

**OPINION No 07/2022
OF THE EUROPEAN UNION AGENCY
FOR THE COOPERATION OF ENERGY REGULATORS**

of 15 December 2022

on ENTSOG's Winter Supply Outlook 2022/2023

THE EUROPEAN UNION AGENCY FOR THE COOPERATION OF ENERGY REGULATORS,

Having regard to Regulation (EU) 2019/942 of the European Parliament and of the Council of 5 June 2019 establishing a European Union Agency for the Cooperation of Energy Regulators ('ACER'), and, in particular, Article 4(3)(b) thereof,

Having regard to Regulation (EC) No 715/2009 of the European Parliament and of the Council of 13 July 2009 on conditions for access to the natural gas transmission networks and repealing Regulation (EC) No 1775/2005, and, in particular, Articles 9(2) and 8(3) thereof,

Having regard to the outcome of the consultation with the ACER's Gas Working Group,

Having regard to the favourable opinion of the Board of Regulators of 14 December 2022, delivered pursuant to Article 22(5) of Regulation (EU) 2019/942,

Whereas:

1. INTRODUCTION

- (1) On 24 October 2022, the European Network of Transmission System Operators for Gas ('ENTSOG') published the Winter Supply Outlook 2022/2023 ('WSO 2022/2023')¹ pursuant to Article 8(3)(f) of Regulation (EC) No 715/2009.
- (2) Pursuant to Article 4(3)(b) of Regulation (EU) 2019/942, ACER may provide an Opinion to ENTSOG on, inter alia, relevant documents referred to in Article 8(3) of

¹ https://www.entsog.eu/sites/default/files/2022-10/SO0038-22_Winter%20Supply%20Outlook_2022-23_2.pdf

Regulation (EC) No 715/2009, as submitted to ACER pursuant to Article 9(2), first subparagraph, of Regulation (EC) No 715/2009.

2. SUMMARY OF THE DOCUMENT

- (3) In the WSO 2022/2023, ENTSOG undertakes an assessment of the resilience of the European gas network for the upcoming winter (October 2022 to March 2023). ENTSOG's analysis investigates the ability of the gas infrastructure to dispatch the necessary supply volumes to meet gas demand, and especially to deal with high demand situations, provided that gas supply is available. The Outlook is based on assumptions of gas supply potentials based on historical gas supplies during the last 10 years, and it looks into the possible evolution of gas supplies and underground gas storage ('UGS') utilisation levels during the upcoming winter withdrawal season.
- (4) ENTSOG's modelling tool simulates the ability of the gas infrastructure system to ensure supply and demand adequacy under a "reference" and a "cold" winter, assessing the expected conditions during mid-February. In addition, the WSO simulates and "stresses" the gas infrastructure under two scenarios of high demand linked to cold weather during mid-February, namely under a "peak day" and a "2-week cold spell".
- (5) Additionally, as part of its obligation under the security of gas supply Regulation², ENTSOG has undertaken an assessment of a prolonged disruption of a single supply source, namely Russian piped gas. Annexes A-C to the Outlook provide additional analyses of the assumptions and the simulations.
- (6) ENTSOG has also reviewed and published a report on the European gas supply and demand for the past Winter 2021/2022³, which aims to provide an ex-post analysis of the gas demand and supply in the previous seasons. The report is published on voluntary basis along with the WSO 2022/2023.

3. ASSESSMENT OF THE DOCUMENT

- (7) ACER welcomes the timely publication of the WSO 2022/2023 and accompanying documents ahead of the winter season. ACER appreciates the analysis of the historical gas supply, demand patterns and use of storages, as well as of the possible evolution of storage levels for the upcoming winter resulting from the assumptions and simulations contained in the Outlook.

² Art. 7(1) of Regulation (EU) 2017/1938

³ https://www.entsog.eu/sites/default/files/2022-10/SO0037-22_Winter%20Supply%20Review%202021-22_0.pdf

3.1. ENTSOG main findings and framework of analysis

- (8) ACER takes notes and underlines the importance of the following **main findings** contained in the WSO 2022/2023:
- a. The EU storage level on 1st October 2022 (985 TWh⁴, 89% of overall storage capacity) is one of the highest in recent years, with varying situations among countries going from 53% in Latvia to more than 90 % in numerous countries⁵. This actual filling level on 1st October for all Member States meets either the 80% objective for 1st November as set out in the EU gas storage Regulation or a volume corresponding to at least 35% of the average annual gas consumption over the preceding five years for that member State.
 - b. The European gas infrastructure, including projects to be commissioned over the upcoming winter, offers sufficient flexibility to dispatch the necessary supply volumes to meet demand in Europe, assuming that there is efficient cooperation among the different Member States and that sufficient gas reaches the EU. However, under specific scenarios of high demand and prolonged disruption of Russian gas supply, some possible demand curtailments are identified.
 - c. In a “refence case”, which reflects the currently reduced Russian imports via Ukraine and TurkStream, in case of a normal winter (1-in-2 years) the gas infrastructure system can ensure demand and supply adequacy. However, in case of a “peak day”, most Member States are exposed to a limited risk of demand curtailment (6%).
 - d. In case of a “cold winter” (1-in-20 years), all European countries are exposed to a risk of 10% demand curtailment for the entire winter season and from 10% to 27% in case of a “peak day”.
 - e. In a “Russian supply disruption scenario during a cold winter”⁶, in case of a peak day, the demand could be curtailed between 12% - 27% across Europe.

⁴ This total includes 9.3 TWh of gas in storage in the UK and 4.5 TWh of gas in storage in Serbia.

⁵ Belgium (92.1%), Croatia (91.2%), Czech Republic (90.2%), Denmark (95.1%), France (97.3%), Germany (91.2%), Italy (90.7%), Netherlands (91.6%), Poland (98.3%), Portugal (100%), Spain (90.1%), Sweden (92.9%) and non-EU member state Serbia (100%).

⁶ ACER understands that the Russian supply disruption scenario addresses imports via pipelines but not LNG from Russia. In the second quarter of 2022, EU countries imported 6.5 bcm of Russian LNG, representing 18% of the LNG imported in Europe (increase of 28% year-on-year). Source: DG ENER quarterly reports on gas markets, p.17. based on cargo tracking data from Refinitiv. Import numbers also include possible re-exports (LNG transshipment) to third countries.

https://energy.ec.europa.eu/system/files/2022-10/Quarterly%20report%20on%20European%20gas%20markets%20Q2_2022_FINAL.pdf

Cooperation between Member States and additional gas supply would efficiently mitigate the risk of demand curtailment. Existing LNG infrastructure would allow for LNG imports to be increased up to 100 bcm over this winter, which means an additional 40 bcm more than in winter 2019/2020, effectively mitigating the risk of demand curtailment from 13% down to 6% across Europe during a “cold winter”.

- f. A demand reduction of ca. -15%, which is assessed as a “sensitivity” scenario, would efficiently mitigate the risk of demand curtailment in EU countries during winter season, in particular during a Russian gas pipeline supply disruption. With 15% gas demand reduction, Europe would be exposed to 4% - 13% demand curtailment during a peak day.

(9) ACER takes notes of the **following conclusions** contained in the WSO 2022/2023

- a. High storage levels, the current gas infrastructure system and new projects to be commissioned, enhanced cooperation and additional LNG import capacities can efficiently reduce the dependence on Russian gas supply, and partially mitigate the risk of demand curtailment in case of a full Russian disruption.
- b. Without demand reduction, most countries would be exposed to significant risk of demand curtailment in case of a cold winter.
- c. Early and significant withdrawal of gas from storages will result in low storage levels at the end of the winter season, having a negative impact on the flexibility of the gas system and on the preparedness for the next winter season 2023/2024.

(10) As in previous seasonal outlooks, ACER notes that the modelling approach assumes that sufficient gas supplies reach the EU to serve gas demand. ACER finds adequate that ENTSOG’s “reference scenario” already reflects the currently reduced Russian gas flows imports, which are now only happening via Ukraine and TurkStream, representing around 10% of the Union gas imports. ACER takes note that ENTSOG’s reference and other scenarios correctly take into account that it will not be possible to flow Russian gas via the damaged Nord Stream I and II pipelines, and that gas flows in Yamal’s pipeline have ceased. In view of new risks of further reduction of gas supply from Russia and a clear political drive to reduce the Union’s dependency on Russian gas⁷, ENTSOG has additionally assessed the impact of a possible long-term supply disruption of all Russian gas pipeline supply routes (including Ukraine and TurkStream).

⁷ REPowerEU Action plan, p.1. “In March 2022, EU leaders agreed in the European Council to phase out Europe’s dependency on Russian energy imports as soon as possible.”
<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM%3A2022%3A230%3AFIN&qid=1653033742483>

3.2. Gas storage filling levels in view of EU Gas Storage Regulation

- (11) ACER concurs with ENTSOG that gas storages play an important role to balance the European gas system and to cover peak demand during winter. Gas storages supply 25-30% of the gas consumed during winter⁸. The role of storages becomes more relevant in view of the risks related to a long-term full disruption of gas supply from Russia, in a context where the EU's indigenous gas production consistently declines year-on-year, and the gas import dependency from external gas producers to the EU increases. ACER notes that the storage inventory level on 1 October 2022 is 89%, 15 percentage points more than last year, and well above the average of the last ten winters⁹.
- (12) The Russian aggression against Ukraine triggered action at Union level in view of phasing out the Union's dependency on Russian gas and improving the level of preparedness for potential long-term gas supply disruption of Russian gas. On 5 August 2022, the Council adopted a Union Regulation¹⁰ aiming to ensure that gas storage capacities in the EU are filled to adequate levels before the winter season 2022/2023 and can be shared between Member States in a spirit of solidarity. The Regulation provides that gas storages must be filled to at least 80% of their capacity before 1st November 2022 and at 90% for the following winter periods.
- (13) ACER welcomes that the EU collective 80% storage filling rate objective was already achieved by the end August, nearly 2-months ahead of the 1st November deadline. The EU storage filling level has increased to 95% on 1 November¹¹, as the injection season continued during October in some Member States. There are varying storage filling levels across Member States, but in all instances the filling levels are compliant with the EU storage filling targets¹². Where possible, NRAs have checked the accuracy of

⁸ ACER report on Gas Storage Regulation and Indicators, p.4
https://acer.europa.eu/Official_documents/Acts_of_the_Agency/Publication/ACER%20Report%20on%20Gas%20Storage%20Regulation%20and%20Indicators.pdf

⁹ WSO 2022/23, Figure 8, p.16.

¹⁰ Council Regulation (EU) 2022/1369 of 5 August 2022 on coordinated demand-reduction measures for gas

¹¹ On 1 November, the storage filling level is 95%. Source: ENTSOG's European gas flow dashboard, accessed on 11 November 2022.
<https://app.powerbi.com/view?r=eyJrIjoiYTk3YjJhZmQtYTRjZS00NmNkLWlxZDUtYmU2MGE5NWE3ZGU1IiwidCI6IjgxMDU4NGZkLTU5ZjktNDEzNy1hNmExLWMwZTMzMjgwYjE1YyIsImMiOiJh9&pageName=ReportSection>

¹² In Latvia, the level of Inčukalns underground gas storage is ~52%, while the intermediate target for 1st October under the EU Storage regulation is 65%. However, Latvia's gas reserves exceed 35% of its average consumption over the last five years, and are compliant with the EU gas storages rules.

<https://www.conexus.lv/press-releases/conexus-latvija-ir-izpildijusi-jaunas-eiropas-regulas-prasibas>
<https://www.conexus.lv/press-releases/incukalna-pazemes-gazes-kratuve-noglabatas-vel-1424-twh-dabasgazes>
Lower than usual level of stocks in Latvia maybe explained by market players decisions from neighbouring countries (e.g. Estonia, Finland) to source gas from Paldiski LNG terminal, will could start operations in next few months.

storage filling levels reported in ENTSOG's Winter Outlook, noticing in one case¹³ a substantial difference with the WSO 22/23 data.

- (14) Last year, Austria, Germany and the Netherlands had a lower than usual storage level, which was largely explained by very low filling levels of large UGS facilities under the ownership or contractual control of Gazprom Export¹⁴. The storage filling levels of those storage facilities are much higher this year, as result of reforms of storage regulations at national and European level. Data shows that strengthened national and EU gas storage regulation and other regulatory interventions have played a role in the successful replenishment of these gas storages. At the same time, the filling of storages came at a cost, and evaluating and revising the incentives of the entities responsible for reaching the filling targets could contribute to avoiding an extreme price peak during the next filling season.
- (15) ACER notes that the winter supply modelling assumptions correctly take into account that the storage withdrawal capacity depends on the filling level, since the deliverability of storage is significantly reduced at filling levels below 30%¹⁵.
- (16) ACER highlights the critical importance of counting with adequate storage levels at the end of the winter season to cover still possible high demand or system stress situations. ACER concurs with ENTSOG that early and significant withdrawal from storages will have a negative impact on the flexibility of the gas system and can increase the exposure to supply risks towards the end of the winter. ACER supports ENTSOG's view¹⁶ that a 30% aspirational target for storage filling level on 1st April 2023 will ease preparedness efforts for upcoming Winter 2023/2024. As the actual use of imports and/or storage is eventually determined by market participants, ACER expects storage users to prudently withdraw gas from storage. Furthermore, ACER calls on national competent authorities to monitor and take available measures to favour a gas withdrawal pattern that enables safeguarding the continuity of gas deliveries during the next winter.
- (17) ACER finds that the time horizon of the Summer and Winter Outlooks analysis and simulations could be extended from 6 months to one year, in order to have a better understanding of gas preparedness beyond the end of the injection season (summer outlook) and the withdrawal season (winter outlook). This would have as a side effect

¹³ The Czech NRA (ERO) cannot verify the WSO 2022/23 data because it apparently included data from storages not connected to Czech market area.

¹⁴ As of 2 November 2022, the % filling storage level of UGS Haidach -Astora (AT) is 95 %, UGS Rehden (DE) 93% and UGS Bergermeer (NL) 99%. There is no information for UGS Haidach – GSA (AT). As of 4 November 2021, the % filling storage level of UGS Haidach - GSA (AT) was 2%, UGS Haidach -Astora (AT) 55%, UGS Rehden (DE) 9.5% and UGS Bergermeer (NL) 30%. Source: GIE AGSI+ platform.

¹⁵ WSO 2022/2023, p.45. Annex A, UGS deliverability curve.

¹⁶ Idem, p.22.

that, with the seasonal outlooks covering a 1-year horizon, the yearly outlooks¹⁷ could be discontinued.

- (18) ACER understands that withdrawal simulations of gas from storages only take into account the Spanish 55% limit set out under national legislation¹⁸. However, other national limitations for storage level limitations may be applicable under national rules. ENTSOG should investigate whether other limitations apply for storage withdrawal and, should they exist, perform a sensitivity analysis considering those restrictions.
- (19) Additionally to the role of storages, tanks from LNG regasification terminals would offer additional short-term flexibility to cover the peak-demand and short-term cold spells, but their potential is limited¹⁹.

3.3. The role of LNG to replace Russian piped gas

- (20) Since the start of the Russian aggression against Ukraine, LNG has been the main gas source to replace significant gas imports from Russia and this is likely to continue in the near future. European gas storage filling levels were very low at the end of last winter (303 TWh, 27%), but the gas injected during the summer season reached unprecedented high levels (~70 bcm)²⁰. Increased and unprecedently high LNG imports were necessary to offset the 29 bcm decline in Russian gas pipeline imports from Russia during the first half of 2022, as other gas pipeline sources²¹ have shown limited flexibility to increase supply. Attracting these incremental LNG volumes to Europe was quite challenging and costly²² for energy companies in view of the limited global availability of LNG supply, and only possible by diverting LNG cargoes, for which European buyers paid at premium over other LNG Asian markets. Based on market expectations²³, LNG prices are likely to continue to be high during the winter season.
- (21) The WSO 2022/2023 mentions²⁴ that LNG imports could be increased up to 100 bcm, summing the existing regasification capacities and additional LNG import capacities expected to come online soon in Germany, the Netherlands and Finland²⁵. However, despite regasification terminals in the EU would have overall sufficient spare send-out

¹⁷ ENTSOG published its Yearly Supply Outlook 2022/2023 on 20 July 2022 https://www.entsog.eu/sites/default/files/2022-07/SO0036-22_Yearly_Supply_Outlook_2022-2023_0.pdf

¹⁸ WSO 2022/23, p.23.

¹⁹ Idem, pp.46,50.

²⁰ Idem, p.26, only injections during 2018 have a similar high value.

²¹ Norway, Algeria and Caspian gas.

²² Reportedly at ten times historical costs (estimated at 50 billion euros). Source: ACER, based on Reuters.

²³ The month-ahead TTF price of natural gas decreased during September and October from maximum prices of 300 euros/MWh reached in August 2022, but they are still quite volatile and well above the values before the start of Russian aggression. On 3 November 2022, the TTF day ahead price is 66 €/MWh, but prompt TTF values for Q1 2023 are over 130 €/MWh, showing an expectation of high gas prices over next winter. Source: ICIS-HEREN gas TTF future prices.

²⁴ WSO 2022/23, p.5.

²⁵ WSO 2022/23, p.19.

regasification capacity, in general quite limited but varying margins of spare send-out capacity exist per Member State and across LNG terminals. In addition, possible physical constraints in the programming of ship scheduling in some LNG terminals cannot be ruled out for the winter. ACER notes that the arrival of LNG cargoes to EU LNG terminals would be a commercial decision, since the LNG market is global and spot LNG cargoes will be destined where demand is willing to pay the highest price²⁶. Besides available LNG regasification capacity, sufficient transmission capacities are necessary to make fully use of the LNG import potential across Europe.

3.4. Risks factors for this winter

WSO 2022/23 Supply Disruption Scenarios

- (22) ACER finds adequate that the Outlook's "Reference case" reflects the currently reduced Russian imports limited to Ukraine and Turkstream routes to the EU²⁷. ACER welcomes that ENTSOG includes in its assessment a disruption of the supply from Russia, investigating its potential impact on the storage filling level at the end of the winter and possible gas demand curtailment for the "Reference Winter" and "Cold Winter" scenarios. This is new compared to previous editions of the winter outlooks where gas supply disruption scenarios were simulated for the following gas supply routes: Ukraine, Belarus, the Baltic States and Algerian production under "peak" and "cold spell" situations.
- (23) The WSO's simulations show that storages cannot reach the 30% filling level at the end of the winter season in case of a prolonged disruption of the supply from Russia, and the European countries would face from 1 to 3% demand curtailment. Infrastructure bottlenecks appear under this disruption scenario which do not allow better cooperation, especially bottlenecks between southern and northern countries. Infrastructure bottlenecks appear between Spain and France as well as between Italy and Greece in order to meet peak day demand. However, simulations show that additional LNG could mitigate the risk of demand curtailment. This holds also if a European wide 15% demand reduction over the winter could be realised.
- (24) ACER agrees with ENTSOG that the simulated prolonged disruption of Russian gas is undoubtedly the main risk for the upcoming winter. However, this scenario could be aggravated by disruption scenarios for sources other than Russia, which are however less likely to occur (e.g. gas supplies from Algeria, prolonged disruption of Norwegian

²⁶ LNG supplies represent currently to 34% of EU gas imports.

²⁷ WSO 2022/23, p.3, 7, 24 and 28. We understand Russian supply potential for reference case is determined by the assumptions taken about infrastructure in p. 7: "Given the exceptional situation, the following assumptions has been done about the infrastructure:- The Belarus import route and the Russian import route to Finland, Estonia and Germany (Nord Stream) are no longer available. Import route from Russia to Latvia is considered as available from October to December. Additionally, supply from Russia via imports through Ukrainian transit route and Turk Stream is limited in order to be aligned with the structural reduction observed in last months. Gas flows are only possible from Ukraine to Slovakia and from Russia to Bulgaria."

gas supplies via offshore pipeline such as Europipe, Norpipe, Zeepipe, Franpipe). Such additional extreme combined scenarios would provide useful insights regarding the readiness of the European gas infrastructure to deal with less likely but high impact disruption scenarios.

Main risk factors for upcoming winter

- (25) ACER notes the continuation of risk factors present since the start of the Russian aggression against Ukraine for the upcoming winter season:
- a. High uncertainty about the availability of already drastically reduced Russian pipeline gas supply²⁸;
 - b. Limited additional gas volumes from other major sources of gas pipeline imports to go much beyond the contracted/booked volumes;
 - c. Existence of internal infrastructure bottlenecks in the EU to accommodate new gas flows from the West which previously came from the East;
 - d. Possible recovery of Asian economy driving upwards global LNG demand and prices, and impacting the price of LNG imports to the EU;
 - e. Operational incidents or accidents in major supply routes or in upstream production sites limiting availability of gas supply to the EU market;
 - f. A colder than usual winter, driving up gas demand;
 - g. Lack of implementation of gas demand reduction targets; and
 - h. A very low (below 30%) storage filling level at the end of the winter, limiting the deliverability of storages at the end of the winter and complicating the replenishment of storages during summer 2023.
- (26) The materialisation of these risk factors may lead to supply scarcity which would firstly impact wholesale gas prices, leading to some demand reduction, in particular for industrial consumers. Forced gas demand reductions would come next and involuntary demand curtailment of non-essential gas consumers would be a last resort emergency measure.
- (27) In addition, Member States may decide to prioritise²⁹ the gas supply to certain critical gas-fired power plants over the gas supply to certain categories of protected customers, if the lack of gas supply to such critical gas-fired power plants either could result in

²⁸ Russian gas pipeline imports decreased from normal historic values of 40% in March 2022 to 9% in October 2022.

²⁹ According to Article 11(7) of Regulation (EU) 2017/1938.

severe damage to the functioning of the electricity system or would hamper the production and/or transportation of gas. In this sense, ENTSO-E's early insights for the Winter Supply Outlook 2022/2023 assess the critical gas volume for electricity generation in Europe, finding that significant gas volumes are needed for electricity adequacy reasons³⁰.

- (28) This situation calls for continued vigilance with respect to gas supply situation beyond the assumed availability of maximum import flows in the past and for monitoring the implementation of the EU gas demand reduction regulation.

3.5. Demand assumptions in view of EU Gas Demand Reduction

- (29) On 5 August 2022, the European Union adopted a Regulation³¹ on a coordinated demand-reduction measures for gas to increase the Union level of preparedness as regards gas supply disruptions, in view of a significant risk that a complete halt of Russian gas supplies may materialise soon. This regulation is applicable for 1 year and recommends a voluntary reduction of natural gas demand by at least 15% which may become mandatory by a declaration of a "Union alert". The Union alert can be declared by the Council, acting on a proposal from the European Commission in case of a substantial risk of a severe gas shortage or an exceptionally high gas demand, or if five or more MSs have declared an alert at national level requesting the Commission to do so. This Regulation foresees derogations for Member States depending on the level of interconnection and other aspects. Member States count with flexibility to choose the demand reduction measures³².
- (30) ACER notes that the Outlook's yearly "baseline scenario" for gas demand data has been provided by TSOs on a monthly granularity level and understands that ENTSOG's gas demand projections are based on a business-as-usual projection provided by the TSOs. It is not entirely clear if and how ENTSOG checks how reasonable the TSOs demand projections are and if they are consistent for aggregation at EU-level. In this regard, it is not clear if the TSO demand projections consider that sustained high levels of wholesale gas prices erode gas demand, in particular for energy-intensive industries. ACER finds the Outlook's seasonal and peak demand projections potentially too high³³.
- (31) In ACER's views, ENTSOG should have preferably used a "baseline scenario" of gas demand for the winter outlook built upon the European Union targets of reduction of

³⁰ <https://www.entsoe.eu/outlooks/seasonal/#slides>

³¹ Council Regulation (EU) 2022/1369 of 5 August 2022 on coordinated demand-reduction measures for gas

³² Possible measures include reducing gas consumed in the electricity sector, measures to encourage fuel switch in industry, national awareness raising campaigns, targeted obligations to reduce heating and cooling and market-based measures such as auctioning between companies. Measures that do not affect protected customers such as households and essential services for the functioning of society like critical entities, healthcare and defence should be a priority.

³³ WSO 2022/2023, p.9-10. In comparison to winter 2021/22 which was quite mild, the WSO 22/23 seasonal gas demand projection increases by +4.5% for a "reference winter" and 22.3% for a "cold winter"; the peak demand increases by +27.3% for a "reference winter" and +31.5% for a "cold winter", respectively.

gas demand, which would be consistent with the Union Regulation on coordinated demand-reduction measures for gas.

- (32) In addition, planned demand reduction measures in the power sector – as proposed by the EU Emergency Intervention toolkit - can have a relevant impact on the overall gas demand via reduced consumption of gas-fired power plants. In its early insights for the Winter Outlook 2022-2023³⁴, ENTSO-E assesses that significant amount of gas can be saved in the power sector as a consequence of a 10 percent overall and a 5 percent peak electricity demand reduction. Such cross-sectoral insights should be reflected in the Gas Supply Outlook.

3.6. Treatment of odourised gas and reverse flow-projects

- (33) So far, it has not been possible to flow odourised gas from France to Germany and Belgium due to purity requirements of industrial consumers. ACER has called on ENTSOE and TSOs to give priority³⁵, in coordination with national authorities and end-users, to conduct a detailed analysis of the feasibility of implementing reverse flows and needed investments and adaptations, considering ways to overcome legal and technical provisions. ACER welcomes that the French TSO GRTgaz has reacted³⁶ to the request of its adjacent German TSOs (OGE and GRTgaz Deutschland) to develop physical flows and offer commercial capacities from France to Germany at the Obergailbach interconnection point, despite different odourisation practices in France and Germany, and that regulatory authorities have speedily approved the terms of commercialisation³⁷. This new capacity is of a daily firm nature, in the order of 100 GWh/d, conditional on certain network and demand parameters. Physical gas flows from France to Germany are possible since 13 October 2022, improving the security of gas supply situation.

3.7. Network topology

- (34) ENTSOE periodically upgrades the topology of its network model based on capacities provided by TSOs to reflect the technical capacities that are available for the upcoming winter. ACER welcomes that the Outlook includes a list of major developments of

³⁴ <https://www.entsoe.eu/outlooks/seasonal/#slides>

³⁵ ACER Opinion No 05/2022 on ENTSOE Summer Supply Outlook 2022/23, para 26. https://www.acer.europa.eu/sites/default/files/documents/Official_documents/Acts_of_the_Agency/Opinions/Opinions/ACER%20Opinion%2005-2022%20on%20ENTSOE's%20Summer%20Supply%20Outlook%202022.pdf

³⁶ Source: CRE's Public consultation n°2022-07 of 15 September 2022 relating to the creation of a physical gas exit capacity offer at the Obergailbach interconnection. <https://www.cre.fr/en/Documents/Public-consultations/creation-of-a-physical-gas-exit-capacity-offer-at-the-obergailbach-interconnection-and-the-setting-of-the-physical-exit-capacity-tariff-at-obergail>

³⁷ <https://www.cre.fr/en/Documents/Deliberations/Decision/creation-of-a-physical-gas-exit-capacity-offer-at-the-obergailbach-interconnection-point>

interconnection capacity and of supply sources availability in winter 2022/23 compared to previous year³⁸. However, ACER encourages once again ENTSOG to provide more clarity in the Outlook on the timestamp of the network topology, and to list not only the projects, but also the capacities and expected start of operations of the new projects during the season.

3.8. Maximisation of gas import and cross-border capacities

- (35) The war in Ukraine is leading to a significant rerouting of gas across Europe, basically increasing supplies from West to East substituting traditional East-West flows. ENTSOG has identified transmission capacity limitations to move gas from West to East in case of disruption scenarios of Russian pipeline gas, which hamper most Central Eastern European countries to reach the storage filling targets in preparation for the next winter in case of a full disruption of Russian gas. ENTSOG has identified possible short-term preparedness actions of the gas TSOs to enhance cooperation for better preparedness between Member States. Part of such flow changes could be accommodated by TSOs re-allocating of existing transmission capacities to new expected flow patterns. ACER encourages ENTSOG to provide an update of such re-allocated capacities and to TSO's to maximise the availability of capacities to accommodate new flow configurations
- (36) ACER reiterates that any assessment for maximisation of cross-border capacities should start by considering which bottlenecks could be alleviated by re-allocating existing spare capacities, since part of the available capacities which are no longer needed to accommodate traditional gas flows could be re-allocated to accommodate new gas flows. In case of uncertain flows, TSOs could offer more short-term interruptible capacities to the market. Since the start of the Russian aggression against Ukraine, limited capacities on new supply routes have resulted in TSOs collecting unprecedented congestion rents, which could be used to maximize technical capacity for reconfigured flows, (reallocation of technical capacity) and, if necessary, investing in new gas infrastructure to increase the physical capacity, thus relieving physical congestion.
- (37) The LNG import regasification capacities in North-West Europe and the Baltics and Finland will increase by more than 30 bcm per year, while other projects will improve the gas connectivity between EU Member States. The additional gas import and cross-border capabilities that these projects bring improve the preparedness of the EU gas infrastructure to accommodate changing gas flow patterns due to reduced Russian gas supplies. Therefore, the rapid finalisation of these projects should be a priority. Annex III to this Opinion lists major LNG regasification and cross-border projects recently commissioned or to be commissioned by H1 2023.

³⁸ WSO 2022/23, p.19, Chapter 4, Infrastructure assessment for Reference Winter and Cold Winter scenarios.

3.9. Monitoring tools of gas supply situation

- (38) ACER appreciates that ENTSOG and GIE have developed monitoring tools and initiatives beyond their legal tasks, which provide real value for monitoring the gas security of supply situation, such as the European gas flow dashboard³⁹, Seasonal Supply Outlook Monitoring⁴⁰, and the support to Gas Coordination Group assessments. ACER welcomes that ENTSOG aims to continue making these monitoring tools operational, which are really valuable for having accessible updated information on storage filling levels and the operation of the gas system.
- (39) ACER welcomes that ENTSOG will ensure the functionality of the Regional Coordination System for Gas (ReCo System) as a common network operation tool for emergency conditions, and the continuation of the work with TSOs on developing an internal common IT platform for the exchange of TSOs' operational data at the European level.

3.10. Implementation of previous ACER recommendations

- (40) ACER finds no reference in the Outlook as regards possible implementation of its previous recommendations on seasonal outlooks, namely consider using a scenario based on expected gas supply and booked capacities; studying first in view of the current environment of extremely high prices the gas demand responsiveness to prices, and in view of the outcomes of such study, consider estimating the effect of gas prices on demand in the Outlook⁴¹. ACER acknowledges ENTSOG's efforts and additional analysis in the current summer outlook. However, ACER firmly believes that improvement in the WSO assumptions and methodology would be instrumental to better identify potential risks (and remedies) to which Member States would be exposed in case of a tight gas supply situation, triggering timely anticipatory measurements. ACER encourages ENTSOG to consider developing, in consultation with stakeholders, such methodological improvements for future Outlooks in order to improve the robustness of the Outlook's assessments. ENTSOG should devote, as a matter of priority, more resources to improve, even further, the methodology for the security of gas supply and preparedness assessments.

3.11. Winter supply review 2021/22

- (41) ACER welcomes ENTSOG's Winter Supply Review for the winter 2021/2022. The review presents relevant facts and figures regarding market dynamics and in particular

³⁹ <https://gasdashboard.entsog.eu/>

⁴⁰ <https://app.powerbi.com/view?r=eyJrIjoiYTtk3YjJhZmQtYTRjZS00NmNkLWlxZDUtYmU2MGE5NWE3ZGU1IiwidCI6IjgxMDU4NGZkLTY5ZjktNDEzNy1hNmExLWwzMzZmZjgwYjE1YyIsImMiOiJh9&pageName=ReportSection>

⁴¹ ACER Opinion No 11/2021 on ENTSOG Winter Supply Outlook 2021/2022, p.8.

gas wholesale prices, as well as demand and supply during the last winter. ACER understands that the winter outlooks are mainly developed for extremely uncertain situations, while the observed winter 2021/2022 was rather mild. The review mainly compares the last winter with previous ones, but it does not sufficiently dwell on how the observed market dynamics (e.g. price impacts) and figures in last winter period connect with the outlook methodology and projections. ACER reiterates that ENTSOG's document should put more focus on the comparison of the review with the outlook to draw conclusions and improve, where relevant, the approach followed for the WSO,

HAS ADOPTED THIS OPINION:

1. ACER is of the view that ENTSOG' Winter Supply Outlook 2022/2023 contributes to the objectives of Regulation (EU) 2019/942 and Regulation (EC) No 715/2009 in terms of contributing to non-discrimination, effective competition and the efficient and secure functioning of the internal natural gas market.

Scope of analysis and timely publication

2. ACER welcomes ENTSOG's timely publication of the Winter Supply Outlook 2022/2023. ACER appreciates that the scope and methodology of the Outlook has been expanded to consider the Russian invasion of Ukraine and the possible repercussions for risk preparedness in the Union.

Vigilance over EU storage filling levels

3. ACER welcomes that the EU collective 80% storage filling rate objective was already achieved by the end of August, and that storage filling levels have increased close to 95% by 1st November. Strengthened national and EU gas storage regulations and other regulatory interventions have played a role in the successful replenishment of storages.
4. ACER highlights the critical importance of counting with adequate storage levels towards the end of the winter season to cover for possible high demand or supply disruption situations. Early and significant withdrawal from storages would result in low storage levels at the end of the winter season. Therefore, ACER expects storage users to prudently withdraw gas from storage and national competent authorities to monitor to favour a withdrawal pattern that would safeguard the continuity of gas deliveries throughout the whole winter.

Gas demand projections and savings

5. ENTSOG should have preferably used a "baseline scenario" of gas demand for the winter outlook built upon the European Union targets for reduction of gas demand, which would be consistent with the Union Regulation on coordinated demand-reduction measures for gas. The implementation of gas savings is fundamental for improving preparedness for this winter and the next one.

New infrastructure projects and maximisation of gas import and cross-border capacities

6. ACER welcomes that physical gas flows from France to Germany are possible since October 2022, contributing to improve the security of gas supply situation, and that major gas infrastructure projects initiated several years ago have recently been commissioned or are expected to become online soon. The LNG import regasification capacities in North-West Europe and the Baltics and Finland will increase by more than 30 bcm per year, while other projects will improve the gas connectivity between EU Member States. The rapid finalisation of projects bringing additional gas import and cross-border capabilities should be a priority to improve the preparedness of the EU gas infrastructure to attract new gas supplies to reduce and replace Russian gas supplies. ACER notes the appearance of infrastructure bottlenecks between Member States, especially in the case of a prolonged disruption of the supply from Russia. These bottlenecks hamper cooperation between Member States. A more detailed analysis of these infrastructure limits would be relevant in order to find appropriate solutions. In any case, TSOs have to maximise available capacities to the market using all means available, including short-term reallocation of existing capacities and the offering of interruptible capacities.

Risks factors for this winter and upcoming injection season

7. ACER agrees with ENTSOG that the simulated prolonged disruption of Russian gas is undoubtedly the main risk for the upcoming winter. However, this scenario could be aggravated by disruptions scenarios for sources other than Russia, which are however less likely to occur, and which are not modelled in the Outlook. The continuation of risk factors⁴² since the start of the Russian aggression against Ukraine for the upcoming winter season calls for continued vigilance with respect to the gas supply situation. ACER calls on ENTSOG and all actors with responsibilities regarding the gas supply continuity and price monitoring to remain vigilant for the upcoming winter to those risk factors.

Improvements to Outlook methodology

8. ACER acknowledges ENTSOG's efforts and additional analysis in the current winter outlook. However, ACER firmly believes that improvement in the WSO assumptions and methodology would be instrumental to better identify potential risks to which Member States would be exposed in case of a tight gas supply situation, including exposure to very high gas wholesale prices. ACER encourages ENTSOG to consider improving the WSO assumptions and methodology, in particular by using a complementary scenario based on expected gas supply and booked capacities to the current scenarios based on historical values, and to estimate the effects of high gas prices on gas demand in the Outlook .
9. ACER suggests that the time horizon of the Summer and Winter Outlooks analysis and simulations could be extended from 6 months to one year, in order to have a better understanding of gas preparedness beyond the end of the injection season. ENTSOG should investigate whether other limitations for storage withdrawals apply under national

⁴² See paragraph 23-25 of the Opinion, main risk factors for upcoming winter.

rules than the ones considered so far and, should they exist, perform a sensitivity analysis considering those restrictions.

10. ACER also highlights the importance of close cooperation between ENTSOG and ENTSO-E to ensure, where relevant, consistent assumptions and results in their respective seasonal assessments.

This Opinion is addressed to ENTSOG.

Done at Ljubljana, on 15 December 2022.

- SIGNED -

For the Agency
The Director
C. ZINGLERSEN

Annexes:

I: Storage filling levels per Member States on 1st October 2022

II: EU Storage filling levels on 1st October 2022 vs EU Regulation filling targets

III: major LNG regasification and cross-border projects (recently commissioned or to be commissioned by H1 2023)

IV: Incorrect or unclear information in ENTSOG's Winter Outlook 2022/2023

Annex I: Storage filling levels per Member States on 1st October 2022⁴³

WGV: Working Gas Volume of Storages

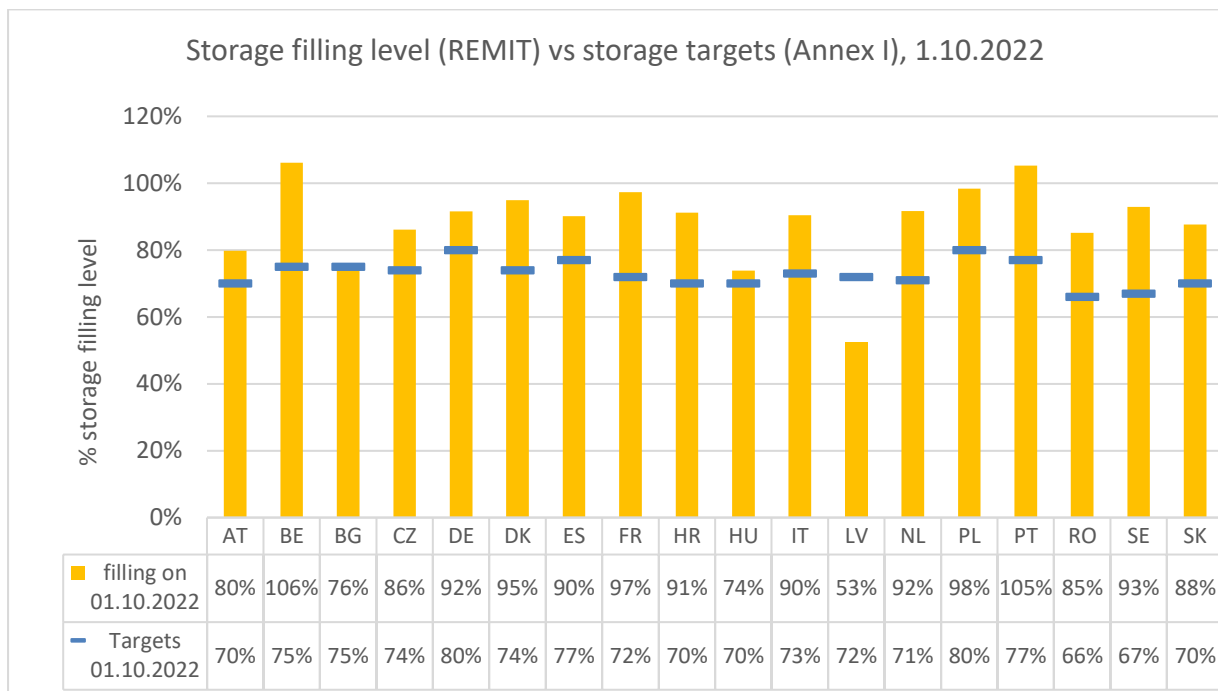
GIS: Gas in Storage

Country	Working gas volume (TWh)	Gas in storage (TWh)	Filling level of storage (%)
Austria	95.5	76.2	80
Belgium	7.6	8.1	100
Bulgaria	5.8	4.4	76
Croatia	4.8	4.4	91
Czech Republic (*)	43.8	37.7	86
Denmark	9.2	9.0	98
France	132.6	129.0	97
Germany	245.5	225.3	92
Hungary	67.7	50.0	74
Italy	193.4	175.6	91
Latvia	24.1	12.7	53
Netherlands	139.0	127.4	92
Poland	36.4	35.8	98
Portugal	3.7	3.9	100
Romania	32.8	28.3	86
Slovakia	35.0	30.7	88
Spain	35.3	31.8	90
Sweden	0.1	0.1	93
EU	1112.3	990.3	89

(*) The filling data for Czechia again do not take into consideration that the Dolní Bojanovice UGS is connected only to Slovak gas grid. Pursuant to Article 6(a) of Regulation (EU) 2017/1938, the filling targets and filling trajectories only apply to storages directly interconnected to a market area in their territory. ERO provided corrected data on 30.9.2022: WGV 36 TWh; GIS 32.3 TWh; Filling level of storage 90 %.

⁴³ Source: AGSI+ platform, 1.10.2022 data, platform accessed on 7.11.2022.
<https://agsi.gie.eu/>

Annex II: EU Storage filling levels on 1st October 2022 vs EU Regulation filling targets⁴⁴



Storage filling data on 1.10.2022 based on REMIT data; storage targets based on intermediate targets for 1.10.2022, as defined in Annex I to Regulation (EU) 2022/1032 with regards gas storage/

Annex III: major LNG regasification and cross-border projects (recently commissioned or to be commissioned by H1 2023)

-projects recently commissioned (by October 2022)

Type (LNG,pipe)	Name		Capacity (in bcm/y)	Commissioned
Pipeline	Gas interconnection between Poland and Lithuania (GIPL)	PL, LT	2 PL->LT , 1.9 LT-PL (during the ramp-up)	1.5.2022
Pipeline	Poland-Slovakia Gas Pipeline	PL, SK	4.7 PL->SK, 5.7 SK->PL	9.2022
Pipeline	Interconnector between Greece and Bulgaria (IGB)	GR, BG	3 GR->BG	1.10.2022
Pipeline	Baltic Pipe Project	PL, DK, NO	10 NO-> DK, PL, 3 PL-DK	1.10.2022

⁴⁴ Latvia's gas reserves exceed 35% of its average consumption over the last five years, and are compliant with the EU gas storages rules. According to ERO, the filling level for Czech Republic should be 90% on 30.9.2021.

Pipeline	Romania-Hungary	RO, HU	additional 0.7 RO->HU	end 2022
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-projects to be commissioned the latest by H1/2023

Type (LNG,pipe)	Name	MS	Capacity (in bcm)	Expected date commissioning
LNG	EemsEnergyTerminal	NL	8	12.2022
LNG	Brunsbüttel FSRU	DE	3.5	end 2022, and 2023
LNG	Wilhelmshaven FSRU	DE	7.5	12.2022
LNG	Lubmin	DE	4.5	end 2023
LNG	Paldiski FSRU	EE	2.5	11.2022
LNG	Inko FSRU	EE,FI	2.5	12.2022
LNG	Alexandroupolis LNG Terminal	GR	5.5	10.2022
LNG	Cyprus LNG Terminal	CY	2	first half of 2023
LNG	El Musel	ES	7	1.2023

Annex IV: Incorrect or unclear information in ENTSOG’s Outlook

- Pp. 10-11, Figures 2 and 3 refer to winter 2011-2021 but they include only data from winter 2012/2013. ENTSOG should have included figures from the winter 2011-2012
- p.23, Figure 18, the name of “x” and “y” axis is inverted and possibly incorrect. The “x” axis should be “storage level”, while the “y” axis should be “storage withdrawal capacity”.
- p. 24, Figure 24, shows gas Caspian gas supplies from the winter 2012/23 to the winter 2016/17, and no more Caspian gas from 2016 onwards. Caspian gas supplies to the Union are only available since recently, thus data in the winter seasonal supply history is probably incorrect.
- p.28, the cross-reference to Figure 14 related withdrawal capacity of gas storages is incorrect, it should be made to Figure 18.
- in the Annexes, references made to the winter 2021/22 should be to the winter 2022/23 (p.45, 48), in the legal note (p.43), the date of storage level should be 31st March 2023 instead of 31st March 2022.
- it is not clear if the -15% reduction is calculated vs the Reference Winter and vs the Cold Winter demands considered in the WSO 22/23 or if it is computed according to Article 3 of Regulation (EU) 2022/1369, and in such a case, what are the differences in every country.
- Section 4, interconnection capacities, commissioning dates and supply (un-) availability quantities are not detailed. The Outlook could provide more detailed additional information
- There is no Annex D (tables with the results for curtailed demand both in % and absolute values in GWh/d) published along the winter outlook, while this it was always published in previous WSO editions. ENTSOG should publish this Annex D.