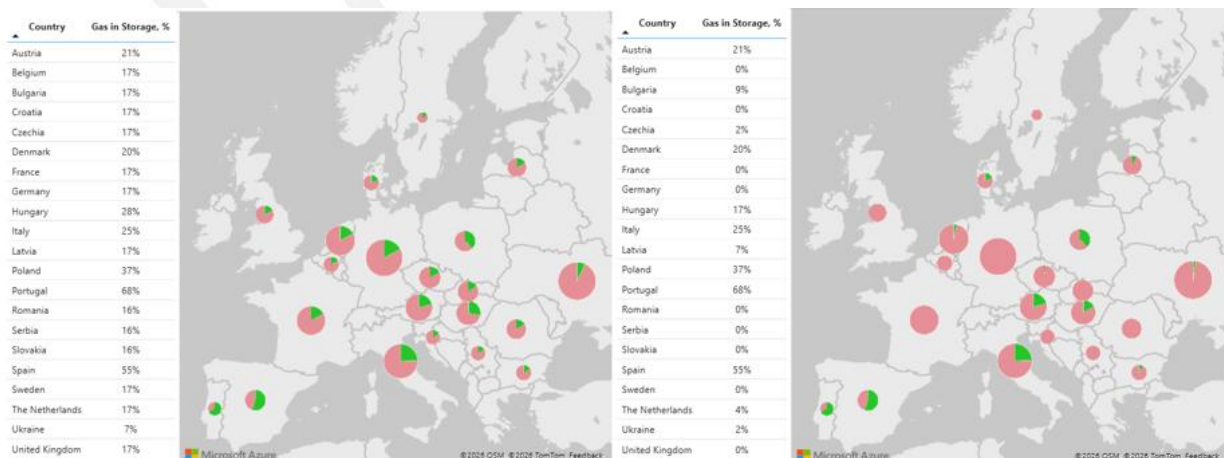


Figure 18 and Figure 19. Reference Winter Russian supply disruption assessment. UGS filling level per country on 31 March 2027 under LNG Optimal and LNG Tight supply, %³³

³³ Values for Czech Republic include Slovakian storages located on the Czech Republic territory.

Figures 20 and 21 show the level and composition of the supply mix in the Reference Winter scenario with full disruption of Russian pipeline supply. LNG and Norwegian pipeline supply remain the largest sources, accounting for 41% and 28% of the total supply, respectively.

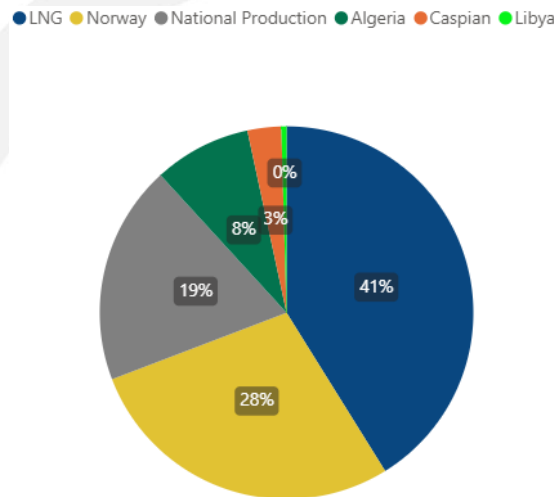


Figure 20. Reference Winter Russian supply disruption assessment with LNG Optimal supply. Supply mix, %

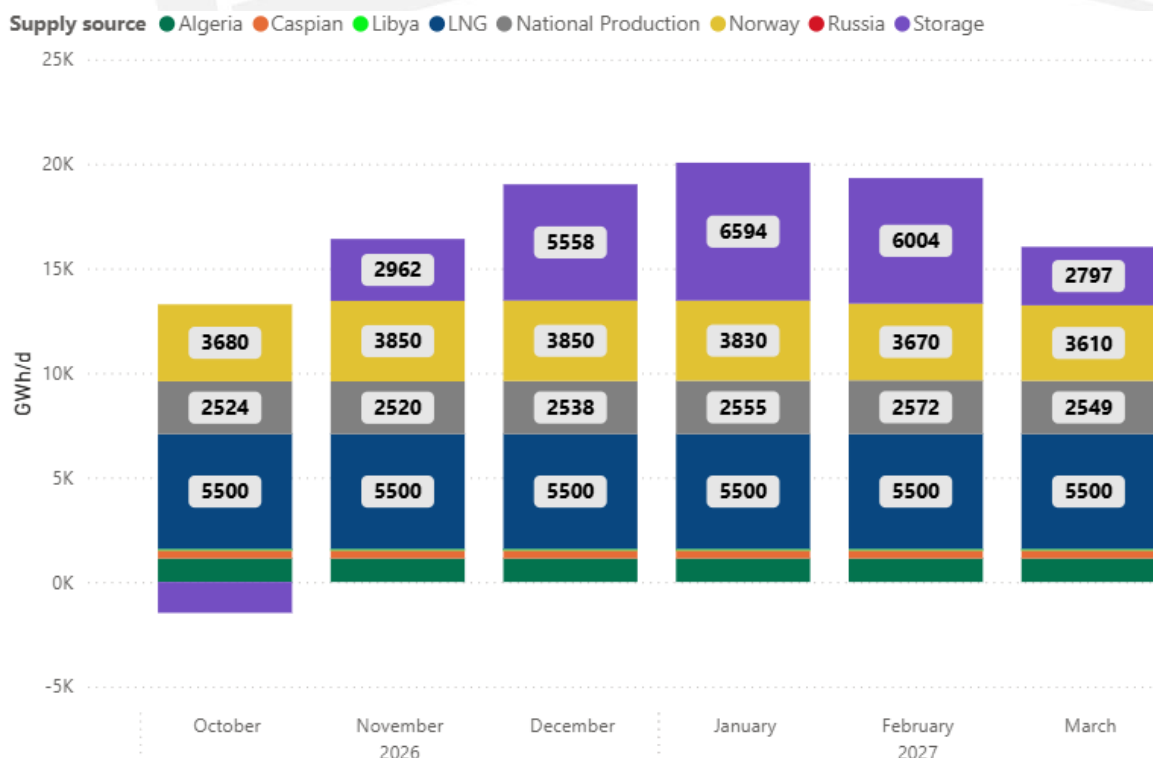


Figure 21. Reference Winter Russian supply disruption assessment with LNG Optimal supply. Monthly supply mix, GWh/d

The disruption does not result in higher imports from other supply sources, as these are already utilised up to their assumed potentials under the LNG Optimal supply assumptions. Instead, the system compensates for the loss of Russian pipeline supply through increased use of storage. Net injections in October are reduced, while storage withdrawals increase from

November to March. This allows demand to be met without demand response or potential uncovered demand, but results in a lower UGS filling level at the end of the winter.

In the event of a disruption of Russian pipeline imports, an additional 96 TWh/~9 bcm of LNG would be required to maintain a 30% UGS filling level at the end of the winter season. Regional impacts may vary, with landlocked countries in Central and Eastern Europe (CEE) and South-Eastern Europe (SEE) potentially facing greater challenges in securing sufficient LNG deliveries. These results demonstrate the importance of coordination and cooperation by countries..

3.3 Reference Winter supply dependence assessment – SoS disruptions

This section assesses the impact of two scenarios considered in the 2024 Union-wide simulation of gas supply and infrastructure disruption scenarios³⁴ (SoS simulation): the disruption of Europipe 2, the largest offshore infrastructure supplying continental Europe, and the disruption of all Algerian pipeline. Both scenarios also assume a full disruption of the remaining Russian pipeline supply via TurkStream.

Under LNG Optimal supply, both SoS disruption scenarios result in severe storage depletion. The aggregated EU UGS filling level falls to 13% following a disruption of Europipe 2 and to 11% following a disruption of all Algerian supplies, compared with 21% without an SoS disruption. The Algerian disruption also results in an average demand response need or potential uncovered demand of 3% (Figure 22).

LNG High supply allows higher end-of-winter storage levels, although this remain below 30% target, reaching 23% following the Europipe 2 disruption and 19% following the Algerian disruption, compared with 26% without an SoS disruption (Figure 23).

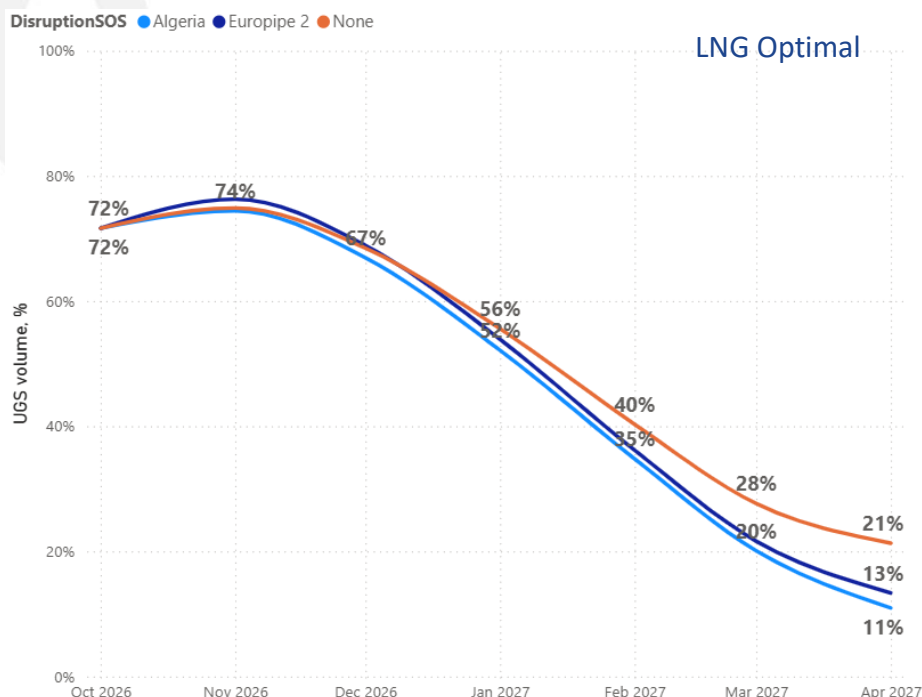


Figure 22. Reference Winter SoS disruption assessment with LNG Optimal supply. Evolution of the aggregated EU UGS stock level, %

³⁴ <https://www.entsog.eu/security-of-supply-simulation#union-wide-simulation-of-supply-and-infrastructure-disruption-scenarios-2024>

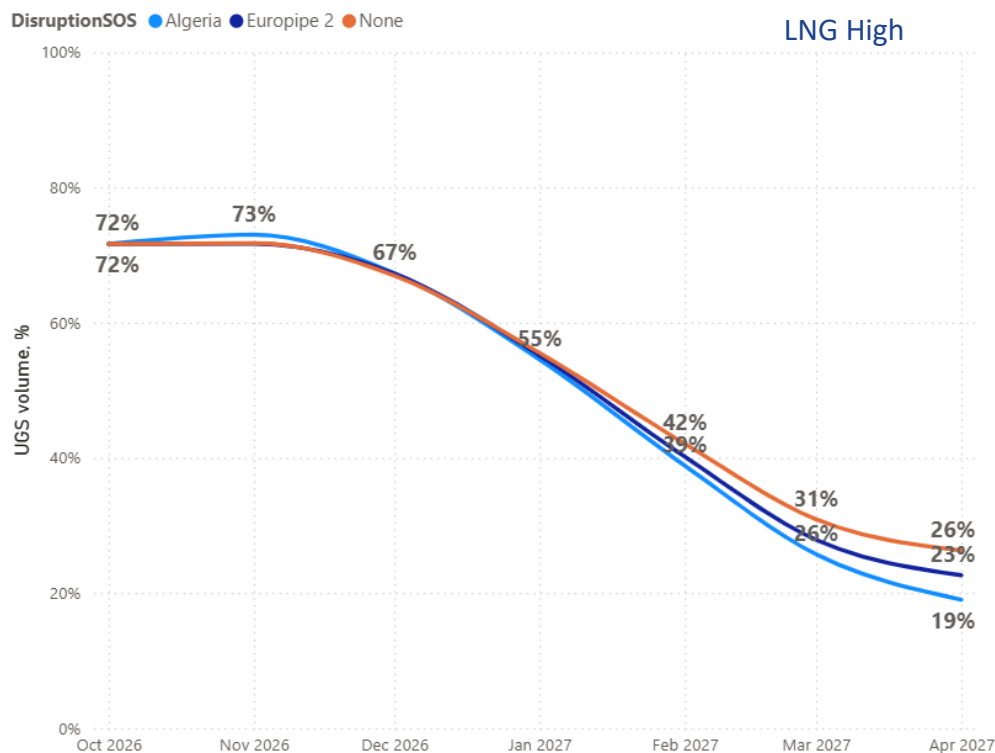


Figure 23. Reference Winter SoS disruption assessment with LNG High supply. Evolution of the aggregated EU UGS stock level, %

3.4 Cold Winter scenario with 30% UGS stock level target for 31 March 2027

For the Cold Winter 2026/27 scenario, the analysis assesses whether the European gas system can meet Cold Winter demand while maintaining a minimum UGS stock level of 30% on 31 March 2027. The simulations start from an average EU UGS filling level of 72% on 1 October 2026, equivalent to approximately 811 TWh/~74 bcm (see Figure 10). In this scenario, the Cold Winter demand values for each country during the withdrawal period were assumed.

The distribution of withdrawal, demand, and supply during the winter months results from the modelling and the following assumptions:

- The Cold Winter monthly gas demand in **Annex B**
- The monthly national gas production estimated by TSOs in **Annex B**
- The monthly capacities provided by TSOs
- The storage withdrawal curves provided by GSE as defined in **Annex A**
- The flexibility given to the model for the definition of the supply potentials derives from the historical supply mix (see **Table 4**)

Based on these assumptions, the modelling has been used to check if any physical congestion or dependence on an import source may limit the fulfilment of gas demand during the Cold Winter withdrawal period while all European countries cooperate.

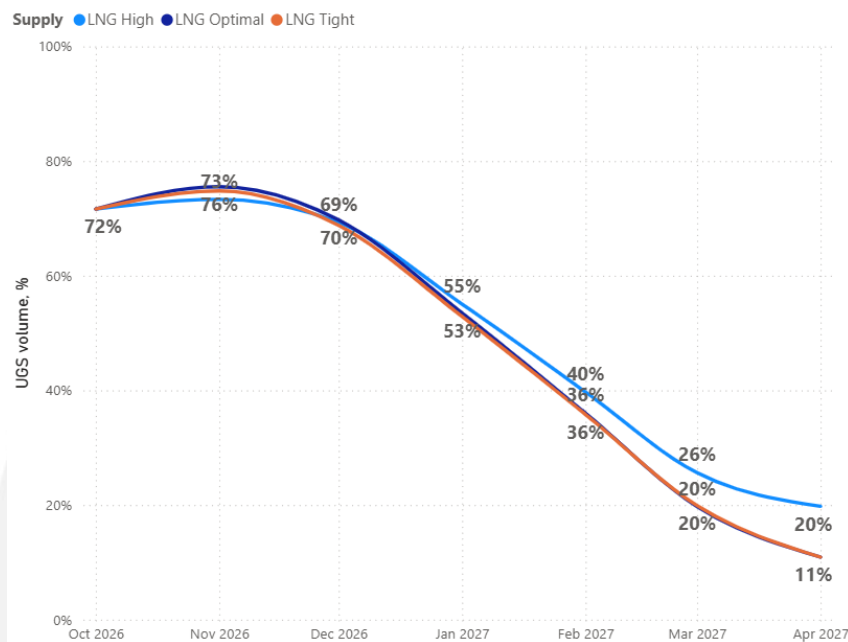


Figure 24. Cold Winter scenario with Russian pipeline supply minimised. Evolution of the aggregated EU UGS stock level under the LNG High, LNG Optimal and LNG Tight supply scenarios, %

The Cold Winter simulation results show that the available supply and storage withdrawal capacity are insufficient to meet demand while maintaining the 30% UGS stock level target. Under LNG Optimal and LNG Tight supply, the aggregated EU UGS filling level falls to 11% by the end of the winter season, corresponding to the remaining strategic storage reserves. Demand response needs or potential uncovered demand reach 7% under LNG Optimal supply and 12% under LNG Tight supply. LNG High supply avoids demand response or potential uncovered demand, but the EU UGS filling level still falls to 20%, below the 30% target (**Figure 24**).

Under both LNG Optimal and LNG Tight supply, the remaining 11% of EU UGS working gas volume corresponds to strategic storage reserves. These reserves are not freely available to market participants under normal conditions. Some countries reserve part of their gas stocks specifically to mitigate demand response needs, with availability governed by national regulations. The simulation results do not consider the use of these strategic reserves, which could further mitigate demand response in the countries where they are available.

Europe would face demand response needs or potential uncovered demand amounting to 7% of total Cold Winter demand under LNG Optimal supply. This corresponds to approximately 237 TWh/~22 bcm. Under LNG Tight supply, demand response needs or potential uncovered demand would increase to 12%, equivalent to approximately 437 TWh/~40 bcm, as shown in **Figure 25**. These results demonstrate the risks associated with a Cold Winter, particularly if Member States also aim to maintain a minimum UGS filling level of 30% at the end of the winter season.

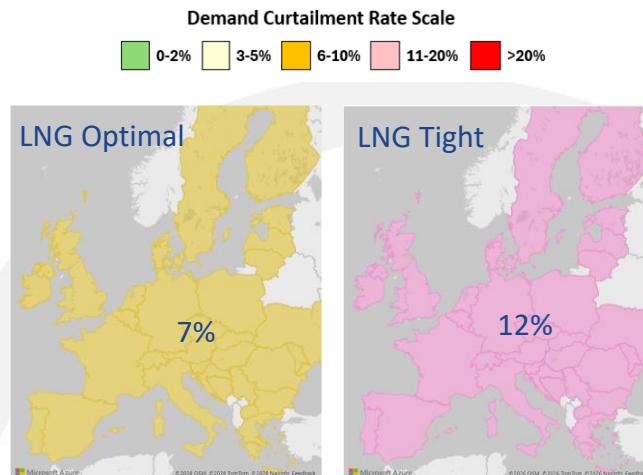


Figure 25. Cold Winter scenario with Russian pipeline supply minimised. Demand response needs under LNG Optimal and LNG Tight supply, %³⁵

To meet Cold Winter demand while maintaining a 20% storage level at the end of the winter, Europe would require additional LNG supply, with approximately 1,364 TWh/~124 bcm of LNG required over the winter.

3.5 Cold Winter supply dependence assessment – Russian supply disruption

This section assesses the impact of a full disruption of the remaining Russian pipeline supply via TurkStream under the Cold Winter assumptions described in section 3.4.

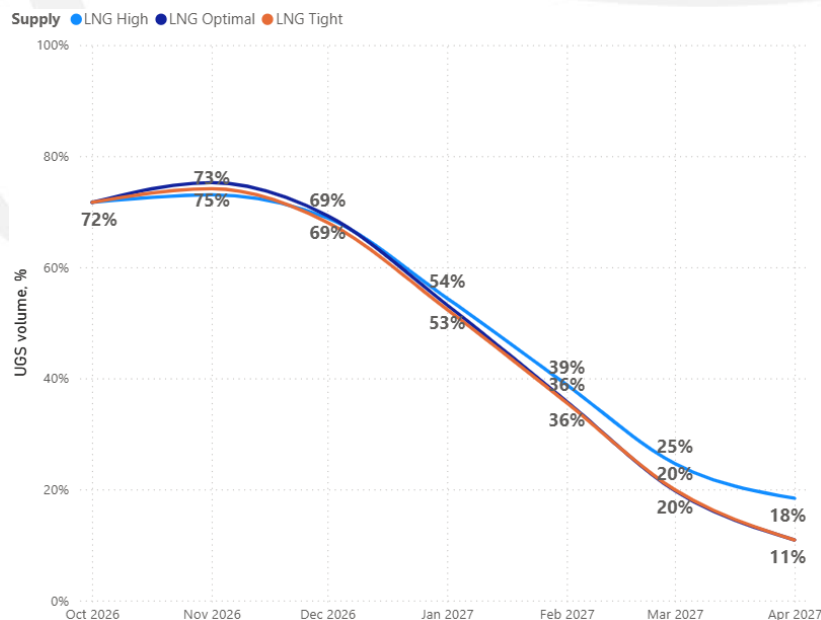


Figure 26. Cold Winter Russian supply dependence assessment. Evolution of the aggregated EU UGS stock level, %

The Cold Winter 2026/27 scenario with full Russian pipeline supply disruption shows that UGS withdrawal capacity, combined with the available flexibility of imports, is insufficient to meet

³⁵ Results do not consider the utilization of strategic storage reserves - strategic reserves remain available to avoid/reduce demand curtailment in some countries (11% at EU level)

demand and reach the 30% UGS stock level target. Without Russian pipeline supply during a Cold Winter, Europe would require demand response or potential uncovered demand ranging from 9% under LNG Optimal supply to 15% under LNG Tight supply. Under the LNG High supply, demand response needs or potential uncovered demand reach 3% in parts of Central and Eastern Europe, highlighting limitations in infrastructure flexibility to transport additional LNG supplies from Western Europe towards these regions. The results depend strongly on LNG availability, as shown in **Figure 27**.

In all cases, the available gas supply is insufficient to meet both demand and the storage target. Under LNG Optimal and LNG Tight supply, the aggregated EU UGS filling level remains at 11% at the end of the winter season. This level corresponds to strategic storage reserves in selected countries, which are not freely available to market participants under normal conditions. Under LNG High supply, the aggregated EU UGS filling level reaches 18%. These results highlight the risks associated with a Cold Winter, particularly if Member States also aim to maintain a 30% UGS filling level at the end of the winter season 2026/27.

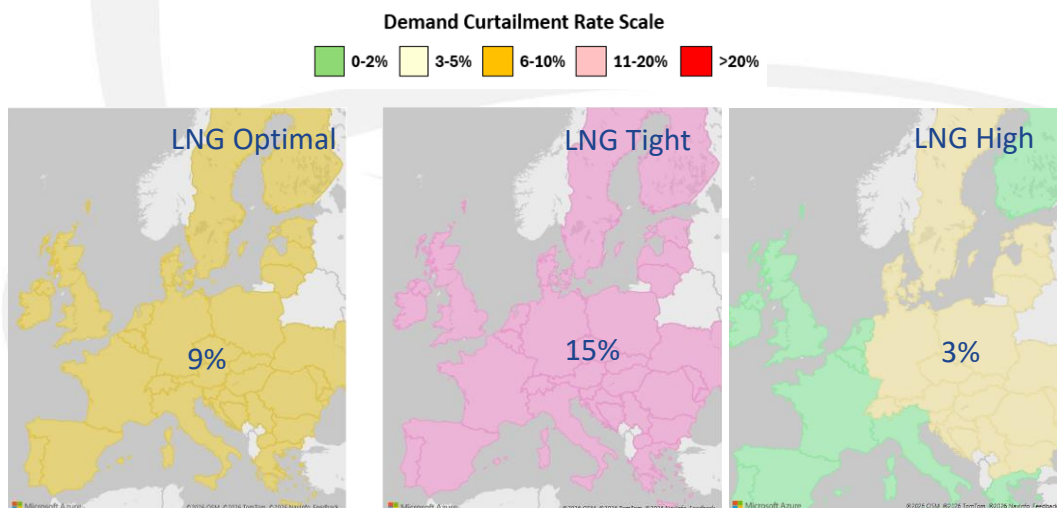


Figure 27. Cold Winter Russian supply disruption assessment. Demand response needs under LNG Optimal, LNG Tight and LNG High supply, %³⁶

3.6 Cold Winter supply dependence assessment – SoS disruptions

This section assesses the impact of two scenarios considered in the 2024 Union-wide simulation of gas supply and infrastructure disruption scenarios (SoS simulation): the disruption of Europipe 2, the largest offshore infrastructure supplying continental Europe, and the disruption of all Algerian pipeline. Both scenarios also assume a full disruption of the remaining Russian pipeline supply via TurkStream.

Storage facilities are insufficient to meet demand, with the aggregated EU UGS filling level falling to 11%, corresponding to the remaining strategic storage reserves, by the end of the winter season (**Figure 28**). Demand response needs or potential uncovered demand reach 12% in the Europipe 2 disruption case and 15% in the Algerian disruption case (**Figure 29**).

³⁶ Results do not consider the utilization of strategic storage reserves - strategic reserves remain available to avoid/reduce demand curtailment in some countries (11% at EU level)

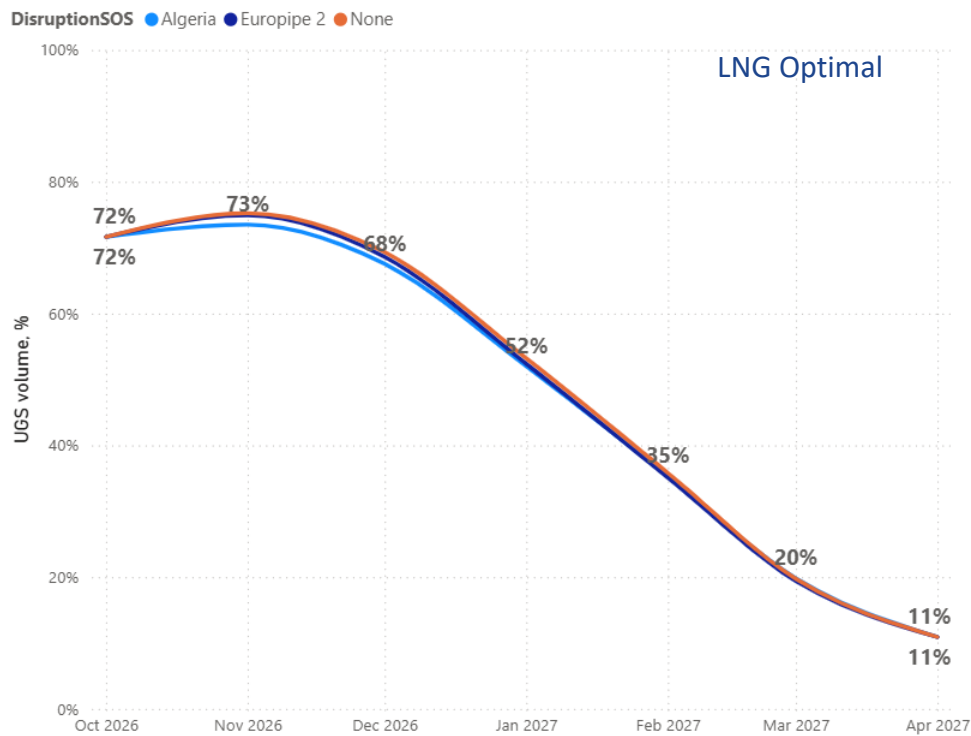


Figure 28. Cold Winter SoS disruption assessment with LNG Optimal supply. Evolution of the aggregated EU UGS stock level, %

Demand Curtailment Rate Scale

0-2%	3-5%	6-10%	11-20%	>20%
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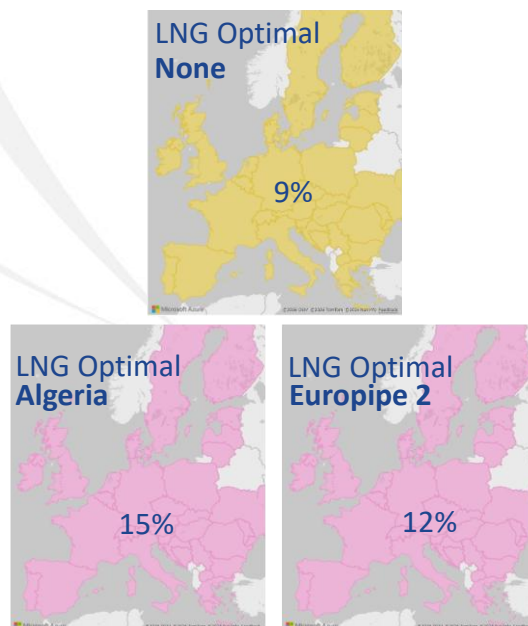


Figure 29. Cold Winter SoS disruption assessment with LNG Optimal supply. Demand response needs, %³⁷

With LNG High supply, the impact of the disruptions is reduced, but the 30% end-of-winter UGS stock level target still cannot be reached. The aggregated EU UGS filling level reaches 18%

³⁷ Results do not consider the utilization of strategic storage reserves - strategic reserves remain available to avoid/reduce demand curtailment in some countries (11% at EU level)

in all three cases (**Figure 30**). Demand response needs or potential uncovered demand remain at approximately 3% without an additional SoS disruption, increase to around 5% under the Europe 2 disruption and reach around 12% under the Algerian disruption in parts of Central and Eastern Europe, highlighting limitations in infrastructure flexibility to transport additional LNG supplies from Western Europe towards these regions (**Figure 31**).

To prevent storage depletion below 30% at the end of the Cold Winter scenario, additional LNG would be required in combination with demand response measures or potential uncovered demand.

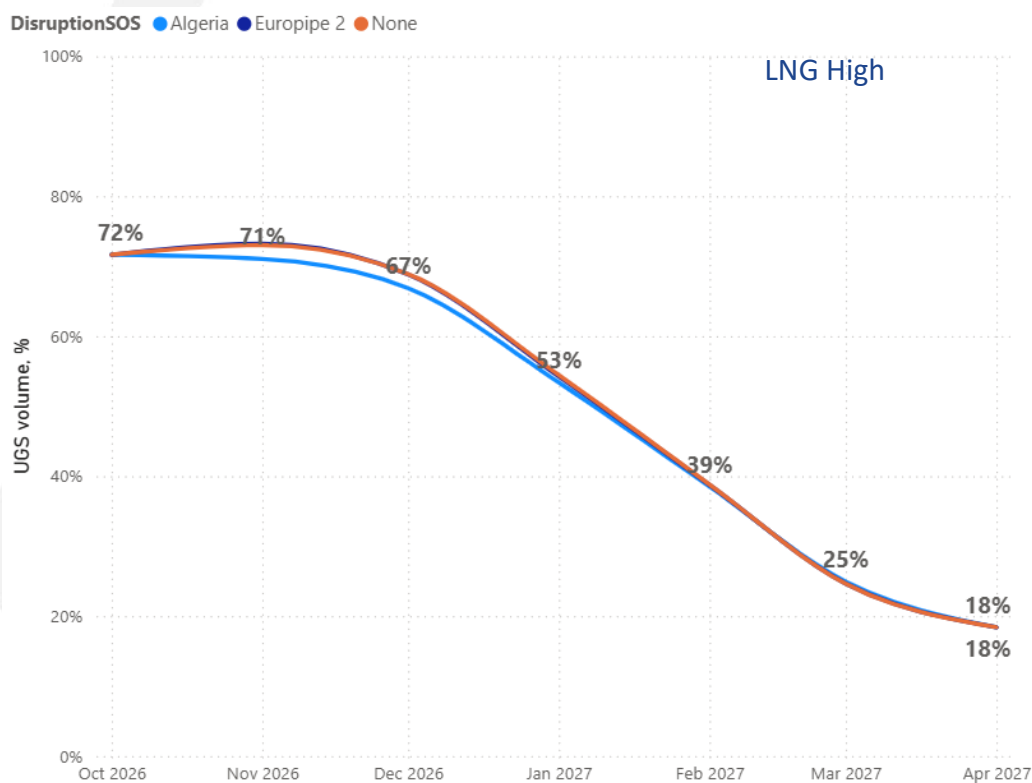


Figure 30. Cold Winter SoS disruption assessment with LNG High supply. Evolution of the aggregated EU UGS stock level, %

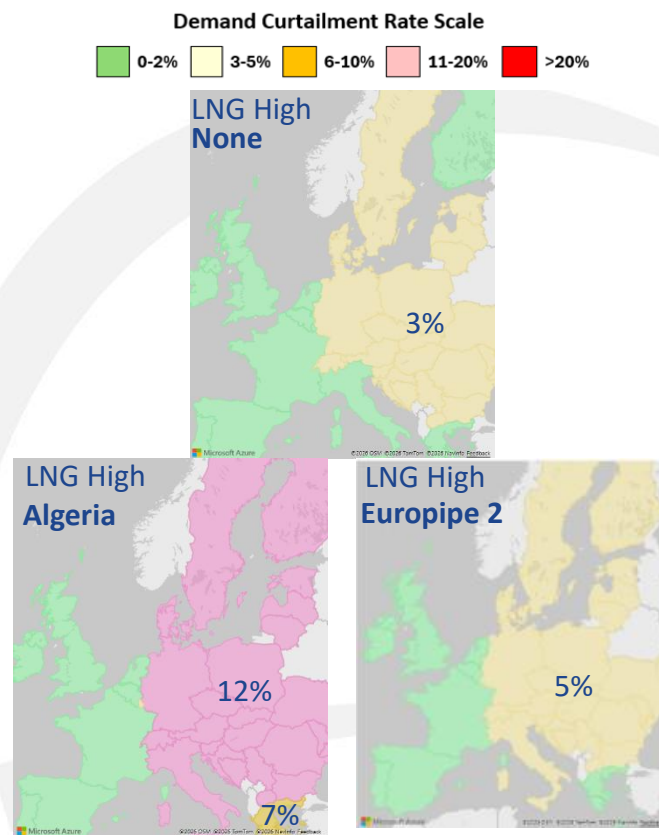


Figure 31. Cold Winter SoS disruption assessment, LNG High supply. Demand response needs, %³⁸

3.7 High demand events

For the high demand scenarios, meeting Peak Day and 2-Week Cold Spell demand depends on the availability of peak supply potential and sufficient storage withdrawal capacity. The simulations start from UGS filling level of 50% or 35%.

High demand cases, such as Peak Day and 2-Week Cold Spell, are simulated as independent analyses. However, these high demand events are typically expected to occur late in winter, when UGS are no longer at their maximum stock level (therefore, they cannot deliver their maximum withdrawal capacity). A lower UGS stock level leads to a decrease in withdrawal capacity, primarily due to reduced pressure in the UGS.

The distribution of withdrawal, demand, and supply during the high demand situation results from the modelling and the following assumptions:

- The Peak Day and 2-week Cold Spell gas demand estimated by TSOs for the Reference Winter in **Annex B**
- The Peak Day and 2-week Cold Spell gas demand for the Cold Winter in **Annex B**
- The peak national gas production estimated by TSOs in **Annex B**
- The peak capacities provided by TSOs
- The UGS withdrawal curves provided by GSE as defined in **Annex A**

³⁸ Results do not consider the utilization of strategic storage reserves - strategic reserves remain available to avoid/reduce demand curtailment in some countries (11% at EU level)

- The flexibility given to the model for the definition of the supply potentials derives from the historical supply mix (see **Table 4**) together with additional LNG that can be withdrawn from the tanks (see **Annex A**)

Based on these assumptions, the modelling has been used to evaluate the ability of the gas infrastructure to cope with high demand events such as a 1-in-20 years Peak Day and a 1-in-20 years 2-week Cold Spell during the winter period while all European countries cooperate.

In the case of Reference Winter (Figures 32 and 33), the European gas infrastructure is capable of fully meeting the demand both during a 2-week Cold Spell and during a Peak Day.

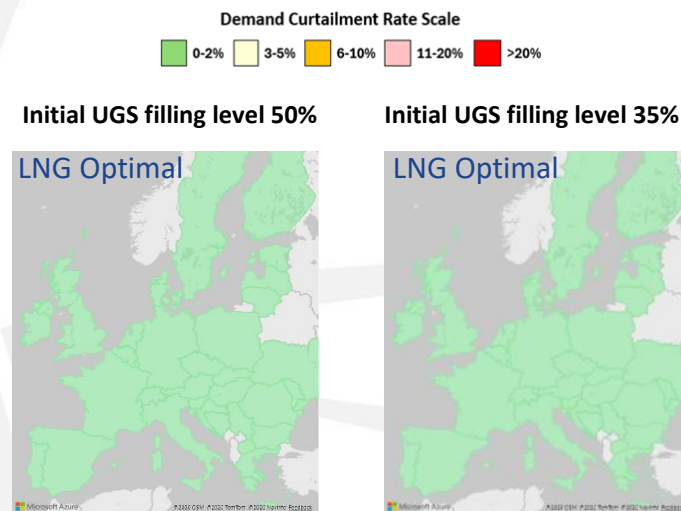


Figure 32 - Reference Winter. 2-Week Cold Spell. Demand response needs with initial UGS filling levels of 50% and 35%, %

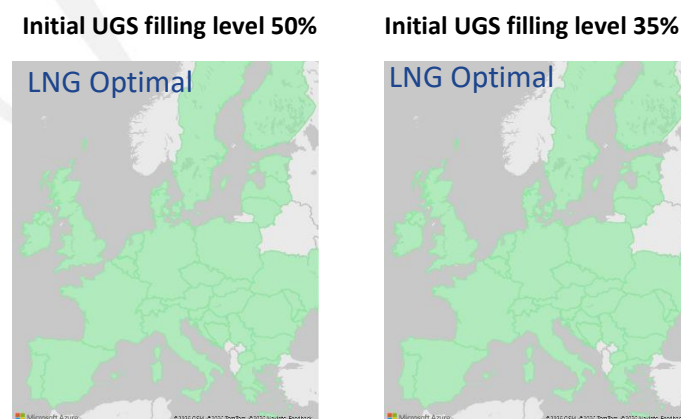


Figure 33. Reference Winter. Peak Day. Demand response needs with initial UGS filling levels of 50% and 35%, %

In the case of Cold Winter (Figures 34 and 35), the European gas infrastructure is capable of fully meeting the demand both during a 2-week Cold Spell and a Peak Day with 50% UGS filling levels, while for 35% filling levels there is some demand response need or potential uncovered demand in Peak Day.

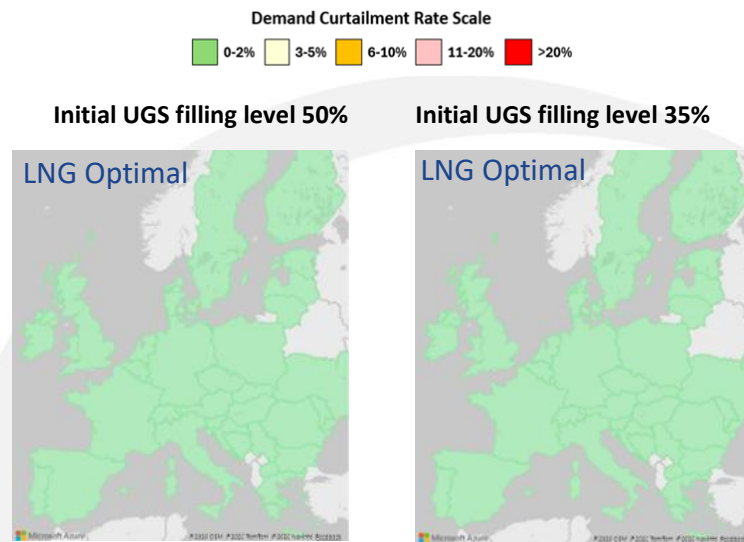


Figure 34. Cold Winter. 2-Week Cold Spell. Demand response needs with initial UGS filling levels of 50% and 35%, %

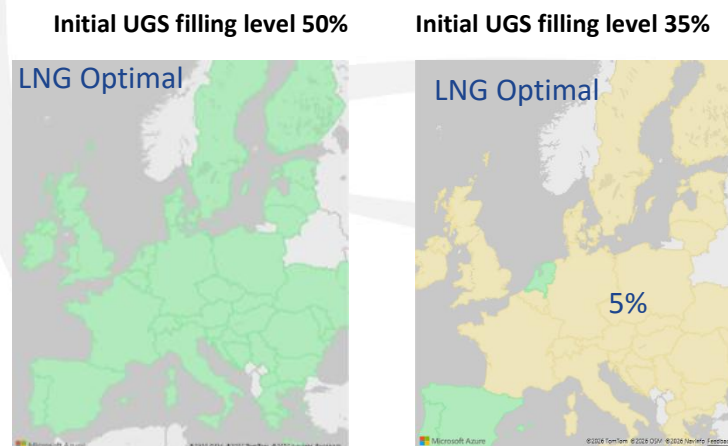


Figure 35. Cold Winter. Peak Day. Demand response needs with initial UGS filling levels of 50% and 35%, %

3.8 High demand events supply dependence assessment – Russian supply disruption

This section assesses the impact of a full disruption of Russian pipeline supply during Peak Day and 2-Week Cold Spell conditions. The results are assessed for initial UGS filling levels of 50% and 35%, illustrating the effect of reduced storage withdrawal capability on the ability of the system to respond to high demand.

With an initial UGS filling level of 50%, the European gas infrastructure can fully meet **Reference Winter** demand during both events. With an initial filling level of 35%, demand can still be fully met during a 2-Week Cold Spell, while a Peak Day results in slight localized demand response needs or potential uncovered demand (**Figures 36 and 37**).

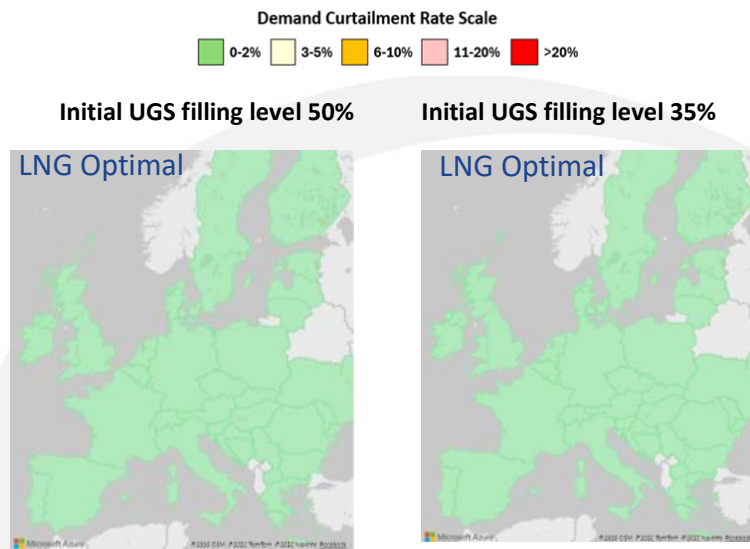


Figure 36. Reference Winter RU supply dependence. 2-Week Cold Spell. Demand response needs with initial UGS filling levels of 50% and 35%, %

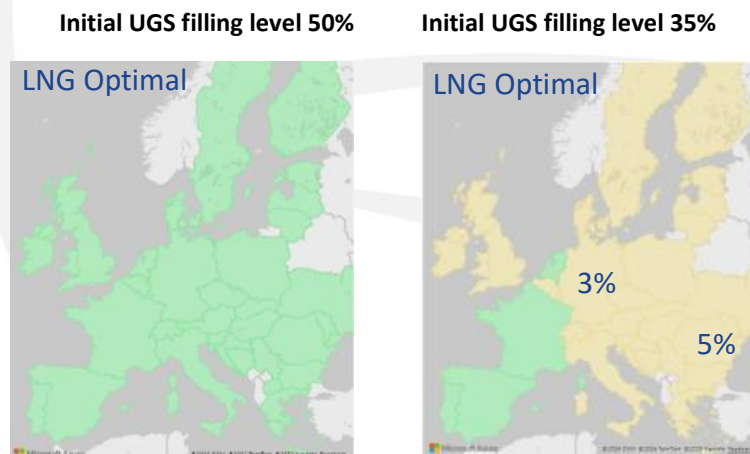


Figure 37. Reference Winter RU supply dependence. Peak Day. Demand response needs with initial UGS filling levels of 50% and 35%, %

In the case of Cold Winter (see Figures 38 and 39), with an initial UGS filling level of 50%, the European gas infrastructure is capable of fully meeting demand during a 2-Week Cold Spell. During a Peak Day, demand response needs or potential uncovered demand reach approximately 7% in the South-Eastern European region.

With an initial UGS filling level of 35%, reduced storage withdrawal capability results in demand response needs or potential uncovered demand during a Peak Day with amount to around 6% across most of Europe and rise to around 12% in South-Eastern Europe. These results show that lower initial storage levels reduce the ability of UGS facilities to respond to high demand and reinforce the effect of infrastructure bottlenecks affecting gas supplies to the South-Eastern European region.

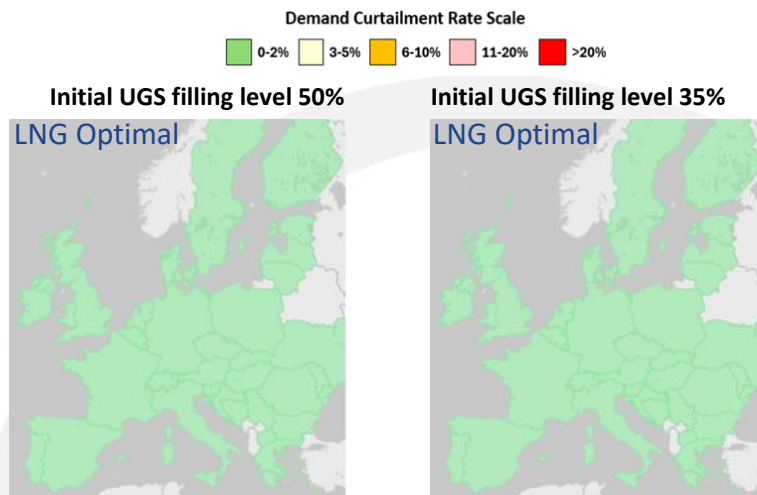


Figure 38. Cold Winter Russian supply disruption assessment. 2-Week Cold Spell demand response needs with initial UGS filling levels of 50% and 35%, %

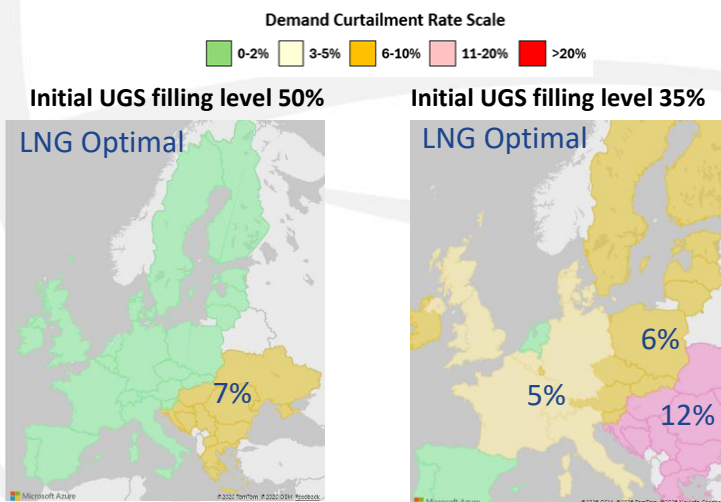


Figure 39. Cold Winter Russian supply disruption assessment. Peak Day demand response needs with initial UGS filling levels of 50% and 35%, %

Some European countries reserve part of their gas stocks as strategic reserves, which may be used specifically to mitigate demand curtailment. Their availability and conditions of use depend on national regulations. The model reflects the applicable minimum strategic storage constraints and does not assume that these reserves are released. However, national authorities could make them available to reduce demand curtailment in some countries.

3.9 High demand events supply dependence assessment – SoS disruptions

The two SoS disruption scenarios, consisting of the disruption of the largest offshore infrastructure supplying continental Europe (Europipe 2) and the disruption of all imports from Algeria, were considered under both Reference and Cold Winter conditions. These

simulations assume a full disruption of Russian pipeline supplies and an initial UGS filling level of 35%.

Under Reference Winter conditions, a 2-Week Cold Spell can largely be accommodated without demand response. During a Peak Day, demand response needs or potential uncovered demand reach around 3% across most of Europe and 5% in South-Eastern Europe without an additional SoS disruption. They increase to around 4% and 8%, respectively, under an Algerian disruption, and to around 4% and 5% under a Europeipe 2 disruption (**Figures 40 and 41**).

Under Cold Winter conditions, during a 2-Week Cold Spell, an Algerian disruption results in demand response needs or potential uncovered demand of around 4% in parts of Europe, while a Europeipe 2 disruption leads to demand response needs or potential uncovered demand of approximately 5% in the most affected countries. During a Peak Day, without an additional SoS disruption, demand response needs or potential uncovered demand reach around 6% across most of Europe and 12% in South-Eastern Europe. An Algerian disruption increases demand response needs or potential uncovered demand to around 9% across most of Europe, while a Europeipe 2 disruption results in needs of around 6%. In both disruption scenarios, demand response needs or potential uncovered demand reach approximately 12% in South-Eastern Europe, as illustrated in **Figures 42 and 43**.

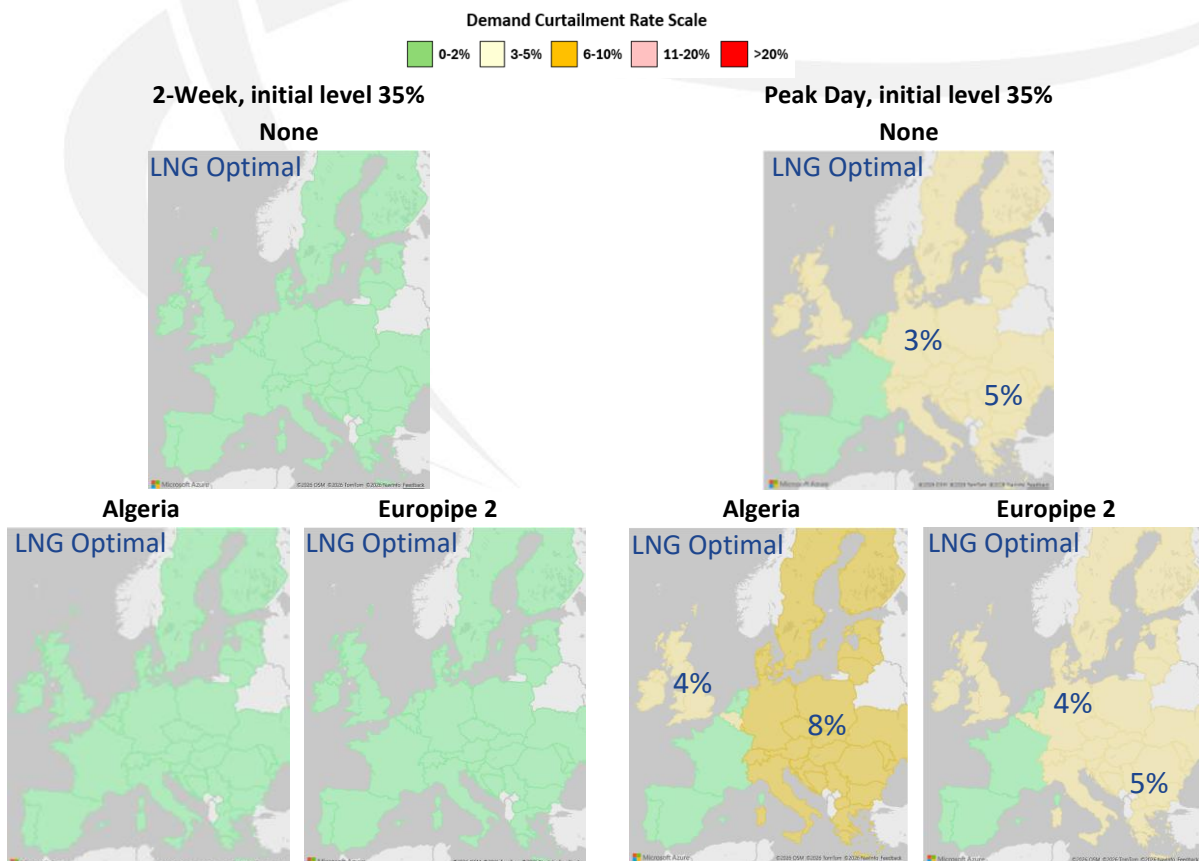


Figure 40. 2-Week Cold Spell supply dependence assessment under SoS disruptions, Reference Winter, initial UGS filling level 35%. Demand response needs, %

Figure 41. Peak Day supply dependence assessment under SoS disruptions, Reference Winter, initial UGS filling level 35%. Demand response needs, %

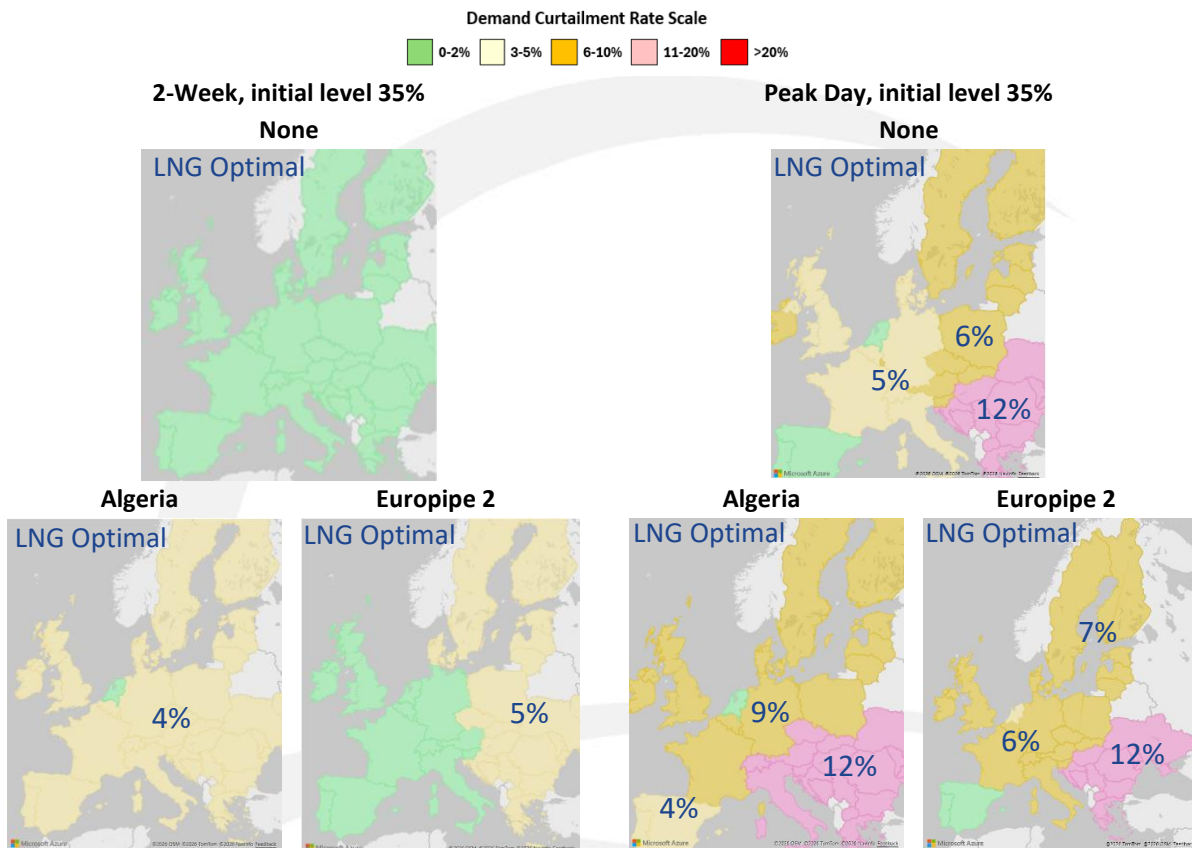


Figure 42. 2-Week Cold Spell supply dependence assessment under SoS disruptions, Cold Winter, initial UGS filling level 35%. Demand response needs, %

Figure 43. Peak Day supply dependence assessment under SoS disruptions, Cold Winter, initial UGS filling level 35%. Demand response needs, %

The simulations of high demand events, such as a Peak Day and a 2-Week Cold Spell, show that low storage levels combined with supply disruptions can significantly constrain the European gas system. Under Cold Winter conditions, these constraints highlight bottlenecks in west-to-east flows and limit the ability of the infrastructure to supply Central, Eastern and South-Eastern Europe. The same considerations regarding strategic storages as in Section 3.8 also apply here.

4. MODELLING RESULTS FOR THE SUMMER 2027 OVERVIEW

4.1 Reference summer scenario with 90% UGS stock level target for 30 September 2027

For the Summer 2027 overview, the following simulation was performed:

- Full year (12 months) simulations where the model anticipates reaching the UGS stock level target of 90% at the end of this period (after these 12 months) already from the beginning of the gas year, i.e., 1 October 2026. Monthly demand values for Reference demand and for 5-year average demand with 15% reduction (5YA-15%)³⁹ are assumed for each country.

The analysis investigates the possible evolution of the gas supply as well as the ability of the gas infrastructures to meet the demand, export, and storage injection needs to reach 90% of the stock level in each EU UGS on 30 September 2027. For the full year simulation of the gas year 2026/27 (i.e., from 1 October 2026 to 30 September 2027), the simulation starts with an average EU UGS stock level of 72% on 1 October 2026 (see **Figure 44**).

The distribution of withdrawal, injection, demand, and supply during the winter and summer months results from the modelling and the following assumptions:

- The **Reference** monthly gas demand and the **5-year average with 15% reduction** monthly gas demand in **Annex B**
- The monthly national gas production estimated by TSOs in **Annex B**
- The monthly capacities provided by TSOs
- The UGS withdrawal and injection curves provided by GSE as defined in **Annex A**
- The supply potentials from the historical supply mix (see **Table 4**)

With this configuration, the full-year simulations show that, under the LNG Optimal supply scenario, the European gas system is capable of meeting demand and reaching a UGS filling level of 90% by the end of September 2027. According to the simulation results, an aggregated EU UGS filling level of approximately 27% at the end of winter is required to reach the 90% target by the end of the following summer.

However, the LNG Tight sensitivity shows that the available supply would be insufficient to reach the 90% UGS filling level target, with European storage reaching only 65% by the end of September 2027 (**Figure 44**).

³⁹ Council Recommendation of 25 March 2024 on continuing coordinated demand-reduction measures for gas

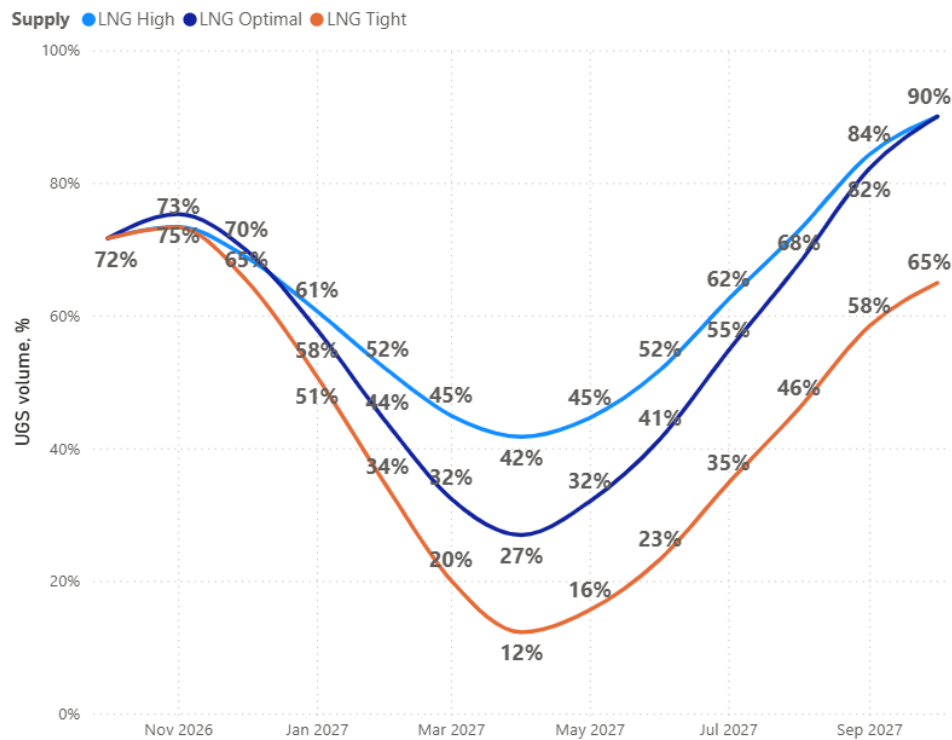


Figure 44. Reference demand scenario. Evolution of the aggregated EU UGS filling level, %

Under the 5YA-15% demand scenario, the lower demand enables EU UGS facilities to reach the 90% target under LNG Optimal supply. Under the LNG Tight supply scenario, the filling level reaches 81% by the end of September 2027, remaining below the target but significantly above the level achieved under Reference demand conditions (**Figure 45**).

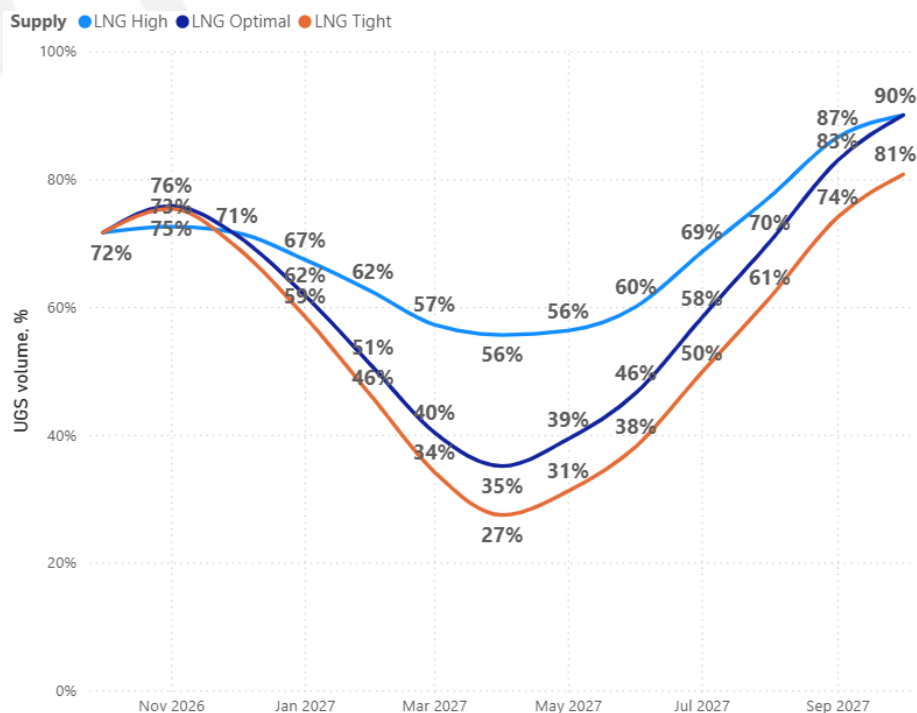


Figure 45. 5YA-15% demand scenario. Evolution of the aggregated EU UGS filling level, %

Additional sensitivity analyses were performed to assess the impact of the UGS filling level at the beginning of the injection season. The standard sensitivity assumes an average EU UGS filling level of 30% in each country on 1 April 2027. This is compared with the lower starting level of 13% resulting from the Winter 2026/27 assessment under LNG Tight supply and with Russian pipeline supply minimised. When Russian pipeline supply is minimised and the injection season starts with UGS at 30%, the aggregated EU UGS filling level reaches 90% by the end of September 2027 under both LNG High and LNG Optimal supply, while it reaches 82% under LNG Tight supply. With a lower starting level of 13%, the corresponding end-of-September filling levels decrease to 86%, 80% and 65% under LNG High, LNG Optimal and LNG Tight supply, respectively (**Figure 46**).

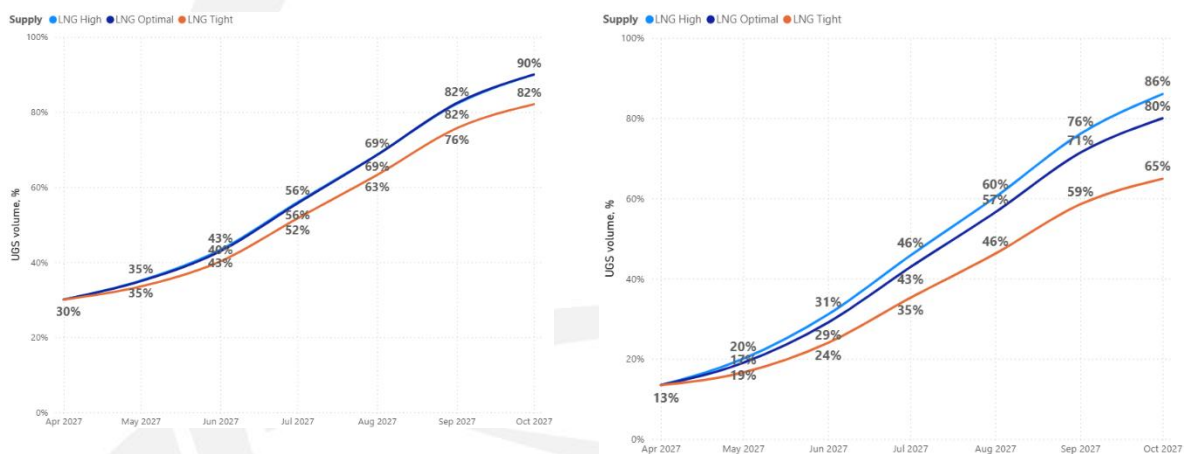


Figure 46. Reference summer demand scenario with Russian supply minimised. Comparison of the aggregated EU UGS filling level evolution from initial levels of 30% and 13%, %

Figures 47 and 48 show the level and composition of the supply mix in the full year (12 months) simulation scenario with LNG Optimal supply potential. The aggregated EU UGS filling level reaches 90% by the end of September 2027.⁴⁰

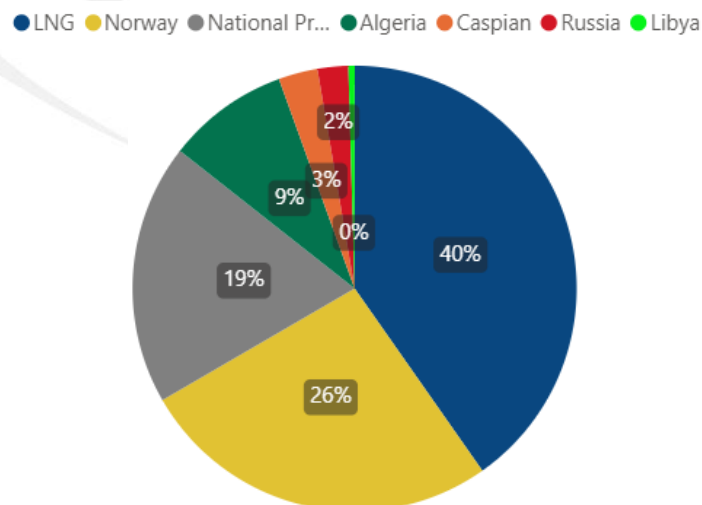


Figure 47. Reference Summer (full year) scenario. Supply mix, %

⁴⁰ The import levels shown represent one possible supply option, with LNG providing import flexibility in this example, and modelling was done while minimizing Russia supply.

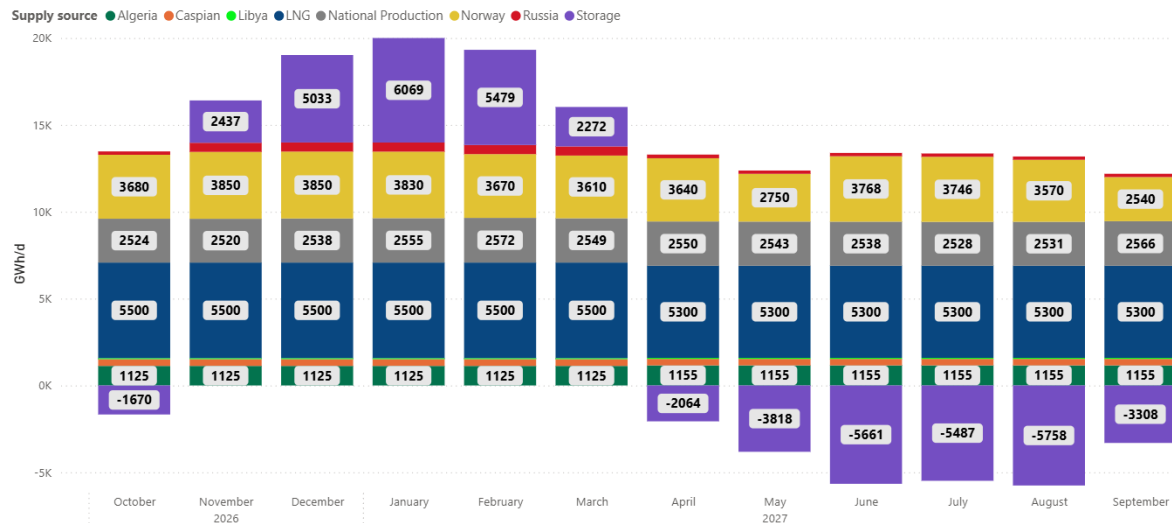


Figure 48. Reference Summer (full year) scenario.
Monthly supply mix, GWh/d

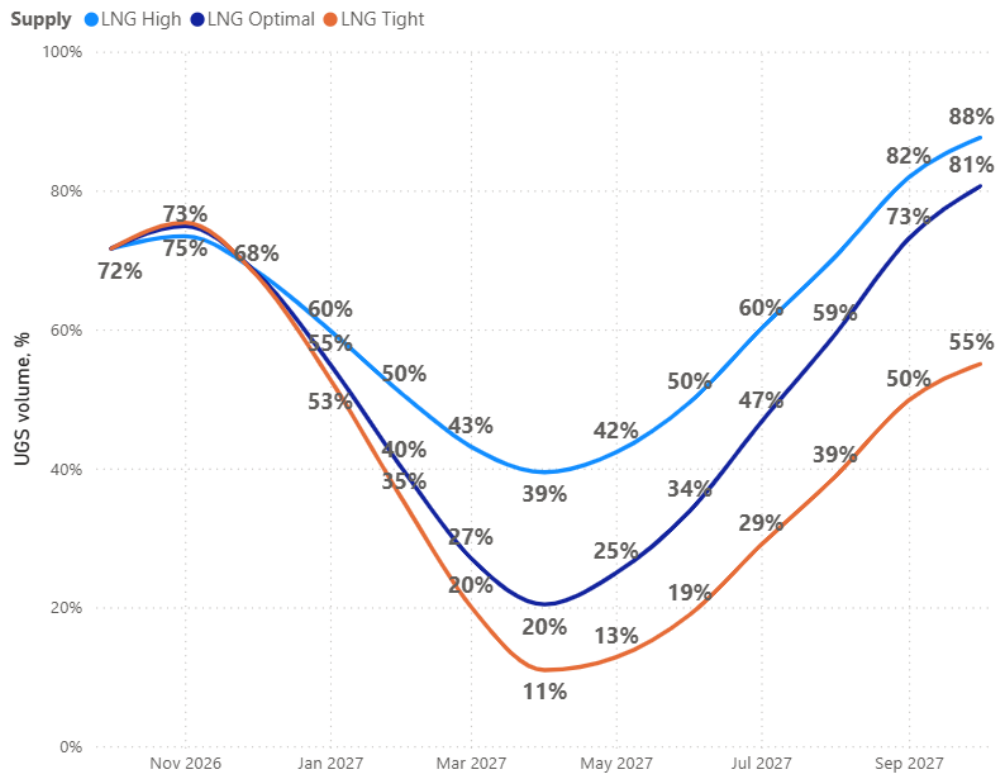
LNG supply and supply from Norway represent the largest sources of supply. In the Reference Summer scenario, they constitute 40% and 26% of the total supply, respectively. The simulation results reveal that LNG supply is used at its maximum potential based on the assumptions made for this scenario to reach the UGS stock level target of 90% by the end of September 2027.

The monthly supply mix remains stable throughout the winter season of 2026/27. However, during the summer season 2027, the Norwegian supply fluctuates due to maintenance work on Norwegian fields during some months, which is anticipated to impact injection possibilities during that period of time. The EU UGS stock level could potentially increase in October 2027, as the injection season typically extends until November in some countries.

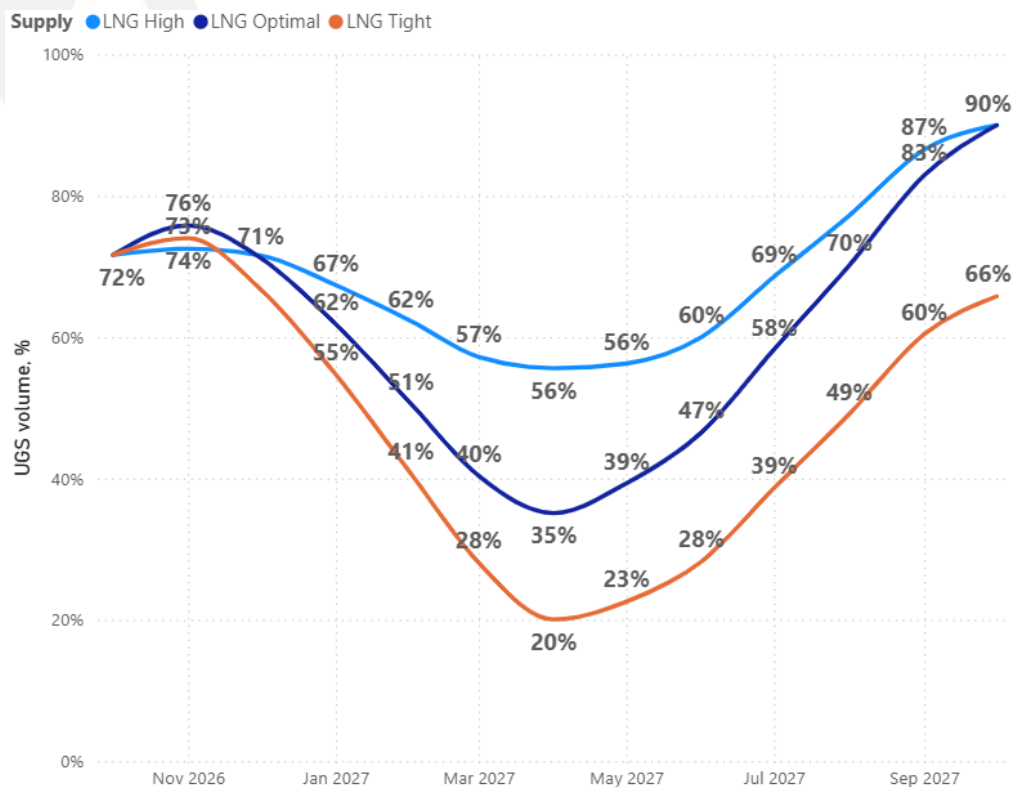
4.2 Reference summer supply dependence assessment – Russian supply disruption

This section assesses the impact of a full disruption of the remaining Russian pipeline supply via TurkStream under the full-year assumptions described in section 4.1.

Under Reference demand conditions and a full disruption of Russian pipeline supplies, the filling level reaches 88% under LNG High supply, 81% under LNG Optimal supply and 55% under LNG Tight supply. The corresponding aggregated EU UGS filling levels at the end of winter are approximately 39%, 20% and 11%, respectively. These results demonstrate the importance of both adequate end-of-winter storage levels and sufficient supply during the injection season (**Figure 49**).



**Figure 49. Reference demand (full year) RU supply dependence assessment.
Evolution of the aggregated EU UGS stock level, %**



**Figure 50. 5YA-15% demand (full year) RU supply dependence assessment.
Evolution of the aggregated EU UGS stock level, %**

Under the 5YA-15% demand scenario, the lower demand enables the EU UGS filling level to reach 90% under LNG Optimal supply. Under LNG Tight supply, storage reaches only 66% by the end of September 2027. The corresponding end-of-winter filling levels are approximately 35% and 20%, respectively (**Figure 50**).

Additional sensitivity analyses were performed to assess the impact of the UGS filling level at the beginning of the injection season. The standard sensitivity assumes an average EU UGS filling level of 30% in each country on 1 April 2027. This is compared with the lower starting level of 11% resulting from the Winter 2026/27 assessment under LNG Tight supply and with Russian pipeline supply is fully disrupted. When Russian pipeline supply is fully disrupted and the injection season starts with UGS at 30%, the aggregated EU UGS filling level reaches 90% by the end of September 2027 under both LNG High and LNG Optimal supply, while it reaches 75% under LNG Tight supply. With a lower starting level of 11%, the corresponding end-of-September filling levels decrease to 79%, 70% and 55% under LNG High, LNG Optimal and LNG Tight supply, respectively (**Figure 51**).

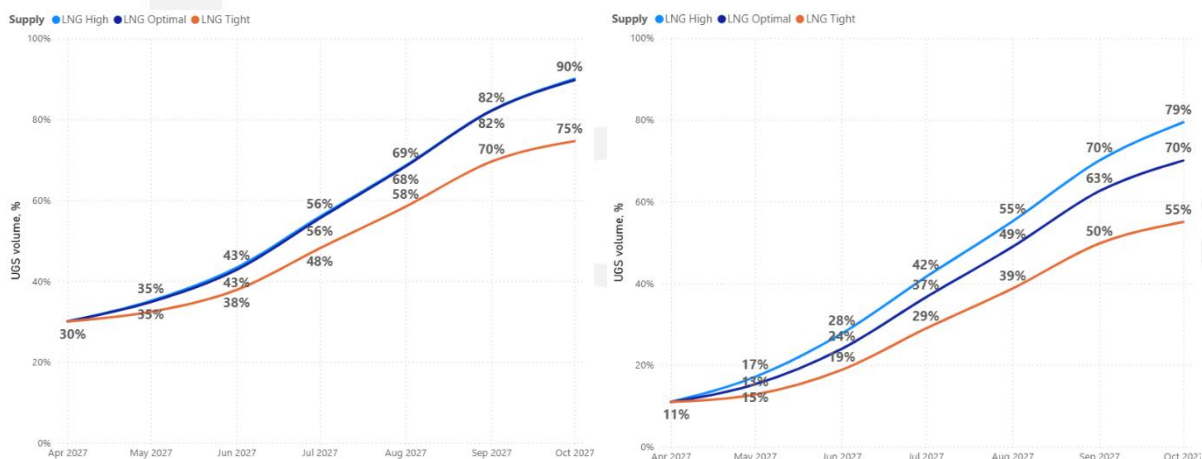


Figure 51. Reference summer demand scenario with Russian supply disrupted. Comparison of the aggregated EU UGS filling level evolution from initial levels of 30% and 11%, %

Figures 52 and 53 show the composition and monthly evolution of the supply mix under the Reference demand scenario, assuming a full disruption of Russian pipeline supplies and LNG Optimal supply. Under these conditions, the aggregated EU UGS filling level reaches 81% by the end of September 2027.

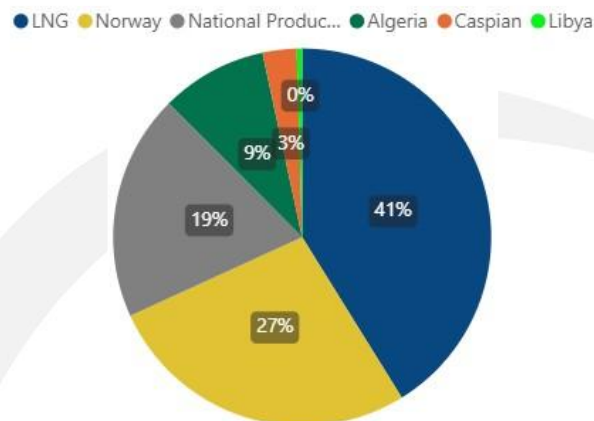


Figure 52. Reference Summer (full year) scenario RU supply dependence assessment.
Supply mix, %

LNG and Norwegian supplies constitute the largest sources of supply, representing 41% and 27% of the total, respectively. National production accounts for 19%, Algerian supplies for 9% and Caspian supplies for 3%. LNG imports remain at the assumed maximum supply potential throughout the simulation, amounting to 5,500 GWh/d during the winter and 5,300 GWh/d during the summer.

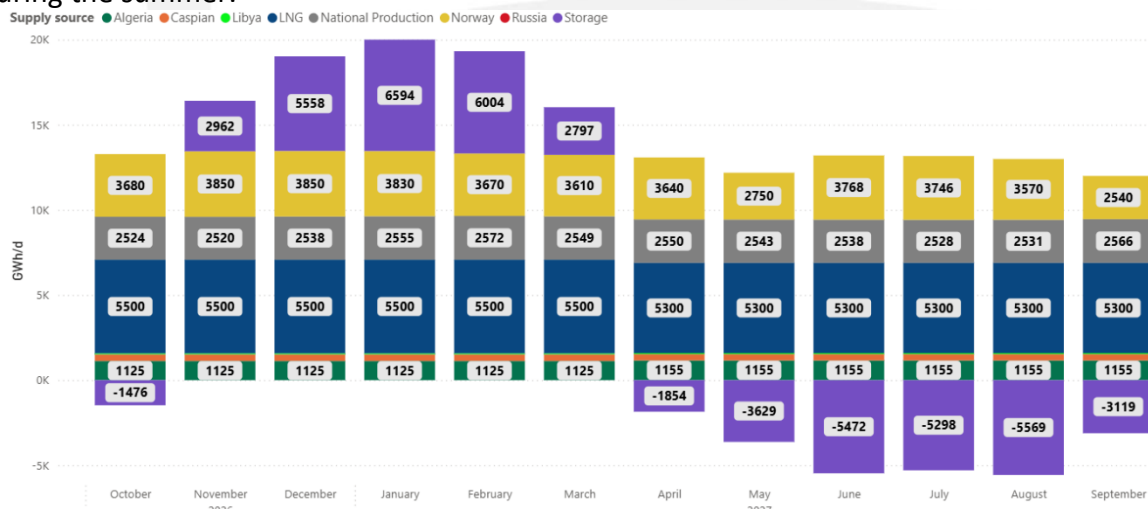


Figure 53. Reference Summer (full year) RU supply dependence assessment.
Monthly supply mix, GWh/d

The monthly supply mix remains relatively stable during winter 2026/27. During summer 2027, Norwegian supply decreases in several months due to assumed maintenance, reducing the volumes available for storage injection during those periods. Storage injections continue throughout the summer, but the 90% filling level target is not reached by the end of September 2027. Further injections could take place in October, since the injection season typically extends into the autumn in some countries.

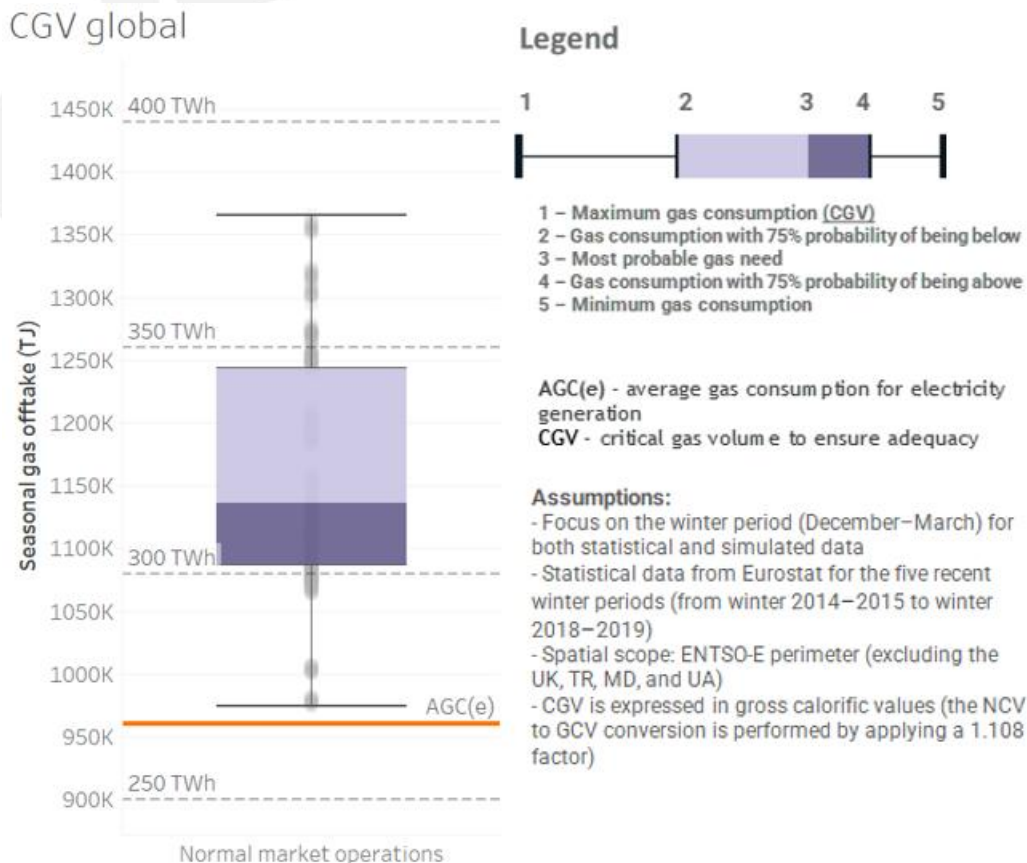
5. ENTSO-E INSIGHTS ON GAS CONSUMPTION FOR ELECTRICAL POWER SYSTEM

The operations of electricity and natural gas systems are historically interdependent. Gas-fired generators are key for covering the electricity demand during peak hours and during period of low renewable generation. This is especially true during the winter period and ENTSO-E remains prepared and in close cooperation with ENTSOG, especially in case winter 2026-2027 would be cold.

As performed in the last winters, ENTSO-E will conduct again a critical gas volume (CGV) analysis to quantify the amount of gas needed to ensure adequacy in the electrical power system. (see figure here-under for more explanation and CGV results of winter 2025/2026). The CGV analysis will be part of ENTSO-E's Winter Outlook 2026-2027 publication.

Previous year, this CGV was estimated to be around a fifth of the European Working Gas volume⁴¹ according to Figure below. For the coming winter, the CGV is still in process at the time of writing.

The new projected CGV volumes will come in the next ENTSO-E winter outlook, which will be released before December 2026.



⁴¹ According to [Gas Infrastructure Europe - AGSI](#) including EU and non-EU countries for a total of 1460 TWh Technical Capacity.

How to interpret the CGV chart:

Each orange dot represents a historical winter period of gas consumption for electricity generation. The significant differences between periods are primarily related to temperature and climate conditions but can also be influenced by the situation in the electricity market (prices, planned outages, changing generation fleet, etc.).

The AGC(e) (orange line) represents the average gas consumption for electricity generation for the 5 statistical years (orange dots).

The maximum gas consumption corresponds to the gas volume necessary to ensure adequacy in the worst- case simulated weather condition scenario. This maximum is indicated as the CGV to ensure adequacy.

The dark and light purple colours represent the range of simulation outcomes of gas volume needed to ensure adequacy for a given year, depending on the climate conditions (the simulation uses 34 climate condition scenarios). There is a 50% probability of a given year being in this range.

ENTSO-E keeps awareness of the developments in the gas system and in cooperation with ENTSO-G as the natural gas systems can play a crucial role in delivering electricity to sensitive consumers and ensuring grid stability. It is anticipated that gas and electricity markets will ensure optimal allocation of resources during winter season. In the event of limited gas supplies, some Member States' legislative framework would prioritize scarce gas resources for critical gas-fired power plants to ensure security of power system operations and supply of electricity to the sensitive electricity consumers.

Legal Notice

The current analysis is developed specifically for this Winter Supply Outlook 2026/27 with summer 2027 overview. It results from TSOs experience, ENTSOG modelling and supply assumptions and should not be considered as a forecast. The actual supply mix and storage level will depend on market behaviour and global factors.

ENTSOG has prepared this Winter Supply Outlook 2026/27 with summer 2027 overview in good faith and has endeavoured to prepare this document in a manner which is, as far as reasonably possible, objective, using information collected and compiled by ENTSOG from its members and from stakeholders together with its own assumptions on the usage of the gas transmission system. While ENTSOG has not sought to mislead any person as to the contents of this document, readers should rely on their own information (and not on the information contained in this document) when determining their respective commercial positions. ENTSOG accepts no liability for any loss or damage incurred as a result of relying upon or using the information contained in this document.

Annex A: UGS and LNG

The data for the Winter Supply Outlook 2026/27 is available online as an annex of this report. The data available is specifically:

➤ Working Gas Volume and Gas in storage on 1 October 2026.

For the modelling of the different scenarios, the Winter Supply Outlook 2026/27 considers the storage inventory level per country on 1 October 2026 as the initial situation. The gas in storage on 1 October 2026 for each country is based on the AGSI+ platform. The relative filling level has been calculated using the Working Gas Volume and gas in the storage from the AGSI+ platform.

➤ Injection and withdrawal curves.

In order to capture the influence of the UGS inventory level on the withdrawal capacity, ENTSOG uses deliverability curves made available by GSE. These curves represent a weighted average of the facilities (salt caverns, aquifers or depleted fields) of each area.

➤ LNG Tank Volume and Flexibility.

The send-outs from the terminals are modelled to represent the sum of both the off-loaded volumes of arriving cargos and gas from tanks. As for the previous Winter Outlook, the 2-Week Cold Spell is split in 2 periods to allow a differentiation of the LNG terminals' behaviour between the first and the second week.

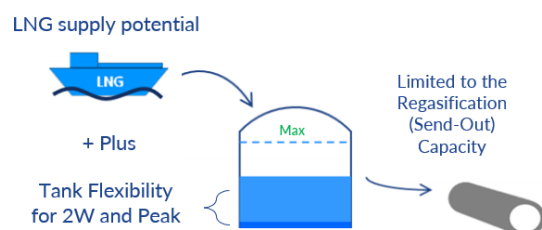
- During the first week, the model will determine the LNG send-outs using the level of LNG supply that reached LNG terminals in February as a result from the whole winter simulation, plus additional LNG that can be taken from the tanks.
- During the second week, importers are allowed to access a relevant number of cargos, so that the LNG supply reaching the terminals can reach the February maximum supply potential. In addition, the LNG send-outs can be taken from the remaining LNG stored in the tanks.

LNG terminals tank flexibility:

LNG stocked in the tanks fluctuates within a normal operating range of LNG in the tanks following normal operation. Besides, there is a minimum amount of LNG that must be kept in the tanks for a safe operation.

However, in case of high demand events such as 2-week cold spells or peak demand days, this minimum amount can be lowered, and part of the tanks are therefore used as a buffer volume, waiting for more LNG carriers to unload.

ENTSOG models this tank flexibility based on historical figures from GIE ALSI.



Annex B: Demand, National Production, Supply Potential and Export

The data for the Winter Supply Outlook 2026/27 is available online as an annex of this report. The data available is specifically:

➤ *Average daily Reference Winter and Reference Summer demand forecast, GWh/d.*

The Reference Winter and Summer demand (from 1 October 2026 to 31 March 2027) is based on TSOs' estimates.

➤ *Average daily Cold Winter demand forecast, GWh/d.*

The Cold Winter demand is based on demand assumptions considered in ENTSG's Union-wide Security of Supply Simulation Report 2021 revised by TSOs in July 2024, i.e., the historical highest winter demand since the winter 2009/10 on country level.

➤ *Average daily National production forecast, GWh/d.*

The national gas production is estimated by TSOs.

➤ *Supply potential*

For each of the winter and summer demand profiles and high demand situations in the winter season, specific maximum gas supply availabilities are used in the report. The maximum supply potentials of the different sources providing gas to the EU are based on the historical availability over the last five years (Caspian Sea, Algeria, LNG) or based on TSO information (Libya, Norway) or the observed flows of the last year (Russia).

Supply limitations are set for different cases (monthly values for winter and summer seasons, weekly values for the 2-Week Cold Spell case, daily values for the Peak Day case) so that the maximum flows from each source cannot exceed reasonable levels based on historical observations.

➤ *Consideration of non-EU countries*

When assessing the supply adequacy at European level, ENTSG considers the interactions with all the European countries neighbouring the EU, including Energy Community Contracting Parties, with the following geographical scope in the supply conditions:

- *The United Kingdom, Switzerland, Bosnia and Herzegovina, North Macedonia, Serbia, Moldova and Ukraine are fully included in the modelling perimeter.*
- *Albania, Montenegro and Kosovo are not connected to the gas grid.*
- *Exports to Morocco and the Kaliningrad region of Russia are not considered.*
- *Caspian and Russian gas are transported through Turkey into the EU and Strandzha 1 (Bulgaria) allows for additional LNG imports from Turkish terminals into the EU.*

Annex C: Modelling approach

The Outlook model represents the natural gas infrastructure within the geographical scope of the assessment. ENTSG uses PLEXOS as the modelling tool.

The model follows a capacity-based approach, whereby gas flows are determined according to the available infrastructure capacities. The optimisation allocates flows across the network while respecting capacity constraints, with the objective of meeting demand and achieving the storage targets at minimum total system cost.

The modelling framework assumes cooperative crisis management across the system. In the event of demand curtailment in one country, the model distributes curtailment proportionally across all countries, reflecting a cooperative response within the network. It further presumes cooperative behaviour among Member States, including LNG distribution to terminals and storage utilisation according to security of supply needs. However, the model does not factorize commercial supply agreements.

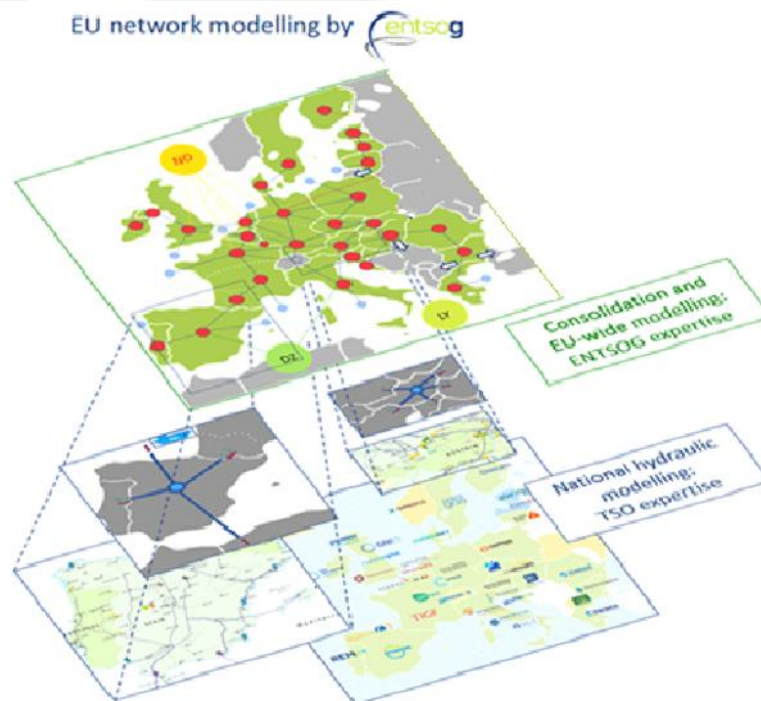


Illustration 1: Entsog model overview

▪ **Natural gas network topology**

The network topology represents the existing European gas infrastructure as well as planned infrastructure projects expected to become operational within the modelling horizon. It incorporates the firm technical capacities provided by TSOs, including the impact of scheduled maintenance.

The analysis considers non-EU countries, including the Energy Community contracting parties, considering the geography and the actual supply situation. The following modelling assumptions are applied:

- > The United Kingdom, Switzerland, Bosnia and Herzegovina, North Macedonia, Serbia, Ukraine and Moldova.
- > No export towards Turkey is considered. Caspian Sea and Russian gas are transported through Turkey into the EU and additional gas imports from Turkey into the EU are allowed from Turkish LNG terminals.
- > Albania, Montenegro and Kosovo are not connected to the gas grid.
- > Export to the Kaliningrad region of Russia is not considered.
- > Export to Kingdom of Morocco is not considered.

▪ **Objective Function**

For each simulation, the objective function represents the total system cost (Illustration 2). The mathematical solver determines the optimal solution by minimizing this objective function.

Parameters known prior to the simulation are shown in blue, while variables determined during the simulation are shown in purple. The term “SUM” denotes aggregation across all relevant objects and time periods. Consequently, the model includes a single objective function defined over the entire simulation horizon (e.g. a season or a year), rather than separate objective functions for individual periods (e.g. months).

The objective function is defined as:

$$\begin{aligned}
 &\textbf{OBJECTIVE FUNCTION} = \\
 &\text{SUM for all countries (unitary curtailment cost} \times \text{related curtailed quantity)} \\
 &\quad + \text{SUM for all storage (unitary target penalty} \times \text{quantity below target)} \\
 &\quad + \text{SUM for all supplies (unitary cost of supply} \times \text{related supply quantity)} \\
 &\quad + \text{SUM for all arcs (unitary residual cost} \times \text{related flow)}
 \end{aligned}$$

Illustration 2: Objective function of the Outlook model

■ **Cost Components**

The Outlook model incorporates several cost categories (shown in blue in Illustration 2), which are prioritised from highest to lowest as follows:

- > **Curtailment cost.** Curtailment is assigned the highest cost in the model and is therefore avoided whenever possible. The cost is incremental and assumed to be identical across all countries, reflecting the modelling assumption of cooperation between countries within the system.
- > **Target penalty.** A penalty cost is applied when a storage facility does not reach its predefined fill-level target at the end of a given period. This mechanism is used to assess whether the available infrastructure is sufficient to achieve the specified storage targets. Two target configurations are considered in the Outlook model:
 - Non-mandatory target: the storage level may fall below the target if demand cannot otherwise be met by available supply sources. In this case, the target penalty is set below the curtailment cost.
 - Mandatory target: the model enforces the target, potentially requiring demand curtailment to ensure that the target level is achieved. In this case the target penalty is above the curtailment cost.
- > **Cost of supply.** This component represents the costs associated with imports and national production and can be used to prioritise certain supply sources. In the model assumptions, LNG is considered more expensive than all pipeline supplies. As a result, LNG is utilised only after lower-cost pipeline supplies. Russian pipeline gas is assigned the highest supply cost to minimise its use.
- > **Residual costs** (infrastructure). Residual costs represent incremental costs associated with the use of infrastructure. The pipeline routes are assigned similar incremental residual costs, with utilisation of each route limited by its available capacity.

Annex D: Curtailment Rate

The data for the Winter Supply Outlook 2026/27 is available online as an annex of this report. The data available is specifically:

- *Curtailment Rate for Winter Outlook monthly simulations, %*
- *Curtailment Rate for High demand events 2-week Cold Spell and Peak day simulations, %*

For each demand situation and each zone, the modelling results consist of the calculation of a Curtailment Rate which is the potential level of demand curtailment representing the share of the gas demand that cannot be satisfied (calculated as a daily volume). The level of demand curtailment is assessed considering a cooperative behaviour between European countries in order to mitigate its relative impact. This means that all countries try to reduce the curtailment rate of other countries by sharing it.

Note: To give a comparable picture of the situation and avoid any distortion in the cooperative behaviour of ENTSG's model, all indicators consider the demand as it is defined in the assumptions. However, in case of risk of inadequacy between supply and demand and an exposure to a few percentiles of demand curtailment observed in a country is generally considered as a limited risk in this assessment.

Abbreviations

CEE	Central and Eastern Europe	WGV	Working Gas Volume
TSO	Transmission System Operator	5YA-15%	5-Year average demand with demand reduction by 15%
UGS	Underground Gas Storage facility		
LNG	Liquified Natural Gas		

Supplies

CA	Caspian Area	NO	Norway
DZ	Algeria	NP	National Production
LY	Libya	RU	Russia

Countries

AT	Austria	LU	Luxembourg
BE	Belgium	LV	Latvia
BG	Bulgaria	MD	Moldova
CY	Cyprus	MK	North Macedonia
CZ	Czechia	MT	Malta
DE	Germany	NL	The Netherlands
DK	Denmark	PL	Poland
EE	Estonia	PT	Portugal
ES	Spain	RO	Romania
FI	Finland	RS	Serbia
FR	France	SE	Sweden
GR	Greece	SI	Slovenia
HR	Croatia	SK	Slovakia
HU	Hungary	UA	Ukraine
IE	Ireland	UK	United Kingdom
IT	Italy	UKn	Northern Ireland
LT	Lithuania		

Other

BEI	Belgium L-gas	STcDEd	Germany Dutch storage zone
DEI	Germany L-gas	STcDEdL	Germany Dutch storage zone L-gas
DEn	Germany THE South	STcDEg	Germany storage zone THE North
DEg	Germany THE North	STcDEm	Germany multi-country storage
FRnL	French Nord L-gas	STcDEmL	Germany multi-country L-gas
LNG_FRn	French LNG zone North	STcDEn	Germany storage zone THE South
LNG_FRs	French LNG zone South	STcFRa	TSO GRTGaz storage zone Atlantic
LNG_ITa	Italian LNG zone Adriatic	STcFRn	TSO GRTGaz storage zone North
LNG_ESa	Spain LNG zone Atlantic	STcFRnL	TSO GRTGaz storage North L-gas
STcAT	Austrian storage zone	STcFRs	TSO GRTGaz storage zone South
STcATm	Austrian multi-country storage zone	STcFRt	TSO Terega storage zone
STcATn	Austrian storages to THE South		
STcCZd	Czech storages to Slovakia		

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