Assessment of Gas Supply Security Risks and Gas System Safeguard Procedure Setting Methodology

Natural Gas Storage Regulation and the Effects to Consumers

Roundtable Discussion input by Austria

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Gas Supply risks

- Security of supply refers to all technical and organisational requirements for ongoing operations and all necessary measures to ensure the continuous physical availability of natural gas in sufficient quantities at all times with defined quality and at reasonable prices.
- In order to avoid a supply bottleneck, preventive measures can be taken to reduce gas consumption, to ensure that storage facilities are adequately filled and to enable diversification and procurement from other gas sources. In the event of an energy shortage, intervention measures to reduce energy consumption must be prepared and implemented.

Gas Supply risks

Prevention

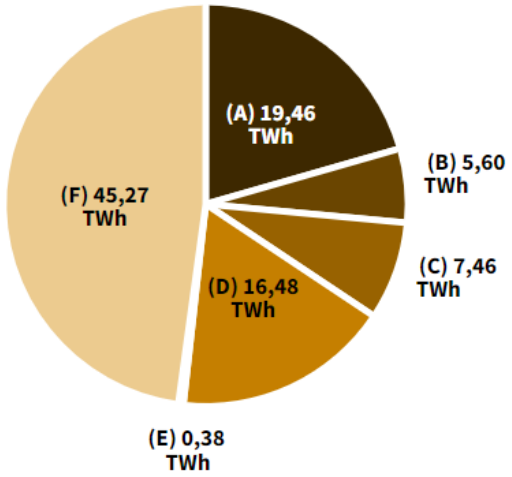
- Gas supplier have to comply with gas supply standard for protected customers (EU SoS Regulation 2017/1938) and monitored by E-Control.
  - Protected customers
    - Household customers
    - Social services other than education and public administration
    - District heating installations, to the extent that they supply heat to household customers, basic social services or small and medium-sized enterprises and cannot switch to a fuel other than gas
  - Gas in storage to ensure the supply of gas in the following cases
    - Extreme temperatures for 7 consecutive days with peak load
    - Exceptionally high demand for gas over a period of 30 days
    - Outage of the largest single gas infrastructure under average winter conditions for a period of 30 days
    - In addition since 2024: Gas in storage with average winter conditions for 45 days (reduced to 30 days if gas from non-Russian sources) between Oct-Feb

Gas Supply risks

Prevention

- Specification of gas storage filling targets at EU level (EU Regulation 2022/1032)
  - 18 EU Member States with underground gas storage facilities - including Austria - obliged to fill 80% of their storage capacity by 1 November 2022 and encouraged to reach 85%. Changed to 90% in 2023.
  - Gas storage capacity: 101,6 TWh (2024)
  - Gas consumption: 75,6 TWh (2023) and 2024 expected <70 TWh (2021 at 96,3 TWh)
  - Filling level in storage: 93,96% (22.10.2024)
- Strategic gas reserve in storage
  - 20 TWh in storage, introduced 2022 and costed EUR ~4 bn.
  - Market and distribution area manager (AGGM) was mandated with the procurement and management of a strategic gas reserve. The subsidiary Austrian Strategic Gas Storage Management GmbH (ASGM) was founded for this purpose.
- Immunised gas quantities in storage
  - End customers can store gas volumes that are exempt from volume-related, sovereign measures up to a proportion of 50% of their consumption in the previous calendar year.

Eigentumsverhältnisse in den Gasspeichern



Source: E-Control (Data 08.10.2024)

Gas Supply risks

Prevention

- Infrastructure:
  - N-1 infrastructure standard indicates a well developed system (both DSO/TSO). However, the changed gas flows require adjustments to the gas infrastructure in order to replace the Russian gas volumes in the long term.
  - WAG Loop: enables additional import capacities of up to 3.2 GWh/h or 28 TWh/a at the IPs Oberkappel and Überackern with Germany.
  - Further projects allow the expansion of gas flow capacities from Italy to Austria (initial increase in capacity by ~30%/23 TWh/a to the import capacity on the Austrian side in October 2024) .

Diversification

- Economic incentives for diversification via the Gas Diversification Act
  - Increasing the resilience of the Austrian economy by reducing dependence on Russian natural gas by mitigating the additional costs of diversification to relieve the burden on companies.
  - This compensation is handled by Austria Wirtschaftsservice GmbH (aws).

Gas Supply risks

Diversification

- Monitoring diversification efforts
  - Since 2024, E-Control collects ‘long-term forecast’ data from gas suppliers in accordance with the Natural Gas Energy Steering Data Ordinance to determine the extent to which gas suppliers have diversified their procurement portfolio.
  - Information on gas volumes for end customers for the delivery years 2024, 2025 and 2026.
  - 2024: 56% via bilateral contracts (OTC) and 22% via CEGH (12 % from Russian traders, 7 % domestic production and 3 % from Norway). The majority of OTC trading is expected to be gas from Russian sources. A small volume will be procured at short notice via the CEGH.
  - 2025/2026: More short-term procurement via CEGH and the informative value of the data is lower.
- Submission of security of supply concepts
  - Suppliers with more than 20.000 metering points or an annual supply volume of more than 300 GWh must draw up this concepts to prepare for the immediate outage of their largest single source of supply and submit these to E-Control.

Gas Supply risks

Diversification

- Submission of security of supply concepts
  - Information of all measures that the remaining sources of supply are able to fulfil the contractual supply obligations.
  - Information of all measures to reduce the proportion of gas volumes originating from Russia.
  - Information of all gas volumes that were not purchased via virtual trading points.
  - E-Control published guidelines on the collection and content of the concepts on its website.
  - Not applicable if largest single source of supply is not from Russia/unknown or the annual delivery volume of its largest single source of supply is less than 25%.
- Aggregate EU joint purchasing platform
  - First round in May 2023.
  - 77 European companies registered a demand of 11,6 bcm.
  - 25 suppliers offered gas volumes of 13,4 bcm.
  - Gas volumes of 10,9 bcm were matched. However, the contracts between buyer and supplier are being concluded outside the platform.
  - Further rounds followed.

Gas Supply risks

Intervention

- 3 emergency levels: Early warning level, alarm level and crisis level
- E-Control is responsible for the preparation and coordination of intervention measures to safeguard the supply of natural gas in the event of an emergency (Energy Intervention Measures Act)
- Any intervention measures are issued by the Energy Minister under the Natural Gas Energy Control Measures Ordinance in the event of a crisis.
- E-Control, in cooperation with the Energy Ministry and in coordination with the market and distribution area manager (AGGM), takes all necessary measures to ensure the best possible supply to Austria's end customers.
- If market-based measures are not sufficient, sovereign intervention in the areas of supply and consumption must be prepared or coordinated.
- A solid forecast and data basis are necessary in order to make decisions on possible restrictions as appropriately as possible. The regulatory authority has therefore developed a tool to map the supply and consumption of gas in Austria and thus defined scenarios and in a specific observation period.

Gas Supply risks

Intervention

- Daily monitoring
  - Gas imports and consumption
  - Storage levels
  - Electricity generation
  - Gas flows and prices
- Measures to increase the gas supply
  - Increase production, withdrawal and imports
  - Activation and supply on the MOL and FlexMOL
  - Market maker tender
  - Release of strategic reserve
- Intervention measures in the event of crisis
  - Calls for savings and instructions
  - Substitution of natural gas with other energy sources (except electricity)
  - Call/obligation to offer consumption reduction quantities from end consumers on the on the FlexMOL
  - Restrictions on large consumers
  - Restrictions on end consumers with load metering

Gas Supply risks

Austria‘s gas security of supply – Outlook for next winter

- Different gas supply risks identified
  - Pipeline failure via Ukraine possible at any time (act of war, sabotage, etc.)
  - Expiry of the transit agreement between Ukraine and Russia at the end of 2024
  - Unilateral reduction of deliveries by Russia (e.g. after enforcement of a court decision)
- Scenario analysis carried out – what if?
  - E-Control calculation tool for all three Austrian gas market areas
  - Starting month of the analysis: May 2024 , Observation period: 106 weeks (until mid-May 2026)
  - Analysis performed in cooperation with the Ministry (BMK) and the Austrian Energy Agency

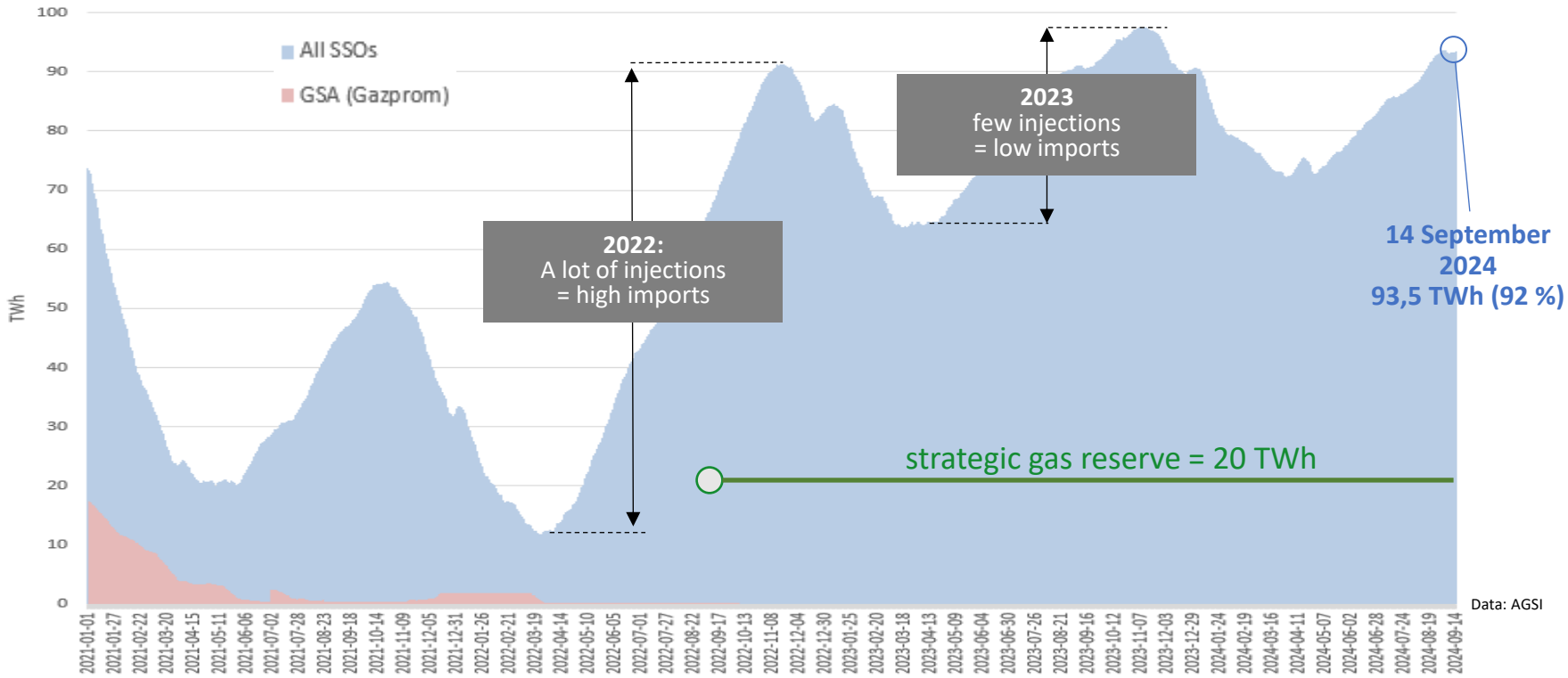
Assumptions on Austrian annual gas consumption

- 80 TWh: Average from 2022 and 2023, 85 TWh: “cold winter”, 89 TWh: “very cold winter”
- Gas consumption reduction/increase in 88 sectors or areas [%] can be adjusted in the tool as well as price effects, fuel substitution, emergency intervention measures and consumption-increasing effects

Gas Supply risks

Austria‘s gas security of supply – Outlook for next winter

- Assumptions on domestic gas production and storage levels
  - Domestic gas production of 6.2 TWh per year (98% natural gas, 2% biomethane)
  - Storage level: situation at the end of April (based on actual values: 73 TWh)



Gas Supply risks

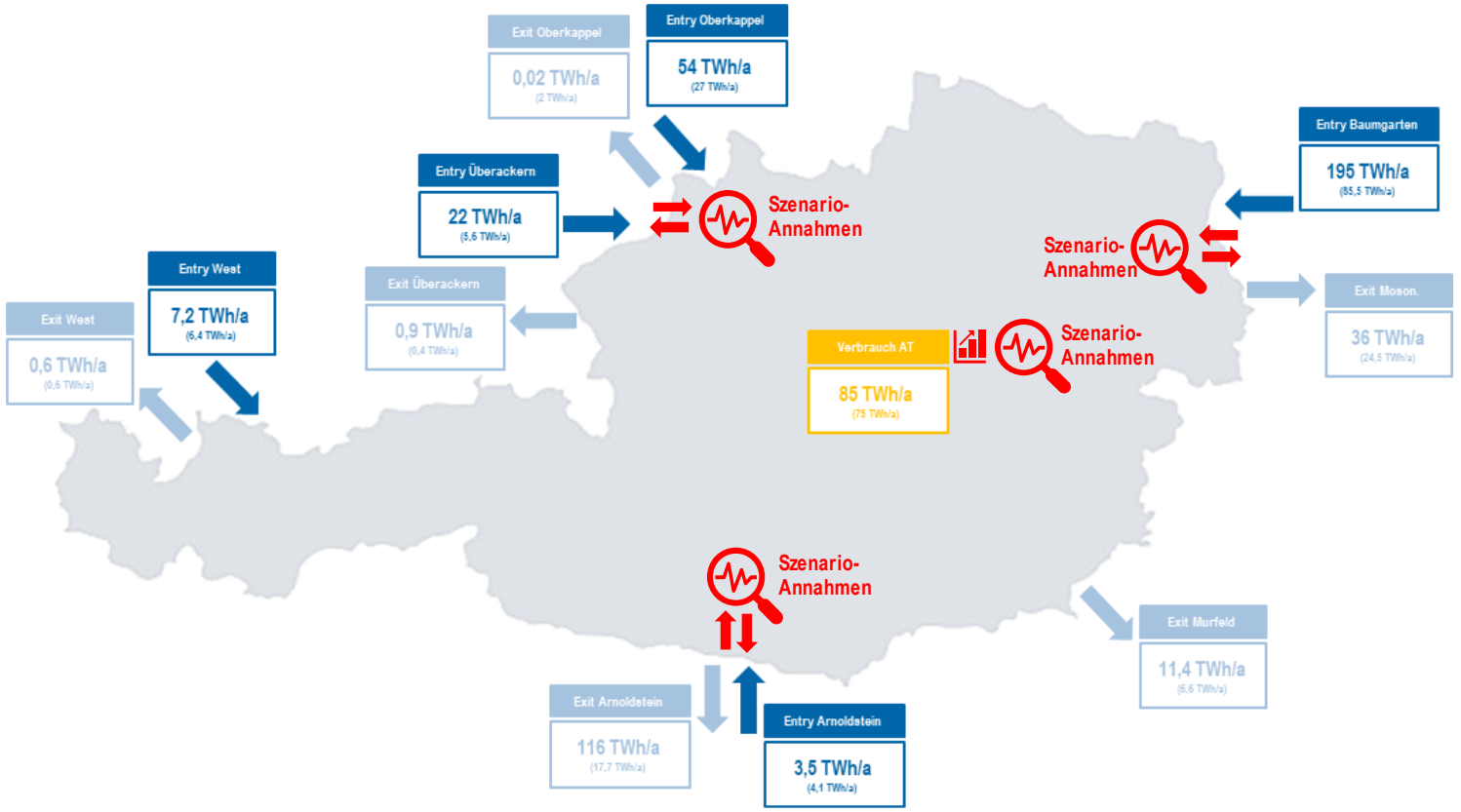
Austria‘s gas security of supply – Outlook for next winter

- Assumptions on imports/exports
  - Gas flows are generally based on the last 12 months (but can be adapted in the tool)
  - “via the east”: Imports via Baumgarten (via Slovakia), exports towards Slovenia and Hungary, partly also Slovakia (these mainly characterized by storage movements)
  - “via Germany”: Imports via Oberkappel and Überackern, but also for supplying the Tyrol and Vorarlberg market areas (from the north/west) and for storage management (Haidach, 7 Fields)
  - “via Italy”: Imports via Arnoldstein, partly also exports towards Italy
- Three main scenarios analysed:
  - Scenario 1: Continuation of the status quo
  - Scenario 2: The volumes transited through Ukraine fall to zero from 1 January 2025
  - Scenario 3: The volumes transited through Ukraine fall to zero from 1 July 2024

Gas Supply risks

Austria‘s gas security of supply – Outlook for next winter

- Simplified volume balance for 2022: If flows via Ukraine are discontinued, imports from DE and IT will remain

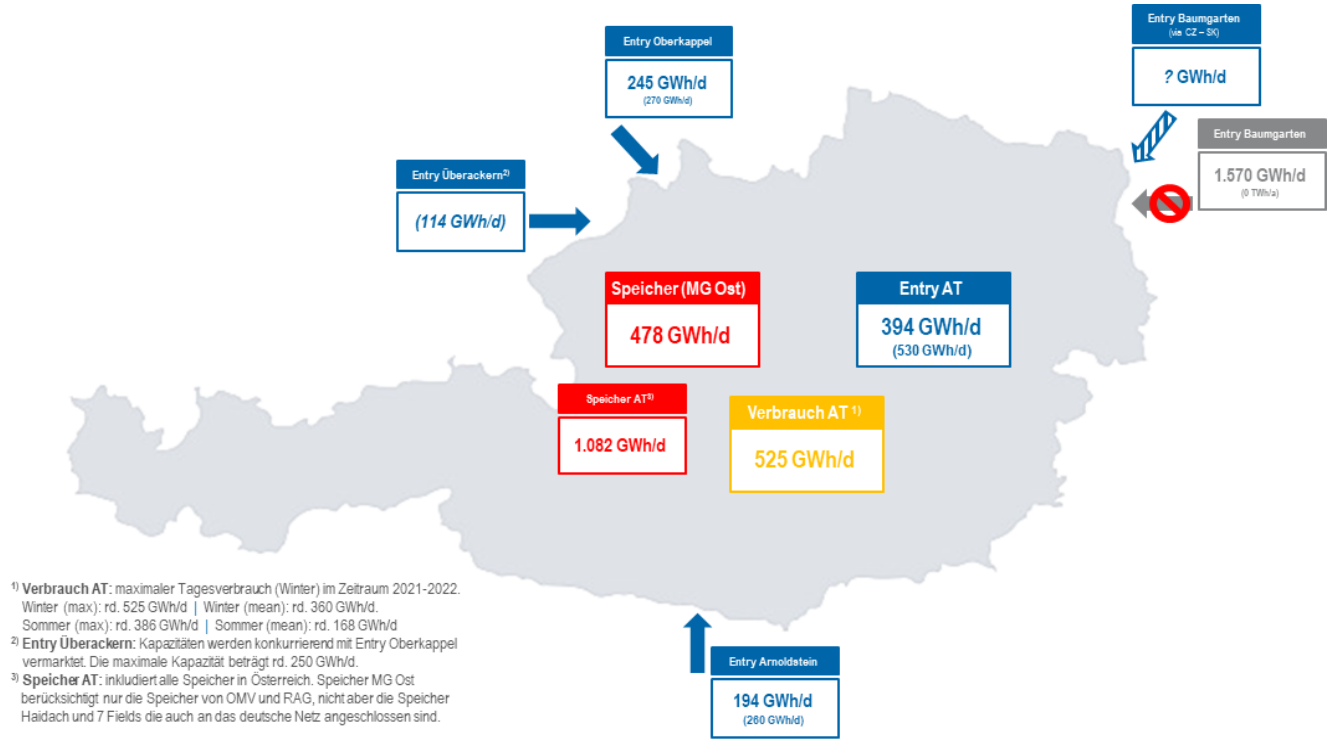


Source: own calculation with data from: AGGM Datenmonitor, (https://platform.aggm.at/) and ENTSOG Transparency Platform (https://transparency.entsog.eu/).
Note: The values in brackets represent the gas flows in 2023.

Gas Supply risks

Austria‘s gas security of supply – Outlook for next winter

- Daily import capacities vs. peak gas demand: Peak gas demand can be largely covered by storage



¹⁾ **Verbrauch AT**: maximaler Tagesverbrauch (Winter) im Zeitraum 2021-2022.
Winter (max): rd. 525 GWh/d | Winter (mean): rd. 360 GWh/d.
Sommer (max): rd. 386 GWh/d | Sommer (mean): rd. 168 GWh/d
²⁾ **Entry Überackern**: Kapazitäten werden konkurrierend mit Entry Oberkappel vermarktet. Die maximale Kapazität beträgt rd. 250 GWh/d.
³⁾ **Speicher AT**: inkludiert alle Speicher in Österreich. Speicher MG Ost berücksichtigt nur die Speicher von OMV und RAG, nicht aber die Speicher Haidach und 7 Fields die auch an das deutsche Netz angeschlossen sind.

Die Entry-Kapazitäten in Klammern sind die maximalen technischen Kapazitäten nach den geplanten Kapazitätserweiterungsprojekten.

Source: own calculation with data from: AGGM Datenmonitor, (https://platform.aggm.at/) and ENTSOG Transparency Platform (https://transparency.entsog.eu/).

Gas Supply risks

Austria‘s gas security of supply – Outlook for next winter

- Main findings: A gas shortage does not occur in any of the scenarios examined (May 2024 to mid-May 2026)
- In the event of a supply stop of Russian gas transit via Ukraine, Austria's neighboring countries will also face new challenges, with significant effects on the modeling of scenarios for Austria.
- A partial release of the strategic gas reserve only occurs in scenarios with very high gas consumption (89 TWh) in two consecutive years (Exception: In a “cold” scenario (85 TWh), 1 TWh of gas must be withdrawn from the reserve).
- A high consumption scenario (89 TWh) can de facto be ruled out for 2024. Gas consumption to date in 2024 is 24% below the 2018-2022 average of 91 TWh.
- The system and market dynamics change in the event of a Ukraine transit disruption. The planned expansion of import capacities (DE/IT - WAG Loop, Arnoldstein) increases security of supply and has an easing effect on prices.

Natural Gas Storage Regulation and the Effects to Consumers

- The Austrian gas storage facilities are located in the eastern market area.
- OMV and RAG Austria technically operate them.
- The storage facilities are depleted gas fields (pore storage facilities) that have been technically converted for storage operations.
- Capacities have been marketed by the following four storage companies
  - OMV Gas Storage GmbH (OGS)
  - RAG Energy Storage GmbH (RES)
  - Uniper Energy Storage Austria (Uniper)
  - SEFE Storage GmbH (formerly astora GmbH)
- Storage capacity of 101,6 TWh (2024) and yearly consumption of 75,6 TWh (2023).
- E-Control prepares a report on the situation on the Austrian flexibility and storage market every three years, on the basis of which the energy minister may adapt the access regime, if necessary, from a currently negotiated access regime to a regulated access regime.
- High transparency requirements for storage operators and market monitoring by E-Control.
- Solidarity agreement with Germany in place.

THANK YOU FOR YOUR ATTENTION!

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