gasunie transport services

Security of supply overview for the 2026/2027 gas year

September 2025

Appended to the letter 'Security of supply overview for the 2026/2027 gas year'

Summary

Under the Dutch Gas Act, Gasunie Transport Services (GTS) has a statutory duty to draw up a review of the security of supply of natural gas in the Netherlands. In the Netherlands, 'security of supply' is defined as the situation where 'end users of gas are supplied with gas of the right quality (low or high calorific) at the right time and in the required amount, even when demand is high'. This means both domestic and international customers. Accordingly, the prerequisites for security of supply are sufficient volume and sufficient transmission, transport and conversion capacity, even in a cold year with a cold winter.

This review of the security of supply focuses on the 2026/2027 gas year and provides a forecast of developments up to the end of the 2030/2031 gas year. Market parties were consulted in advance on the principles used in and preliminary results from the review of the security of supply. Based on this input, the final review of the security of supply was prepared.

The forecast for domestic gas demand is higher than it was in the previous review of the security of supply. That said, the volume balance and capacity balance are both positive. This is partly due to the assumption that the LNG terminal at the port of Eemshaven will remain available in the period after 2027 as well.
The positive volume balance means that there will be sufficient volume available to meet demand in a cold year and the positive capacity balance means that there will be sufficient resources available on a cold day to meet the (temperature-dependent) demand.

In addition to the annual supply of gas, it is essential that resources to balance the difference between high winter demand and lower summer demand are available. GTS assumes temperature-dependent gas demand.
With the loss of a flexible supply of gas from the Groningen field and the loss of pipeline gas from Russia, taken together with the increased supply of gas from Norway and by way of *Liquefied Natural Gas* (LNG), seasonal gas storage facilities are increasingly being used to provide flexibility. A minimum filling level for seasonal gas storage facilities must ensure that, even in a cold winter, enough gas is available to meet the demand.

Given a north-western European perspective and the limited amount of flexibility available in the gas supply, a residual demand for seasonal flexibility of 115 TWh remains in a cold year. To guarantee security of supply, this volume of 115 TWh must be present in Dutch seasonal gas storage facilities at the start of the 2026/2027 winter season. This filling target also complies with the filling targets set under EU regulations.

Given the changing geopolitical situation, events that would result in a large-scale, prolonged interruption of the supply of gas could conceivably arise. And now that north-western Europe is increasingly dependent on gas imports, this would have a direct impact on security of supply. This overview report does not consider the effects of such extreme events, however. Measures to mitigate these impacts are of a different nature and have a different scope to that of the recommended filling level.

Contents

1 Introduction

Under the Dutch Gas Act, Gasunie Transport Services (GTS) has a statutory duty to draw up a review of the security of supply of natural gas in the Netherlands. The 2025 edition of this review focuses on the 2026/2027 gas year and the four gas years that follow. Along with additional information, the review of the security of supply has four core elements:

- an annual volume balance for a cold gas year
- a capacity balance for the coldest gas day, assuming the largest supplier is no longer available
- the supply volume that needs to be available in three different cases during the winter period to guarantee that there will be sufficient gas to cover the demand of protected customers, and
- the filling target for seasonal gas storage to ensure sufficient supply, even in the event of a cold gas year.

In its analysis, GTS uses principles and assumptions, the most important of which are explained in this document. Uncertainties in the analysis have been taken into account by assuming a realistic bandwidth for the principles.

- The uncertainty concerning demand trends in the Netherlands is based on the 2024 Climate and Energy Outlook (Klimaat- en Energieverkenning, KEV) report published by the Netherlands Environmental Assessment Agency (PBL), in conjunction with the scenarios drawn up by Netbeheer Nederland that underpin the Investment Plans. Combined with a bandwidth for gas transit abroad, where uncertainty concerning the transit of high-calorific gas to Germany has the greatest impact, this results in two cases centring around the base case:
    - a case with lower gas demand, and
    - a case with higher gas demand.
- Uncertainty as regards the demand for seasonal flexibility has been reflected in two cases for LNG reaching the Dutch market:
    - a case with a flat LNG supply profile for the Netherlands, and
    - a case with a varying LNG supply profile for the Netherlands, with higher supply in winter than in summer.

Now that north-western Europe, the Netherlands included, is highly dependent on gas imports and given that this dependency is only increasing, it is becoming ever more important to take an international perspective when assessing security of supply. Moreover, the Netherlands is an important transit country for its neighbouring countries. This is reflected in, among other things, the assumptions concerning the availability of LNG and the level of transit, particularly to Germany.

The risks arising from increased geopolitical uncertainty are difficult to quantify. Various threats are conceivable that could affect the security of supply of natural gas in Europe for a longer period of time, and current resources are insufficient to counter the effects of such prolonged supply interruptions.

These potential threats are part of the political debate and may lead to additional measures, such as the establishment of strategic storage. This review of security of supply does not consider large-scale and/or prolonged interruptions of the gas supply.

Section 2 explains the principles GTS has applied and the market environment GTS has assumed in compiling the review of the security of supply. The international perspective is often the guiding principle.

Section 3 expands on the specific principles used for the 2025 review of the security of supply.

The results of the analyses are presented and explained in Section 4. Separate attention is given to security of supply, the EU infrastructure standard, the EU gas supply standard, and the minimum (national and EU-wide) filling target for seasonal gas storage. This section furthermore shows the development of the balance between gases with different calorific values.

2 Market description and methodology

2.1 Relevant developments in the gas market

In recent years, increased attention has been paid to the security of natural gas supply in the Netherlands. This stems from recent developments impacting the supply of natural gas, with increasing reliance on imports and increased uncertainty concerning this supply in the international arena.

Increasing dependence on gas imports
In terms of the supply of natural gas, key recent changes include the end of gas production from the Groningen field and the loss of pipeline gas supply from Russia. Furthermore, European gas production, including production from small gas fields in the Netherlands, is steadily declining. As a result, north-western Europe, including the Netherlands, is increasingly a net importer and, accordingly, dependent on foreign gas. Additional gas coming from Norway and, in particular, additional imports of LNG have offset the loss of gas coming from the Groningen field and Russia.

Expanding LNG production capacity
It is expected that, over the next five years, we will see a significant increase in the volume of LNG available worldwide, with the largest increase expected in the United States. With a total increase of approximately 2500 TWh (200 MTPA), the current production capacity will eventually increase by approximately 50%. With its two LNG import terminals, the Netherlands is positioned to meet a significant portion of its required supply through LNG. The LNG market is global, however, meaning that availability and price depend on developments in other parts of the world, such as the Asian gas market.

Less flexibility in the supply
With the closure of the Groningen field, a key source of *flexible* supply has also fallen by the wayside. In the past, this production field provided both volume and peak capacity for days with high gas demand, as well as the additional volume of reserves needed to supply the market with natural gas during a cold winter.
Norway is an important and stable supplier, able to offset some of the lost supply of gas from north-western Europe. However, as the Norwegian production fields are depleted, this will lead to a declining and increasingly flat supply. Accordingly, Norwegian supply is currently only making a limited contribution towards meeting the demand for seasonal flexibility and this situation is not set to change over the coming years.
The supply of LNG is increasing rapidly and is making up an ever more significant share of the gas supply. To what extent LNG can also provide the additional volume required during a cold winter and thus provide some of the necessary seasonal flexibility is uncertain at this time. This is discussed in more detail in 2.5.

Demand for natural gas
After the decline in gas demand observed around 2022 due to the loss of pipeline gas from Russia and the period of extremely high gas prices, gas demand has now stabilised. Over the five-year horizon covered by this review of security of supply, demand for natural gas will decline less rapidly than anticipated in the 2024 review of the security of supply. This applies not only to the Netherlands but also to other countries such as Germany, for example.
To determine the development of gas demand use is made of forecasts and scenarios.

For the period up to the end of 2030, these forecasts and scenarios do not vary greatly from each other, albeit with the key distinction that forecasts, such as those presented in the Climate and Energy Outlook, are based on the current situation and likely developments, while scenarios, such as those drawn up by Netbeheer Nederland, work towards a chosen end result.

Climate and sustainability

With the increasing use of sustainable energy sources, such as solar and wind, electricity generation is becoming less predictable and, accordingly, there are greater fluctuations and more uncertainty as regards the demand from gas-fired power stations. Gas-fired power stations are often used as backup and to meet increasing demand for controllable capacity[1]. This would include, for example, periods of *Dunkelflaute*, as the Germans call this: periods of little wind and sun.
Climate change is seen as the cause of higher temperatures and a potentially lower volume of demand during the winter months. That said, there is still a chance of a cold winter period, like was seen with the *'Beast from the East'*[2] that hit the Netherlands as well at the end of winter in 2018.
The result is a general picture showing an increase in both uncertainty and variability in gas demand.

Geopolitical uncertainty

Various developments have resulted in increased uncertainty and tensions in the geopolitical arena, developments such as the conflicts in Ukraine and the Middle East, for example. Europe is increasingly vulnerable in these areas due to the decrease in local gas production and the growing dependence on LNG imports. Most LNG is imported from the United States and the Middle East. This presents a risk of reduced availability of gas supply and, with this, diminished security of natural gas supply. This risk includes, for example:

- unavailability of shipping routes for LNG over the Red Sea or through the Strait of Hormuz or the Panama Canal
- trade tariffs and the use of energy supplies as a means of political leverage
- an increased threat of disruption of energy infrastructure, such as offshore pipelines, resulting in prolonged interruptions of gas supplies.

These threats were also addressed in a recent advisory report[3] published by De Mijnraad).
Now that the Netherlands is increasingly dependent on natural gas imports, having a sufficient supply of gas cannot automatically be assumed or guaranteed in advance.

This review of the security of supply does not consider a large-scale and/or long-term disruption of the gas supply; the measures quantified in this review will be insufficient to guarantee security of supply in the event of such a disruption.

1 *https://www.tennet.eu/nl/over-tennet/publicaties/rapport-monitoring-leveringszekerheid*
2 *Wikipedia: https://en.wikipedia.org/wiki/2018_British_Isles_cold_wave*
3 *De Mijnraad: https://demijnraad.nl/ffles/view/dac7fdc3-9395-4b5c-a3a3-877ad94fcca8/mijnraadadvies_gasleveringszekerheid_digitaal.pdf*

Delay in the energy transition

Both the European Commission and the Dutch government have stated that they want to keep local manufacturing in Europe; they want to keep these industries from moving to locations outside Europe as much as possible. Partly because the energy transition in these industries is proceeding more slowly than previously assumed, gas demand is declining less rapidly than foreseen in previous forecasts. In several regions, gas demand may even increase over the coming years, as is anticipated in Germany, for example, as a result of the switch from lignite-fired to gas-fired power stations to generate electricity.

Gas storage filling level obligation

The loss of the supply of pipeline gas from Russia was a direct reason for making agreements in the EU on a minimum filling target for gas storage facilities. Following a recent extension these rules now apply until 31 December 2027. This is discussed in more detail in 3.1.
GTS determined the minimum filling target based on security of supply in a cold gas year. The assumption was gas demand that behaves 'normally', i.e. gas demand that stays in step with the applied temperature dependency, assumed profiles, and forecasts. As a result, a reduction in demand resulting from high prices, for example, has not been taken into account. In determining the filling target, commercial or other use of gas storage facilities not related to temperature or heating degree days was not taken into account either.

2.2 Review of the 2024/2025 gas year

GTS published its review of the security of supply for the 2024/2025 gas year on 12 September 2024, in the lead up to that gas year[4]. This review, which focused on the gas years from 2025/2026 up to the end of the 2029/2030 gas year, made the following key conclusions:

- a volume balance that is positive for the base case, but negative for the combination of a cold gas year and high gas demand
- a capacity balance with a minor shortfall in the first forecast year and a surplus in subsequent years
- a minimum filling target for seasonal gas storage facilities of 110 TWh by 1 November 2025.

The minimum filling target was determined based on an international market for seasonal flexibility, with neighbouring countries also making use of the flexibility available in the Netherlands.
The winter of 2024/2025 was mild; it came in the top 30% of warmest winters over the past 30 years. Despite the mild winter conditions, a significant volume of gas was transmitted from Dutch seasonal gas storage facilities, more than one would expect based on the number of heating degree days. In addition to limited additional withdrawals due to Dunkelflautes[5], an average of around 2 TWh per week was withdrawn from seasonal gas storage facilities. This along with the temperature-related withdrawals resulted in a low filling level, i.e. 21%[6] at the end of the winter, corresponding to a volume of approximately 30 TWh.

4 GTS: https://www.gasunietransportservices.nl/en/gasmarket/security-of-gas-supply/yearly-reports
5 Periods with low electricity generation from wind and solar power
6 Source: https://agsi.gie.eu/

The noted withdrawal shows that gas storage facilities are not only being used to guarantee the physical balance between supply and demand but also for portfolio optimisation and/or commercial trading. Although security of supply was never in jeopardy in the winter of 2024/2025, an additional withdrawal from seasonal gas storage facilities could lead to limited security of supply, like if a cold spell were to occur at the end of winter or if a situation as described in Article 6(c) under 'gas supply standard' in the EU security of gas supply regulation (see 3.1.3) were to arise. The assumption in the latter case is a disruption of the single largest gas infrastructure under average winter conditions for a period of 30 days. In its analyses, GTS only considers the withdrawal of gas from seasonal gas storage facilities based on temperature-dependent gas demand.

Looking back, it can be seen that filling the seasonal gas storage facilities began on 1 April 2025. There is no reason to assume that the Dutch filling target of 110 TWh for the four seasonal gas storage facilities, as set by the Minister of Climate Policy and Green Growth, will not be achieved between 1 October 2025 and 1 December 2025.
The Title Transfer Facility (TTF), the virtual trading point for natural gas in the Netherlands, has continued to develop in recent years, with annual growth of over 30%. The volume supplied from the TTF is currently approximately one and a half times domestic gas demand[7]. The TTF traded volume is over 250 times domestic gas demand, marking the TTF as the leading gas trading platform in Europe. TTF is often the benchmark price used beyond the EU borders, too[8].

2.3 Developments in natural gas supply and demand

2.3.1 North-western Europe

Gas demand

The Ten-Year Network Development Plan 2024 (TYNDP 2024)[9] is used as the source for gas demand in north-western Europe[10]. This shows a virtually constant level of gas demand in north-western Europe up to the end of 2030.
As for the expected capacity, volume, and seasonal profile at the Dutch border points, input was also requested from *neighbouring network operators*.

Gas supply

Gas production in north-western Europe is on the decline. It can be expected that between now and the end of 2031 the current production volume will decline by around 20%. The gas production profile in north-western Europe is virtually flat; the estimate for the 2026/2027 gas year is an additional winter volume of up to 5 TWh compared to the annual average volume.
Gas imports from Norway and the supply of LNG are the two major external sources of gas for the north-western European gas market.
A predominantly flat supply profile is assumed for both LNG and Norwegian gas.

7 GTS: https://www.gasunietransportservices.nl/en/gasmarket/ttf-development
8 OIES https://www.oxfordenergy.org/wpcms/wp-content/uploads/2025/05/NG198-European-Traded-Gas-Hubs.pdf
9 ENTSO-G: https://www.entsog.eu/tyndp
10 North-western Europe: Netherlands, Germany, United Kingdom, Ireland, Belgium, Luxembourg, and France

Importance of gas storage facilities

In recent years, the supply of Norwegian gas provided an additional winter volume of approximately 50 TWh; for LNG this was an additional winter volume of approximately 100 TWh. These profiles and assumptions are described in more detail in 2.5. This additional winter volume is available for north-western Europe as a whole and is based on relatively warm years with mild winters. Most of the required seasonal flexibility by far is provided by seasonal gas storage facilities.

2.3.2 Netherlands

Domestic gas demand

The forecast set by the Netherlands Environmental Assessment Agency (PBL) in the Climate and Energy Outlook 2024 (Klimaat- en Energieverkenning, KEV 2024)[11] was used as the basis for Dutch gas demand. Specifically, GTS used the forecast based on existing and proposed policy. For the calendar years 2030 and 2035, the KEV 2024 reports a high and low value for gas demand, dominated by uncertain developments in the electricity sector.

When making a direct comparison of figures between the Klimaat- en Energieverkenning report and the GTS report, two aspects must be taken into account:

- Where the KEV reports on calendar years, running from 1 January to 31 December, GTS uses gas years, which run from 1 October to 30 September.
- Where the KEV reports volumes and capacities based on the lower calorific value (Hi = 31.65 MJ/m3), GTS reports based on the higher calorific value (Hs = 35.17 MJ/m3).

For the sensitivity analysis in the GTS analysis, a bandwidth around the KEV 2024 was assumed, based on scenarios defined by Netbeheer Nederland for the Investment Plans[12].

Compared to the 2024 review of security of supply, the base case in this current edition has a higher level of domestic gas demand. Given that the KEV 2023 did not include an adjustment to domestic gas demand, the 2024 review of security of supply used the KEV 2022, with GTS reducing the demand in the regional grid by 10%. This 10% correction was prompted by the lower gas demand observed after the supply of Russian pipeline gas was terminated.

The most recent version of the KEV, the Klimaat- en Energieverkenning 2024, assumes that in 2026/2027 the gas demand in an average gas year will be around 28 TWh higher than the figure assumed in the 2024 review of security of supply.

11 *KEV: https://www.pbl.nl/publicaties/klimaat-en-energieverkenning-2024*
12 *IP2025 https://www.netbeheernederland.nl/artikelen/nieuws/netbeheer-nederland-scenarios-editie-2025*

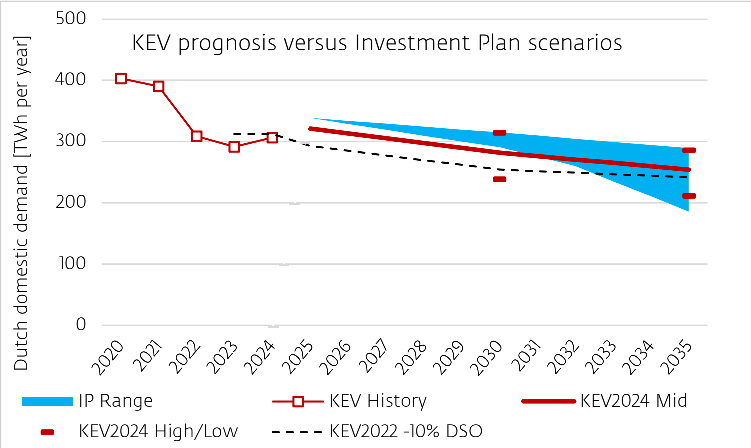


Figure 1
Historical trend and forecast for domestic gas demand in the Netherlands, in accordance with the KEV 2024. The blue area behind the lines shows the gas demand range resulting from scenarios for the Investment Plans (IPs).

The KEV 2024 'Mid' was used for the base case in the review of the security of supply; a case with higher domestic gas demand is based on the bandwidth of the IP scenarios drawn up by Netbeheer Nederland.

2.4 Temperature-dependent gas demand

Temperature-dependent gas demand

The gas demand for heating buildings in the Netherlands depends heavily on outdoor temperatures, with a lower temperature naturally resulting in higher gas demand. This relationship is better illustrated by using

- wind-corrected temperature, the effective temperature, Teff, and
- taking into consideration the temperature above which the contribution from space heating no longer plays a significant role in gas demand.

Both elements converge in the definition of a heating degree day[13], which uses a heating threshold[14] of +14°C. The number of heating degree days increases linearly with a decrease in the effective daily temperature; the relationship between the number of heating degree days and gas demand is also linear.

Due to climate change, a trend can be observed: the average temperature is increasing and, accordingly, the number of heating degree days is decreasing.
GTS bases this observation on data from an analysis carried out by the Royal Netherlands Meteorological Institute (KNMI).

For the volume balance in the review of the security of supply, an average and a cold gas year are applied. Under Dutch legislation, data from the past 30 years must be used in the calculations. The coldest gas day, which statistically occurs once every 20 years, serves as input for calculating the capacity balance. This is in line with the definition applied in the EU Regulation.

13 *As defined in Article 3a of the Implementation Regulations of the Dutch Gas Act: https://wetten.overheid.nl/BWBR0015458*
14 *For effective daily temperatures above the heating threshold, it is assumed that there is no gas consumption for heating buildings.*

2.4.1 Definition of an average gas year (1997/1998)

Under the current Implementation Regulations of the Gas Act[15], GTS must establish a reference year for an average gas year. GTS defines an average year as a gas year with a number of heating degree days comparable to the annual average number of heating degree days in the gas years in the period spanning the 30 most recent gas years. This makes the 1997/1998 gas year the reference year for an average gas year. With 2264 heating degree days, the 1997/1998 gas year comes very close to the arithmetic mean of 2269 heating degree days, and the temperature trend over the gas year also corresponds to the average trend observed over the 30-year period.
By selecting 1997/1998 as the reference year, GTS is deviating from the choice made in the 2024 review of the security of supply, which assumed 2004/2005, with its 2295 heating degree days, as the average year.

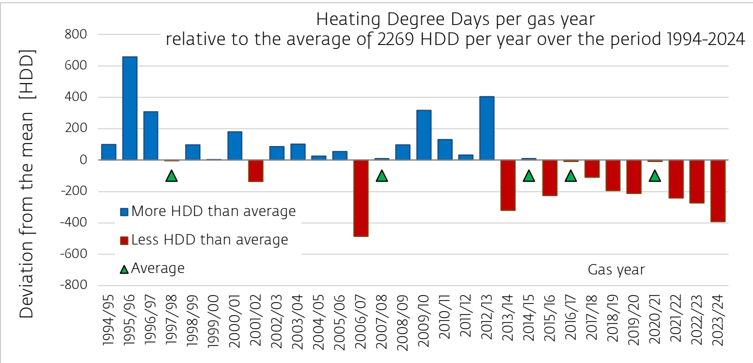


Figure 2

Gas years over time with more/fewer heating degree days than the annual average over the past 30 years.

2.4.2 Definition of a cold gas year (1995/1996)

Under the current Implementation Regulations of the Gas Act, GTS must also establish a reference year for a cold gas year. GTS defines a cold gas year as the gas year with the highest number of heating degree days observed in the 30 most recent gas years. This makes the 1995/1996 gas year, with its 2927 heating degree days, the reference year for a cold gas year. For the 2025 review of the security of supply, the 1995/1996 reference year serves as input for the calculations up to and including the 2030/2031 gas year.

From the 2027 review, the 1995/1996 gas year falls outside the period of 30 historical gas years. Assuming that the next two winters will not be extremely cold, the 2012/2013 gas year, with its 2673 heating degree days, will then be the coldest year.
To present a full picture of the potential impact of this change, the filling level for gas storage facilities has also been calculated based on the temperature trend in the 2012/2013 gas year.

GTS bases its definition of a cold gas year on the applicable legal provisions.
Based on the temperatures actually measured, a trend toward fewer cold years, with fewer heating degree days per gas year, can be observed; see figure 2. However, it is uncertain to what extent this trend affects the probability of a cold year occurring.
GTS intends to commission the Royal Netherlands Meteorological Institute to carry out a study with the aim of getting a better understanding of both the trend and the probability of a cold year occurring in a defined time series.

15 *Proposal for amendment, Article 3(9): https://www.internetconsultatie.nl/regeling_beeindiging_gaswinning_groningenveld/b1*

Though the results of this study will not necessarily result in GTS modifying its calculation methodology, it will contribute to interpreting the findings in the review of the security of supply.

2.4.3 Definition of a cold gas day

To determine the temperature at which sufficient capacity must be available to supply market demand, GTS uses the analysis the Royal Netherlands Meteorological Institute (KNMI) carried out in 2023[16].
This analysis is based on the historical meteorological observations (1905–2023), to which figures KNMI applied a trend correction. Assuming a statistical probability of once every 20 years, in its analysis KNMI arrives at a gas day with an effective daily temperature of -14°C.

2.5 Seasonal flexibility

2.5.1 Quantifying seasonal flexibility

Gas demand depends on the temperature and so this makes it seasonal. GTS defines the demand for seasonal flexibility as the additional gas demand in the winter months compared to the annual average demand. The figure below shows the additional demand, as represented by the orange area.

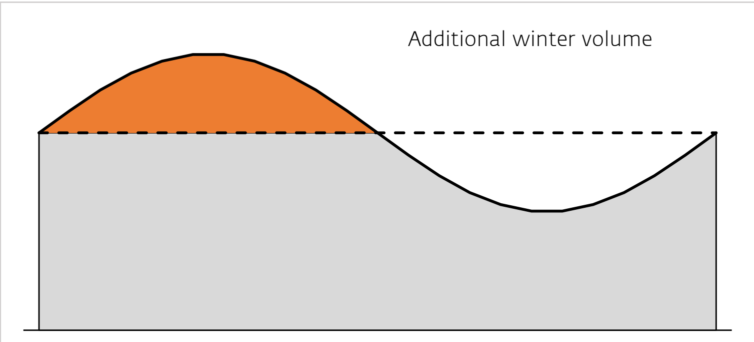


Figure 3
Visualisation of the seasonal fluctuations in gas demand, with the need for additional winter volume.

However, fluctuations in gas demand or supply are generally erratic, with higher or lower gas demand not exclusively occurring during the six months of the winter or summer season. To clearly quantify seasonal fluctuations in supply and demand, GTS determines the volume resulting from these fluctuations by tallying the daily differences between supply and demand, which results in the 'cumulative imbalance'.
Based on a demand pattern, as illustrated in Figure 4, the cumulative imbalance increases on days when demand exceeds the annual average and decreases when demand is lower than the annual average. At the peak of the cumulative imbalance maximum withdrawal is reached and, after this, the gas storage facilities are topped up again. The peak-to-peak value of the cumulative imbalance indicates the *minimum* seasonal volume required to balance the given demand pattern.

16 *https://www.gasunietransportservices.nl/gasmarkt/leveringszekerheid-gas/achtergrondinformatie*

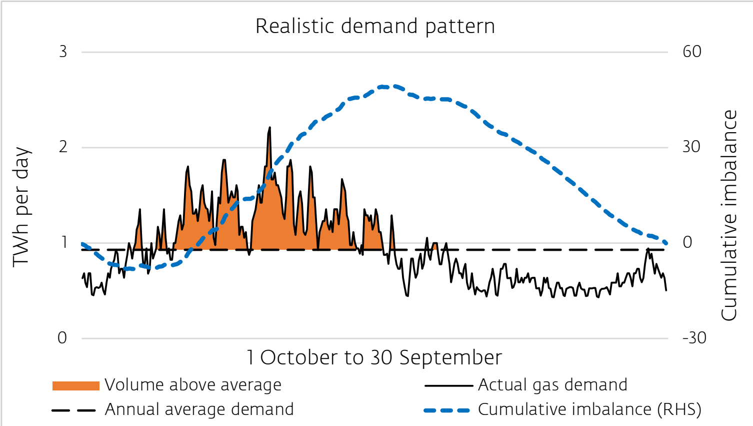


Figure 4
Visualisation of a realistic gas demand pattern. In this example, the cumulative imbalance results in an additional volume (above the annual average volume) of 58 TWh.

With regard to gas storage facilities, the cumulative imbalance takes into account any interim top up of the gas storage facilities.
The annual average gas demand has been used as the reference for the cumulative imbalance, with the assumption being that the higher annual average demand expected in a cold year will be supplied as an annual volume with a flat profile.

Period covered by the analysis

Gas years[17] were used in the analysis of seasonal fluctuations in gas supply and demand over the past years (historical trend). With the loss of Russian pipeline gas in 2022, a different picture can be seen for the period around 2022 compared to previous and later years due to the increase in the replacement gas supply. Take for example the high volume of LNG being supplied, including during the summer months, which resulted in a different seasonal profile.
To include the most recent measurements in the analysis and this way gain a better understanding of the behaviour in the period after the 2021/2022 gas year, the 2024/2025 storage year[18] has been added to the analysis. The 2024/2025 storage year overlaps with the 2023/2024 gas year by six months.

Flexibility on a different time scale

In addition to seasonal flexibility, there are forms of flexibility that occur on a different time scale. This concerns, for example, fluctuations in gas demand:

- that are slower, such as fluctuations between different years,
- that are faster, such as fluctuations in a month, a day, or an hour.

The slower and faster fluctuations do not contribute to the demand for seasonal flexibility.

2.5.2 Demand for seasonal flexibility

The demand for seasonal flexibility consists of the total demand that arises within the Dutch gas market as well as demand that arises from interactions with neighbouring countries and import flows.

17 A gas year runs from 1 October to 30 September
18 A storage year runs from 1 April to 31 March

As stated in 2.4, domestic gas demand is temperature-dependent and thus exhibits a seasonal profile.
Import and export flows can also exhibit a seasonal pattern, with demand for seasonal flexibility arising when gas imports are lower in winter than in summer or when more gas is exported in winter than in summer.

In this review, the maximum demand for seasonal flexibility has been assumed, with a cold gas year being the determining factor.

2.5.3 Supply of seasonal flexibility

Several options are available for meeting the demand for seasonal flexibility:

- reduced demand during a period of high gas demand
- seasonal fluctuations in gas supply, such as:
  - seasonal fluctuations in local gas production,
  - pipeline gas imports, where gas imports are higher in winter than in summer,
  - pipeline gas exports, where exports are lower in winter than in summer, and seasonal fluctuations in LNG imports.

It is assumed that the remaining demand for flexibility will be supplied from seasonal gas storage facilities.

Each of these sources of seasonal flexibility is discussed separately and in the same order below.

Seasonal flexibility through reduced demand

In this review of the security of supply it is assumed that gas demand in the Netherlands is entirely determined by temperature and a general trend in annual volume, as per the KEV 2024. This means that a level of gas demand has been assumed without taking into account the possibility of lower gas demand as the result of supply shortages, whether temporary or ongoing, and/or high energy prices.

Following the significant reduction in demand seen since 2022, a further reduction in gas demand cannot be achieved without far-reaching socio-economic consequences.

Seasonal flexibility in local gas production

Europe/NW Europe

With the exception of Denmark, all EU Member States are net importers of natural gas[19]. The domestic production of around 665 TWh per year can meet approximately 15% of EU gas demand in an average year. Much the same applies to the countries in north-western Europe[20], in this case 17%.

19 *ENTSO-G Summer Outlook 2025*
20 *North-western Europe: Netherlands, United Kingdom, Ireland, Germany, Denmark, Belgium, Luxembourg and France*

Local gas production has a virtually flat profile throughout the year, meaning it can only make a marginal contribution to providing the required seasonal flexibility. Furthermore, any flexibility in gas production is expected to decrease in the coming years due to the further depletion of production fields.
Most of the required seasonal flexibility by far has historically been provided by gas storage facilities, as can be clearly seen in Figure 5.

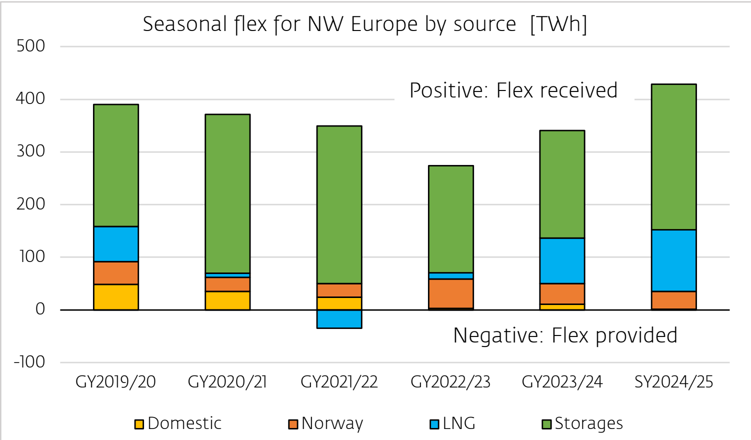


FIGURE 5
Historical supply of additional winter volume in north-western Europe from local production and imports. The contribution from seasonal gas storage facilities overshadows that of the other sources[21].

Due to shifts in the landfall for imported LNG and/or Norwegian gas, the amount of seasonal flexibility from these sources can vary by country.

Netherlands

With the closure of production from the Groningen field, a key source of flexible supply has also fallen by the wayside. Production from the small fields currently amounts to around 85 TWh per year and these fields provide only a limited amount of additional volume in the winter, up to a maximum of 5 TWh.

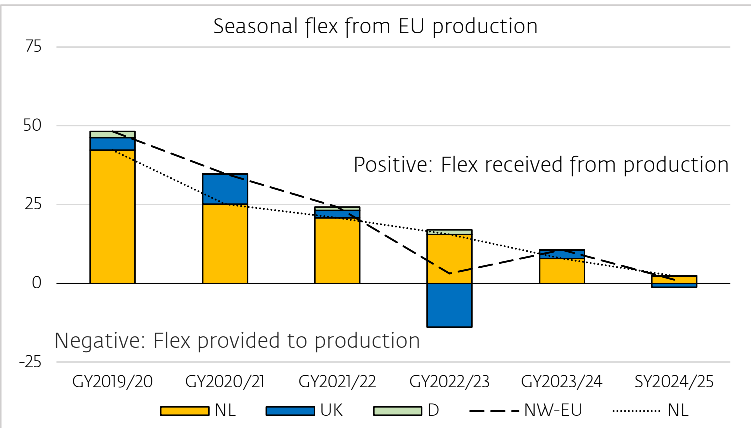


FIGURE 6
Seasonal flexibility in domestic gas production in Europe; historical flexibility for gas years 2019/2020 to 2023/2024 and storage year 2024/2025.

21 *Contrary to the definition given in 2.5.1, the seasonal flexibility depicted in Figures 5, 6, 7 and 9 has been calculated based on the additional volume above the annual average volume during the five winter months. The information from these graphs was not used to determine the filling level for gas storage facilities; the filling level was calculated in the manner described in 2.5.1.*

Seasonal flexibility in pipeline imports

Supply from Russia

In addition to a regular volume, up to 2022 Russia also supplied Europe with a limited volume of gas for seasonal flexibility, with an additional winter volume of approximately 30 TWh. Currently, there is no direct supply of pipeline gas from Russia to north-western Europe. GTS assumes that supply from Russia will not resume in the timeframe covered by this report.

Supply from Norway

The fluctuation in the supply of Norwegian gas provides north-western Europe with seasonal flexibility, specifically around 35 TWh. This flexibility represents the total flexibility available for all of north-western Europe, with the highest volume by far being consumed by the UK and Germany. Supply to the UK is a logical consequence of the lack of seasonal gas storage facilities in the UK, which makes the country dependent on the flexibility provided by import flows.
Norway supplies larger volumes of gas to the Netherlands in summer than in the winter, enabling Norway to make use of the flexibility available in the Netherlands for the gas it produces. The extent of this utilisation has varied in recent years, ranging between 2 TWh and 10 TWh.

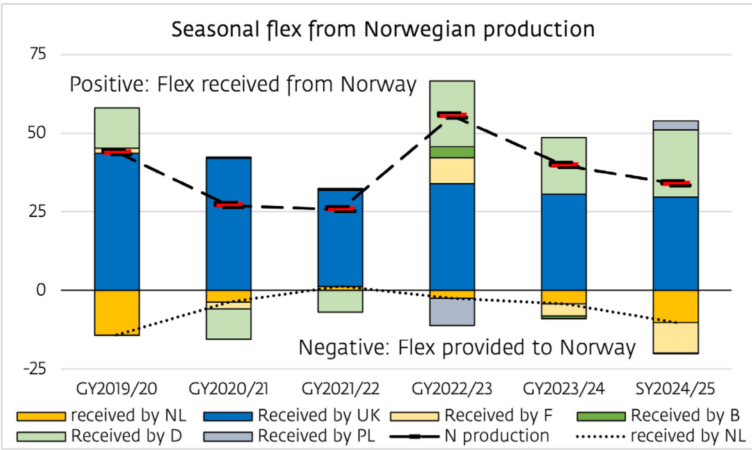


FIGURE 7
Seasonal flexibility from Norwegian production and the distribution over the markets that receive and supply.

Seasonal flexibility in LNG supply

GTS assumes only limited additional winter volumes of LNG for the Dutch gas market, i.e. a flat profile is assumed for LNG supply in the Netherlands in a cold year. This means that while LNG volumes are available for the Netherlands, no additional winter volume above the annual average volume is available. This assumption is further explained and substantiated below.
To account for the uncertainty surrounding the development of the global LNG supply, a case has been defined in the sensitivity analysis that assumes limited seasonal flexibility in LNG supply for the Netherlands.

Seasonal flexibility in LNG production

Due to the high investment costs associated with building LNG production facilities, the LNG production profile is virtually flat. The scheduled maintenance being carried out in the summer and a marginally higher production capacity in the winter means that, in practice, there is only limited production flexibility, i.e. a maximum of 5% of the annual volume. With a global production capacity of somewhere in the range of 6000 TWh per year, the additional winter production volume for the global LNG market currently amounts to around 300 TWh. Once expansion of production capacity has been realised, the additional winter volume will eventually increase to approximately 450 TWh.

The European gas market receives a 25% to 30% share of the global LNG volume. A proportional share of seasonal flexibility from LNG would be approximately 100 TWh, which is in line with the volumes realised over the past five years.

Increase in LNG production capacity

It is expected that, over the next five years, we will see a significant increase in the volume of LNG available worldwide, with the largest increase expected in the United States. With a total increase of approximately 3000 TWh (200 MTPA), the current production capacity of 6000 TWh will eventually increase by approximately 50%. There are also plans for further expansion of production capacity.

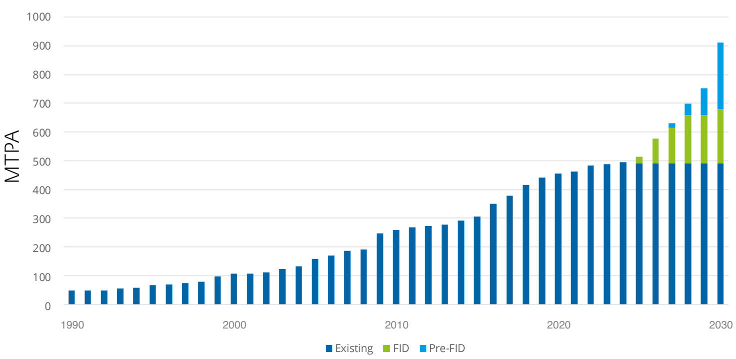
For this additional volume, it is expected that the production profile will be virtually flat, as is the case with the current LNG volumes.

This increase in production capacity is certainly significant; however, the timeline for realising this is uncertain. If the increase coincides with the onset of winter (in Europe), it is conceivable that this additional LNG will contribute significantly to meeting the demand for seasonal flexibility that winter. Given the uncertain timeline, GTS has not taken this into account.

For this reason, the expansion of the Gate terminal's capacity is only included in the additional supply of baseload volume.

After the initial increase in volume, this stabilises at a new annual volume with a baseload profile.

Figure 5.4: Global liquefaction capacity development, 1990-2030



Source: Rystad Energy

Figure 8

Indication of the increase in global LNG production capacity up to the end of 2030[22] broken down by 'existing', 'FID' and 'pre-FID'.

22 *Source: 2025 World LNG Report, IGU, May 2025 https://www.igu.org/igu-reports/2025-world-lng-report 100 MTPA = 1450 TWh per year*

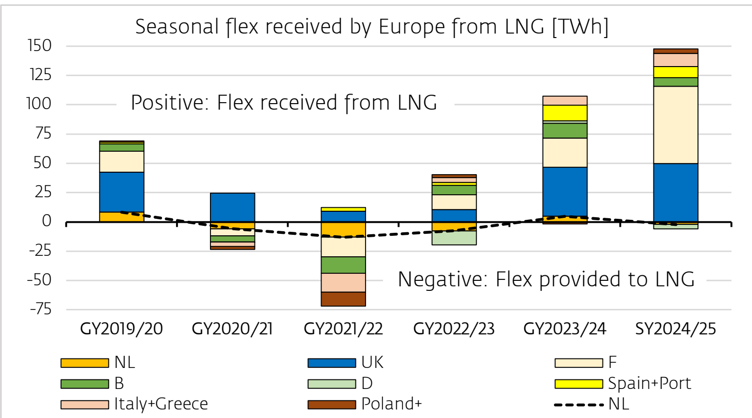
Seasonal flexibility of LNG due to shifts in destination

Globally, the capacity for receiving LNG is approximately twice as large as production capacity. This allows for arbitrage between various markets and demand profiles where, while supply volume remains constant, the destination of the LNG changes.

Seasonal arbitrage is limited given that gas demand and LNG offtake are concentrated in the Northern Hemisphere, the whole of which has the same winter season.
Other arbitrage opportunities, such as with countries experiencing high electricity demand due to air conditioning, for instance, can add seasonal flexibility to LNG supply to Europe.
Such is the case, for example, with the use of air conditioning in Asia, which generally results in higher gas demand in the Asian gas market in Q3 every year. Price differences then cause LNG supply to be shifted from the European to the Asian gas market, allowing LNG supply to better align with the seasonal fluctuations in European gas demand.
In practice, however, this shift is limited by demand profiles, contractual restrictions, LNG transport logistics, and available capacity at import terminals.

Seasonal flexibility realised in LNG supply for Europe

An analysis of the level of seasonal flexibility realised on the European gas market in recent years shows an additional winter volume comparable to the proportional share of available global flexibility in LNG production: 100 to 150 TWh.
The discontinuity observed around the 2021/2022 gas year can be attributed to the loss of pipeline gas from Russia and a sharp increase in LNG volumes during the summer months.



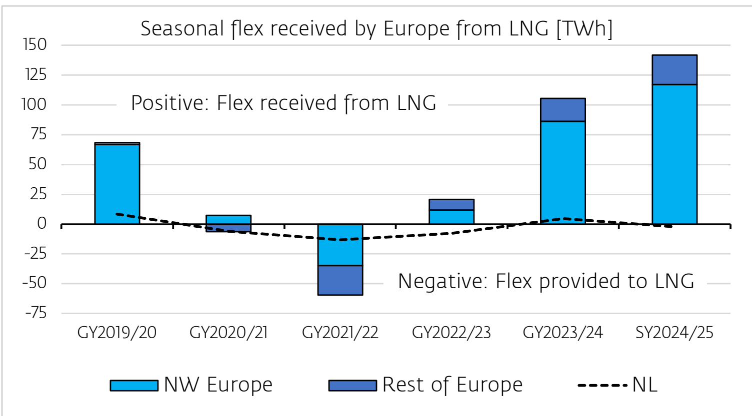


FIGURE 9

The distribution of seasonal flexibility from LNG imports across the European markets and between countries in north-western Europe and other European countries.

North-western Europe, as part of Europe, receives approximately 100 TWh of additional winter volume from the LNG supply. This seasonal flexibility primarily reaches countries with limited seasonal storage facilities.
The UK and France receive by far the largest share of the flexible LNG volume.
In recent years, the Netherlands has received LNG with either a flat annual profile or with a profile that provides seasonal flexibility to the LNG market.

Seasonal flexibility from LNG storage

Import terminals have storage facilities for LNG while still in its liquid form. This tank storage is primarily needed for terminal operations, such as unloading vessels and handling delays in supply. Only a small portion of the storage volume, some 15%, can be used for seasonal flexibility.
LNG storage is, however, suitable for providing flexibility on a shorter time scale, such as on a daily basis.

Seasonal flexibility from seasonal gas storage facilities

After flexibility from production, imports and LNG, the remaining demand for seasonal flexibility is met from seasonal gas storage facilities. In the Netherlands, this represents by far the largest share of the supply.
Seasonal flexibility is primarily provided from depleted gas fields that have been repurposed as underground storage facilities. A limited share also comes from gas storage in caverns, typically created in natural salt formations.
To meet the remaining flexibility demand (in a cold gas year as well), seasonal gas storage facilities must be filled with a minimum required volume (filling target) before the start of winter. This minimum filling target does not take into account the use of seasonal gas storage facilities for portfolio optimisation and other forms of commercial trade.
Nor are large-scale and/or prolonged interruptions in the gas supply taken into account, other than those described under 'gas supply standard' in the EU security of gas supply regulation. See 3.1 for more details.

2.5.4 Exchange of seasonal flexibility in NW Europe

Location of seasonal gas storage is determined geologically

Underground structures, such as depleted gas fields, aquifers or salt caverns, can be economically used for seasonal gas storage facilities. Because these structures vary by country the options for seasonal gas storage facilities also vary by country. This means that not every country has the same level of access to gas storage facilities. Both Belgium and the UK, for example, do not really have any seasonal gas storage facilities of significance.

Exchanging seasonal flexibility

Countries with insufficient seasonal gas storage options depend on flexibility in the gas supply, with the result that countries in north-western Europe 'exchange' flexibility. On balance, neighbouring countries make use of the flexibility available on the Dutch gas market. For more details on this, see also Appendix 1 (in Dutch) of the 2024 review of the security of supply[23]. It can be seen in the historical data that the exchange of seasonal volumes from the Netherlands is significant.

23 *https://www.gasunietransportservices.nl/gasmarkt/marktontwikkelingen/leveringszekerheid-gas*

Exchange of seasonal flexibility can occur directly at border points, but also through a seasonal pattern of shifting landfall, for Norwegian gas or LNG, for example. These two aspects taken in combination generate a range of possibilities, all ultimately leading to a similar situation. For example, the UK might receive seasonal flexibility from Norway, with the result that less Norwegian gas will be available to other countries during the winter months, which in turn would mean that these countries will have to rely on withdrawing more gas from the storage facilities. A similar end result could arise if, rather than shifting the Norwegian supply, the supply of LNG were to be shifted. Seasonal flexibility from gas storage facilities on the continent can also be transported directly to the UK over two connectors: the BBL and IUK.

North-western European perspective

Taking a north-western European perspective, rather than a strictly national perspective, significantly reduces the complexity of the options described. Such a perspective takes into account the international nature of the seasonal flexibility market.
From a north-western European perspective, supply and demand from local production result in net demand for seasonal flexibility. Currently, the only *external* sources of additional seasonal flexibility are Norwegian gas and imported LNG, while the only *internal* source of seasonal flexibility is the seasonal storage facilities.

By taking this perspective, the contribution of seasonal flexibility provided by the supply of Norwegian gas and LNG is now independent of the route by which these two sources reach the market. This helps shape a better understanding of the contribution made by these two sources and prevents potential double counting in the supply of seasonal flexibility for an individual country.

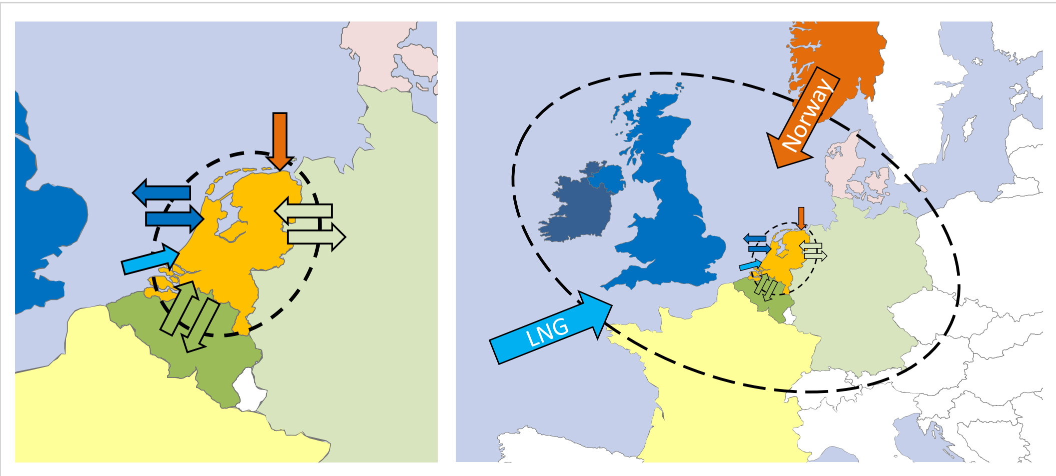


FIGURE 10

Seasonal flexibility patterns at Dutch border points can vary from year to year. At the north-western European level, the supply of seasonal flexibility is stable.

GTS has made assumptions regarding the flexibility in the supply of Norwegian pipeline gas and LNG; see 3.3 for more details.
Based on the expected increase in the supply of LNG, uncertainty surrounding this increase, and the amount of seasonal flexibility in this supply, GTS has defined two options:

- a flat profile for LNG landings in the Netherlands, and a profiled LNG supply, constrained by the technical capacity of Gate and EET, with higher supply in winter than in summer.

2.5.5 Connection capacity and TTF

Another element that contributes to security of supply in the Netherlands is maintaining sufficient connection capacity with neighbouring countries and diversifying supply. These two elements create more possibilities for dealing with delays in supply.
The Title Transfer Facility (TTF), the most liquid gas trading hub in Europe and with the largest traded volumes, also contributes to security of supply. The traded volumes on the TTF are more than 250 times greater than Dutch domestic gas demand[24] and comprise over 80% of all gas traded in Europe, making it the leading and most reliable benchmark for wholesale natural gas prices. Although a liquid TTF does not guarantee security of supply, it does make the Dutch market attractive for (additional) gas supply.
The contribution made by connection capacity, diversification and the TTF to security of supply are not quantified in this report.

2.5.6 Future of Dutch gas storage facilities

GasTerra is currently the only shipper with access to the Grijpskerk and Norg seasonal gas storage facilities. To date, GasTerra has managed to fill both storage facilities to a level sufficient to meet the filling target set by the Dutch Minister for the four seasonal gas storage facilities taken together.
Given that GasTerra will cease operations on 1 October 2026, it is assumed that, from the start of the filling season on 1 April 2026, GasTerra will no longer be topping up the gas storage facilities.

Assuming that the storage facility at PGI Alkmaar will be topped up by EBN and that Bergermeer will be topped up by its customers, the stored volume in the autumn of 2026 will be a maximum of 53 TWh.
To reach the recommended filling target of 115 TWh, parties other than GasTerra will need to top up the gas storage facilities in the Norg and Grijpskerk storage facilities to a total of approximately 62 TWh.

24 GTS website: https://www.gasunietransportservices.nl/en/gasmarket/ttf-development

3 Principles for the review of the security of supply

3.1 Security of gas supply and legal framework

In the Netherlands, security of supply is defined as the situation where 'end users of gas are supplied with gas of the right quality (low or high calorific) at the right time and in the required amount, even when demand is high.'[25] What this definition in essence says is that all end users in the Netherlands should be able to rest assured that security of supply is guaranteed, even during extremely cold weather. Under EU regulations, an EU Member State may not restrict gas flows to another EU Member State. When determining whether there is sufficient gas to meet the needs of end users, the expected gas flows coming into and going out of the country are therefore also taken into account.

The legal provisions regarding the security of natural gas supply are based on Regulation (EU) 2017/1938 of the European Parliament and of the Council (the 'SoS Regulation')[26].
The SoS Regulation establishes provisions aiming to safeguard the security of gas supply by ensuring the proper and continuous functioning of the internal market in natural gas, by allowing for exceptional measures to be implemented when the market can no longer deliver the gas supplies required. The SoS Regulation furthermore provides for the clear definition and attribution of responsibilities regarding both preventive action and the reaction to concrete disruptions of gas supply.
The relevant legal requirements are briefly described in the following sub-sections.

3.1.1 Review of security of supply – a statutory duty of GTS

Article 10a(1)(q) of the Dutch Gas Act states that GTS shall 'annually, by a date to be determined by ministerial regulation, after consulting the representative organisations, provide Our Minister with a review of the security of gas supply, which shall include information on:

- the volumes of high-calorific and low-calorific gas required in a gas year to meet the gas demand of end users;
- the capacity required in a gas year to supply end users with both high-calorific and low-calorific gas and the resources and methods available for this purpose;
- the volumes of high-calorific and low-calorific gas that will need to be stored during the gas year to reliably supply the volumes of gas referred to in point 1 and to reliably have the capacity referred to in point 2 available; and
- the demand trend forecast for high-calorific and low-calorific gas over the next five years.'

The provisions under 10a(1)(q) of the Dutch Gas Act are further elaborated in clauses 8, 9 and 10 of Article 10a of the Dutch Gas Act and the (draft) Implementation Regulations[27] of the Dutch Gas Act. The operation and results of these legal provisions are described in this report.

25 *Explanatory Memorandum, clause 2.1: https://zoek.officielebekendmakingen.nl/kst-34957-3.html*
26 *Regulation (EU) 2017/1938 Of the European Parliament and of the Council: https://eur-lex.europa.eu/legal-content/NL/TXT/HTML/?uri=CELEX:02017R1938-20250101*
27 *https://www.internetconsultatie.nl/regeling_beeindiging_gaswinning_groningenveld/b1*

3.1.2 European infrastructure standard (capacity)

Member States are legally obliged to meet the infrastructure standard set out in Article 5 of the SoS Regulation. Article 5.1 of the Regulation on security of supply requires that: *'Each Member State [...] shall ensure that the necessary measures are taken so that in the event of a disruption of the single largest gas infrastructure, the technical capacity of the remaining infrastructure, determined in accordance with the N – 1 formula [...] is able [...] to satisfy total gas demand of the calculated area during a day of exceptionally high gas demand occurring with a statistical probability of once in 20 years. This shall be done taking into account gas consumption trends, the long-term impact of energy efficiency measures and the utilisation rates of existing infrastructure.'*

Given that gas demand has a known linear relationship with the effective daily temperature, what signifies 'exceptionally high gas demand' is derived from the effective daily temperature. A day of exceptionally high gas demand, which occurs with a statistical probability of once in 20 years, is therefore taken to mean a gas day with an effective daily temperature that occurs with the same probability. This is referred to as 'the coldest gas day'.
To determine the effective daily temperature on the coldest gas day, GTS has based its calculations on an analysis[28] conducted by the Royal Netherlands Meteorological Institute (KNMI) in 2023. Assuming a statistical probability of once every 20 years, in its analysis KNMI arrives at an effective daily temperature of -14°C.

In meeting the EU infrastructure standard, GTS calculates a demand-supply balance of hourly capacities for the coldest gas day, excluding the supply capacity of the Norg (N-1) gas storage facility. To ensure that the expectation is realistic, the expected utilisation rate of the infrastructure is also taken into account in the calculations.

A positive capacity balance indicates that the EU infrastructure standard is being met, meaning that no additional measures are required.
A negative capacity balance means that the Member State must take measures to eliminate the capacity shortfall. The measures taken must reduce the likelihood of the contingency plan[29] being brought into effect and the gas supply of non-protected end users being disconnected or rationed.

3.1.3 EU gas supply standard (volume)

Member States are legally obliged to meet the gas supply standard set out in Article 6 of the SoS Regulation, which states that the competent authority shall require the natural gas undertakings to take measures to ensure the gas supply to the protected customers of the Member State in each of the following cases:

- extreme temperatures during a seven-day peak period occurring with a statistical probability of once in 20 years;
- any period of 30 days of exceptionally high gas demand, occurring with a statistical probability of once in 20 years;

28 https://www.gasunietransportservices.nl/en/gasmarket/security-of-gas-supply/background-information
29 In the Netherlands this is the 'Gas Protection and Recovery Plan': https://open.overheid.nl/documenten/8823440f-4bf5-4c55- 9d75-57905219828e/ffle

- a 30-day period in the case of a disruption of the single largest gas infrastructure under average winter conditions.

The objective of the EU gas supply standard is to guarantee the supply of gas (in terms of volume) to protected customers so that situations such as those described in the standard do not escalate to an emergency situation as described in the SoS Regulation (or at least not immediately).
The *Preventive Action Plan 2023, The Netherlands*[30] defines the category of 'protected customers' as the group of small-scale Dutch consumers with a connection of less than 40 m³/h.

Explanation of the seven-day peak period

In the Netherlands, *'extreme temperatures during a seven-day peak period occurring with a statistical probability of once in 20 years'* is interpreted, based on Section 2, Article 3.4 of the draft Implementation Regulations of the Gas Act, as the 'average effective daily temperature during a seven-day cold spell occurring with a statistical probability of once in 20 years, as determined by the Royal Netherlands Meteorological Institute (KNMI)'[31]. The KNMI has calculated this seven-day average daily temperature to be -10.2°C. Under the specified circumstances there is no emergency situation, meaning that domestic non-protected end users may not be disconnected. Also, pursuant to the SoS Regulation, transit to neighbouring Member States without disconnection or reduced supply must be taken into account.
This means that it must remain possible to supply the entire gas demand, comprising both domestic consumers and exports, under the specified circumstances.
Gas is supplied through various sources, such as LNG, imports and small fields. If this gas supply is insufficient to meet gas demand, supplying gas from seasonal gas storage facilities is an obvious and effective means to guarantee gas supply to the Member State's protected customers.

Explanation of 30 days of high gas demand

In the Netherlands, *'any period of 30 days of exceptionally high gas demand, occurring with a statistical probability of once in 20 years'* is interpreted, based on Section 2, Article 3.5 of the draft Implementation Regulations of the Gas Act, as the *'average effective daily temperature during a 30-day cold spell occurring with a statistical probability of once in 20 years, as determined by the Royal Netherlands Meteorological Institute (KNMI)'*. The KNMI has calculated this average effective daily temperature to be -5.7°C.
GTS determines the total gas demand, the baseload supply, and the required supply from seasonal gas storage facilities in a manner similar to that described in point (a).

Explanation of 30-day period in the case of a disruption

In the Netherlands, *'a 30-day period in the case of a disruption of the single largest gas infrastructure under average winter conditions'* is interpreted, based on Section 2, Article 3.6 of the draft Implementation Regulations of the Gas Act, as the *'average effective daily temperature as determined by the Royal Netherlands Meteorological Institute (KNMI) under those average winter conditions'*. The KNMI has calculated this to be 3.6°C.

30 *https://www.government.nl/documents/reports/2024/02/29/preventive-action-plan-2023-the-netherlands; see section 4, page 30*
31 *Average effective daily temperature: average atmospheric temperature at De Bilt meteorological station (T) over a 24-hour period, corrected for the average wind speed at the same station (V) during the same period, expressed in metres per second, using the following formula: Teff = T – (V/1.5)*

Under these average winter conditions, no withdrawals are made from the seasonal gas storage, or at a lower capacity than Gate terminal. This makes Gate the 'single largest gas infrastructure'. After the capacity expansion on 1 October 2026, Gate terminal will have a capacity of approximately 26.5 GW, corresponding to a 30-day volume of approximately 19.1 TWh. GTS determines the total gas demand, the baseload supply, and the required supply from production and imports in a manner similar to that described for point (a).

Analysis shows that the parts of the standard that are based on a 30-day period result in the largest calculated storage volume, meaning that, to meet the gas supply standard, the largest calculated volume must be available at the start of the last month of winter.

3.1.4 European filling target for gas storage facilities

Member States are legally obliged to meet the filling targets set out in Article 6a, which has been added to the SoS Regulation. This article[32] stipulates that an EU Member State must ensure that the aggregated capacity of its gas storage facilities is 90% full between 1 October and 1 December. To reach the filling target, the Netherlands has chosen to base the storage volume on data from the Aggregated Gas Storage Inventory (AGSI)[33]. Based on an aggregated storage volume of 144 TWh, a 90% filling level corresponds to a filling target of approximately 130 TWh.

Both Article 6a(2) and 6a(3) of the SoS Regulations provide provisions on situations where a Member State may deviate from the 90% filling target.

Adjusted filling target based on national gas consumption

The filling target can be reduced to a volume corresponding to 35% of the average annual domestic gas consumption over the preceding five years, which, based on GTS data, is estimated at 347 TWh for the period 2020-2024. This means that the target to be achieved is approximately 122 TWh.

Filling target based on gas supply to the UK

The filling target can be reduced by the volume which was supplied to third countries during the reference period 2016 to 2021 if the average volume supplied was more than 15 TWh per year during the gas storage withdrawal period (October–April).
During this reference period, an average of 23 TWh was transported to the United Kingdom over the BBL pipeline during the withdrawal period. Accordingly, this reduces the filling target of 130 TWh to around 107 TWh. Although the UK is not part of the EU and therefore this correction can be applied, seasonal flexibility is also exchanged with the UK, as explained in 2.5.4.
Thus, pursuant to the EU Regulation, this produces a filling target for the Netherlands of at least 107 TWh. GTS's analysis is based on realistic estimates for a cold gas year, which takes into account the interaction with neighbouring countries. The filling target calculated by GTS is the target it recommends to the Ministry of Climate Policy and Green Growth.

32 The SoS Regulation has been amended in this part and the whole has been extended until December 2027
33 AGSI assumes the following gas storage facilities: Alkmaar, Bergermeer, Grijpskerk, Norg, Zuidwending and UGS Nüttermoor: https://agsi.gie.eu/. Zuidwending (EnergyStock) is excluded from the filling obligation; this will be officially laid down in impending Dutch legislation aimed at combating an energy supply crisis (Wet Bestrijding Energieleveringscrisis).

Recent adjustments to the EU filling targets

On 18 July 2025, the European Parliament and the Council reached an agreement on adjusting the existing EU filling targets[34] as laid down in the SoS Regulation. This primarily concerns a number of easing measures that may be applied under certain circumstances. However, the basic obligations as described above remain in effect. Key changes include the following:

- Relevant provisions from the SoS Regulation regarding the filling of gas storage facilities will remain in effect longer, until 31 December 2027.
- Instead of 1 November, a binding filling target for the Member State must be achieved between 1 October and 1 December.
- The filling trajectory will now involve a series of intermediate indicative filling targets for each Member State with underground gas storage facilities, with each of said Member States being required to submit a filling trajectory with intermediary targets to the Commission by 15 September of the previous year. This allows market participants more flexibility in filling the gas storage facilities.

3.2 Supply and demand: capacity

To ensure that the expectation is realistic, the capacity balance is calculated based on available capacity, taking into account the expected utilisation rate of the infrastructure under current conditions.

Demand for capacity

As regards the demand for capacity, a distinction is made between the following:

Domestic gas demand

- G-gas demand in the Netherlands
- H-gas demand from gas-fired power stations in the Netherlands
- H-gas demand from industry in the Netherlands

Export of low-calorific gas

- L-gas demand in Germany
- L-gas demand in France (via Belgium)
- L-gas demand in Germany
- H-gas demand from gas-fired power stations in the Netherlands
- H-gas demand from industry in the Netherlands

Transit (export) of high-calorific gas

- H-gas export to Germany
- H-gas export to Belgium
- H-gas export to the UK

34 *https://www.consilium.europa.eu/en/press/press-releases/2025/07/18/gas-storage-council-greenlights-2-year-extension-of-reserves-filling-rules-to-safeguard-winter-supply/*

Capacity supply

As regards the supply of capacity, a distinction is made between the following:

Domestic gas production

- Production from small fields

Import of pipeline gas

- Import of H-gas from Norway
- Import of H-gas from Belgium
- Import of H-gas from the UK
- Import of H-gas from Germany

Import of LNG

- LNG import via Gate
- LNG import via EET

Supply from gas storage facilities

- Production capacity of Norg UGS
- Production capacity of Bergermeer UGS
- Production capacity of Grijpskerk UGS[35]
- Production capacity of Alkmaar UGS
- Production capacity of L-gas caverns in the Netherlands (Zuidwending, Epe)
- Production capacity of H-gas caverns in Germany
- Capacity of the LNG peakshaver facility

The infrastructure standard assumes a situation where there is a disruption of the single largest gas infrastructure. For the Netherlands, this means that the supply capacity from Norg gas storage facility is not included in the capacity balance.

35 *The capacity used corresponds to the production capacity of the L-gas working gas volume*

3.3 Supply and demand: volume

3.3.1 Bandwidth for the base case

The calculation model GTS uses to substantiate the data provided in the review of the security of the supply of natural gas calculates the gas balance on an hourly basis, with each hour being in balance. This results in both an annual volume balance and the minimum volume that must be withdrawn from gas storage facilities.
The recommendation on the minimum filling target for seasonal gas storage facilities is based on the results arising from the base case, corresponding to a cold gas year.

To account for the uncertainty in gas demand and how this will develop, as well as the uncertainty in the LNG supply profile, several other cases alongside the base case have been defined:

- A case with higher and lower gas demand.
- A case with a seasonal profile in LNG supply.
- A case based on a less cold year.

Higher and lower gas demand

- A case with higher gas demand consists of:
  - supply that is the same as the base case, but with
  - higher transit volume to Germany and
  - higher gas demand in the Netherlands.

Compared to the base case, this case results in a tight volume balance in the Netherlands and more export of seasonal flexibility to Germany. It is assumed that the higher demand in the Netherlands will not result in significantly higher demand for seasonal flexibility given that, according to KEV 2024, this additional demand would primarily come from market segments without a clear seasonal pattern.

- A case with lower gas demand consists of:
  - supply that is the same as the base case, but with
  - lower transit volume to Germany and
  - gas demand in the Netherlands equal to the base case.

This case results in ample volume balance in the Netherlands and less export of seasonal flexibility to Germany.

A quantification of the two cases, for the respective countries, is provided below.

A seasonal profile for LNG supply

In the base case the LNG supply profile is assumed to be flat. As a variant of this (assuming a constant annual volume) a seasonal profile in the LNG supply has been envisioned, to the effect that the LNG supply is higher in winter than in summer.
Sub-section 2.5 provides the reasoning for assuming a flat LNG supply profile in the base case.

A less cold gas year

The minimum filling target for seasonal gas storage facilities is set by the base case, which assumes 1995/1996 as the reference year for a cold gas year; see 2.4.
Eventually, a less cold gas year will serve as the reference year for a cold gas year. To illustrate the potential effect of this shift, the calculation in this edition has also been performed for the 2012/2013 gas year.

Summary of the various cases

Reference: 2026/2027 base case for a cold gas year (1995/1996)				
	Variations on the base case			
	Lower gas demand	Higher gas demand	Possible LNG profile	2012/2013 As a cold year
Gas demand in the Netherlands	0	+24 TWh	0	-
Transit to Germany	-20%	+20%	0	0
	Change compared to base case			
Effect on the volume balance	+	-	0	+
Effect on minimum filling level	-	+	-	-

+ higher, more ample
0 no effect, neutral
- lower, less

3.3.2 Netherlands

Domestic gas demand

The forecast set by the Netherlands Environmental Assessment Agency (PBL) in the KEV 2024 was used as the basis for Dutch gas demand. Gas demand in a cold gas year is based on the temperature dependence of the various offtake categories.
The case with higher domestic gas demand is based on the bandwidth of the IP scenarios drawn up by Netbeheer Nederland. The case with lower domestic gas demand is identical to the base case.
The KEV 2024 forecast and the IP scenarios are explained in more detail in 2.3.

Assumption for 2026/2027 gas year

Domestic gas demand	**Base case**		**Higher gas demand** (tight balance)		**Lower gas demand** (ample balance)	
Type of gas year	Average	Cold	Average	Cold	Average	Cold
Annual volume (TWh)	306	340	329	363	306	340
Seasonal profile	Based on the relationship between gas demand and degree days					

Explanatory notes to the seasonal profile

For each offtake category, the gas demand is calculated based on the effective temperature and the established relationship between the effective temperature and gas demand. This is done on an hourly basis. The demand profile is the sum of the demand in the individual offtake categories.

Trend up to 2031
The KEV 2024 was used for the development of domestic gas demand up to 2031. For the high gas demand case, the trend resulting from the IP scenarios was assumed.

Domestic production
Domestic production is based on the GTS review of the estimated gas from small fields published in 2025[36], which shows the production capacity trend. Based on this the production volume for the 2026/2027 gas year would be 83 TWh.

3.3.3 Norway

Norwegian gas supply to Europe
Norway currently supplies Europe with around 1400 TWh of pipeline gas per year. This volume is expected to decline over the coming years due to the depletion of Norwegian gas fields[37].
The supply of Norwegian gas to Europe follows a profile where the winter supply is 35 TWh higher than the annual average volume. This additional supply provides seasonal flexibility to the north-western European gas market. However, the seasonal supply pattern varies considerably by country, with the UK and Germany being receiving markets.

Norwegian gas supply to the Netherlands
In recent years, Norwegian gas supply to the Netherlands has shown a pattern opposite to seasonal demand, with more volume supplied in summer than in winter. On an annual basis, this has resulted in a demand for gas from the seasonal flexibility facilities in the Netherlands of between 2 and 10 TWh.
Following the loss of gas supplied from Russia, some of the Norwegian volume has been shifted to countries such as Germany. Based on the last two years, the annual volume of supply to the Netherlands comes in at around 117 TWh.
Assuming the looming depletion and unchanged distribution among countries in north-western Europe, this projection appears to be a realistic assumption for gas supply in the coming years. Any higher or lower supply to the Netherlands will be compensated for, such as through changes in the LNG landing points, for example.

Assumption for 2026/2027 gas year

Import from Norway	Base case & higher gas demand & lower gas demand
Type gasjaar	Average & Cold
Jaarvolume	117 TWh
Seizoensprofiel	Flat

Explanatory notes to the seasonal profile
Although recent years show that the Netherlands adds a limited amount of seasonal flexibility to Norwegian imports, with higher offtake during the summer months, in the calculations for this review of the security of supply a completely flat supply of Norwegian gas has been assumed.

36 *https://www.gasunietransportservices.nl/uploads/fckconnector/a954bf1b-3234-5baf-9cdb-0985c8785722/Rapport%20overzicht%20ramingen%20gas%20uit%20Kleine%20Velden%202025.pdf*
37 *https://www.norskpetroleum.no/en/production-and-exports/exports-of-oil-and-gas/#natural-gas*

Trend up to 2031
Unchanged volume is assumed up to the end of the 2030/2031 gas year.

3.3.4 LNG

LNG supply to north-western Europe
LNG supply to north-western Europe is in the range of 1000 to 1200 TWh per year.
The supply of LNG shows a summer/winter profile, with winter supply approximately 100 TWh higher than the annual average volume.

LNG supply to the Netherlands
The Netherlands' two LNG terminals (Gate and EET) give the Dutch gas market direct access to the global LNG supply. The maximum landing capacity during the 2026/2027 gas year is calculated to be 288 TWh per year. In the GTS analysis, the annual LNG volume plays a balancing role, with the largest annual volume being fed into the grid in a cold year with higher gas demand.

Recent years have shown a pattern in LNG supply to the Netherlands where it can be seen that the supply of LNG sometimes removes seasonal flexibility in the Dutch gas market and sometimes provides this market with seasonal flexibility. The related volume varied from -10 TWh to +10 TWh, with Gate generally supplying flexibility and EET removing flexibility.
The availability of flexibility in the LNG supply is discussed in more detail in Section 2.

Assumption for 2026/2027 gas year

Import of LNG	Base case & higher gas demand & lower gas demand
Type of gas year	Average & Cold
Annual volume	Max. 288 TWh
Seasonal profile	Flat, with case: profiled

Explanatory notes to the seasonal profile
In the base case, a flat profile was chosen for the aggregated supply of LNG through Gate and EET. As a case, a seasonal profile was assumed, limited only by the technical capacity of Gate and EET. This case has a maximum of 21 TWh of additional winter volume being supplied in a cold year.

Trend up to 2031
For Gate, the assumption is that a fourth storage tank and a capacity expansion of 5.5 GW will be available by October 2026, increasing Gate's annual import volume from the current 166 TWh to 210 TWh per year.
For EET, it has been assumed that availability of this terminal will be extended after 1 October 2027.

3.3.5 Belgium H-gas

Historical volume and flexibility

Belgium supplies H-gas to the Netherlands each year. In recent years, this volume has varied between 60 TWh and 130 TWh, with the volume being higher in the summer months than in the winter. This means that the Netherlands provides varying degrees of flexibility to the H-gas system in Belgium.

Assumption for 2026/2027 gas year

Import from Belgium	Base case & higher gas demand & lower gas demand
Type of gas year	Average & Cold
Annual volume	107 TWh
Seasonal profile	Based on the relationship with heating degree days

Explanatory notes to the seasonal profile

A temperature-dependent profile has been assumed in the calculations, with imports decreasing when temperatures drop. As a result, imports are concentrated in the summer months, and no additional import volume is available in a cold year.

Trend up to 2031

It has been assumed that the volume will remain constant for the period up to the end of the 2030/2031 gas year.

3.3.6 United Kingdom

Historical volume and flexibility

The UK supplies H-gas to the Netherlands annually through the BBL pipeline, with the average volume in recent years varying between 20 and 30 TWh per year (an average of 24 TWh per year). These volumes are imported in the summer months. This means that the BBL removes seasonal flexibility (between 5 to 15 TWh) from the Dutch gas market.

Assumption for 2026/2027 gas year

Imports from the UK	Base case & higher gas demand & lower gas demand
Type of gas year	Average & Cold
Annual volume	24 TWh
Seasonal profile	Imports only during the summer months

Explanatory notes to the seasonal profile

Based on the actual results in the 2022-2024 period, a profile with the entire import volume of 24 TWh being realised during the summer months has been assumed in the calculations.

Trend up to 2031

For both the import volume and the annual profile, it has been assumed that these will remain constant for the period up to the end of the 2030/2031 gas year. Due to uncertainty in scenarios for the UK gas market, other assumptions are also possible for the net annual volume; see also 2.5.4. These do not, however, affect the outcome of the analysis, which focuses on seasonal flexibility.

3.3.7 Germany H-gas

Historical volume and flexibility

Since the loss of gas supplied from Russia, the Netherlands has become an important transit country for the supply of H-gas to Germany. Natural gas is both imported and exported between the countries, with an annual net supply from the Netherlands to Germany. Recent years, all of which have seen mild temperature trends, show higher transit in summer than in winter. This has increased seasonal flexibility in the Netherlands by around 5 TWh.
However, for a cold gas year, the German grid operators as a whole (united in the FNB Gas association of gas TSOs in Germany), have stated that Germany will rely on seasonal flexibility from the Netherlands, for a volume of between 20 and 25 TWh. This range takes into account supply and demand in Germany, including LNG imports and the use of gas storage facilities in Germany. All assumptions below are based on information from German TSOs, united in FNB Gas.

Assumption for 2026/2027 gas year

Export to Germany	**Base case**		**Higher gas demand** (tight balance)		**Lower gas demand** (ample balance)	
Type of gas year	Average	Cold	Average	Cold	Average	Cold
Annual volume (TWh)	142	158	178	198	106	119
Seasonal profile	1/3 in summer months, 2/3 in winter months					

Explanatory notes to the seasonal profile

A seasonal profile has been assumed for the calculations, with the volume in the six summer months representing one-third of the annual volume.

Trend up to 2031

Compared to the figures in the 2024 review of the security of supply, the exit capacity to Germany has been adjusted downwards. For the 2026/2027 gas year, this concerns an adjustment from approximately 34 GW to 26.3 GW. In the period up to 2027/2028, the exit capacity will increase to 32.8 GW, and in the period up to 2030/2031, it will further increase to 42.8 GW. This means that the exit capacity is more than the figures assumed in the 2024 review of the security of supply.
In the base case, the annual volume will increase from 142 TWh in 2026/2027 to 177 TWh in 2030/2031 and to 196 TWh in a cold gas year.

3.3.8 Export of L-gas to Germany and France (via Belgium)

Historical volume and flexibility

The Netherlands has traditionally exported L-gas to markets in Germany, Belgium, and France. In the run-up to closing the Groningen field, customers in these export markets were being weaned off L-gas and moved to the H-gas system. This transition has now been completed in Belgium. The remaining L-gas exports to Germany and France currently amount to less than 50 TWh per year and this figure is falling rapidly. Exports to France are transported through Belgium.
Seasonal flexibility in the Netherlands is used for the L-gas exports, with the volume currently amounting to around 5 TWh. The forecast assumes that this seasonal flexibility will shift to the H-gas system.

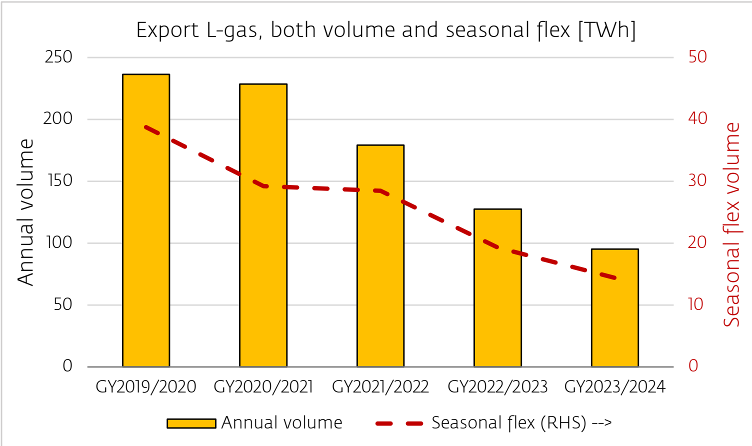


FIGURE 11

History of L-gas exports and seasonal flexibility.

Assumption for 2026/2027 gas year

The table below shows the combined volumes and capacities of L-gas exports to Germany and France, based on information from the respective countries.

L-gas export	Base case & higher gas demand & lower gas demand	
Type of gas year	Average	Cold
Annual volume	40 TWh	44 TWh
Seasonal profile	Based on the relationship between gas demand and heating degree days	

Explanatory notes to the seasonal profile

L-gas exports abroad are temperature-dependent, with the largest offtake of volumes occurring during cold periods. The additional export in the winter months in 2026/2027 will be in the range of 8.4 TWh should this be a cold gas year. Demand for seasonal flexibility in Germany plays an overriding role in this.

Trend up to 2031

L-gas exports to France will cease as of the 2028/2029 gas year; for Germany this will be a year later, from the 2029/2030 gas year.

3.4 Gas storage facilities in the Netherlands

3.4.1 Seasonal gas storage facilities

Depleted gas fields that have been repurposed for gas storage have a relatively large operating volume and follow a predominantly seasonal pattern. Production takes place in the winter months, and the storage facilities are filled in the summer. In the Netherlands, we have three L-gas seasonal gas storage facilities (Norg, Alkmaar and Grijpskerk). Bergermeer is available for the storage of H-gas.

	Gas quality	Working gas (TWh)	Maximum capacity (GW)	
			Production	Injection
Norg	L	59.3	33.4	18.7
Grijpskerk	L	Max. 24.4 (*	25.8	6.4
Alkmaar	L	5.0	15.0	1.7
Bergermeer	H	48.2	27.0	17.9
Total		**136.9**	**101.2**	**44.7**

(* At maximum capacity, approximately 15 TWh of the gas stored at Grijpskerk UGS is available to the L-gas system. The remaining working gas volume has a different calorific value and so must be fed into a separate sub-system, limiting the capacity available.
For the analysis, it has been assumed that the seasonal gas storage facilities shown above will remain available, also with the specifications shown above, and that they will continue to operate according to a seasonal pattern in the coming years.

3.4.2 L-gas caverns for use by the Dutch market

There are four L-gas cavern locations that are exclusively connected to the GTS network. It can be assumed with certainty that the volume and capacity of these caverns are available for the Dutch market. Though caverns can quickly switch between injection and production, they also exhibit a seasonal pattern. The storage capacity of these caverns is limited, meaning their contribution to supplying additional winter capacity is also limited.
The table below shows the specifications of these L-gas caverns.

	Gas quality	Working gas (TWh)	Maximum capacity (GW)	
			Production	Injection
Epe RWE	L	2.6	5.0	2.7
Epe Eneco	L	1.4	3.9	2.0
Epe Nuon	L	2.8	5.9	3.5
UGS EnergyStock	L	3.6	18.0	12.9
Total		**10.4**	**32.8**	**21.1**

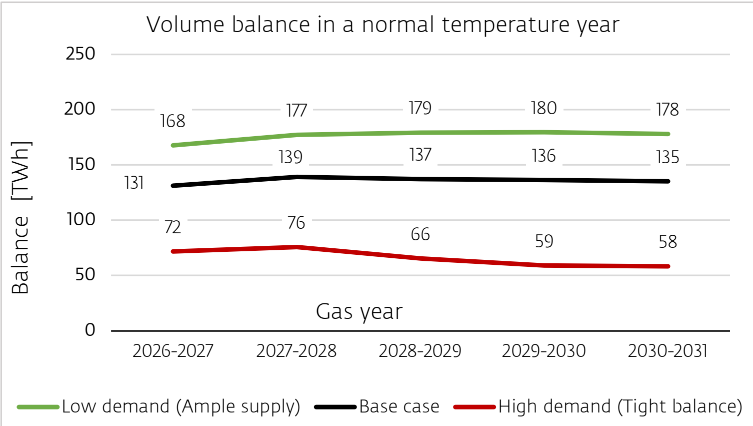
3.4.3 H-gas caverns for use by the Dutch market

Germany has seven H-gas caverns connected to the Dutch market, by way of Oude Statenzijl. Six of these caverns can serve both the Netherlands and Germany, with the other one connected exclusively to the GTS network.
The total production capacity of these gas storage facilities is high, but technical constraints in the German transmission network mean that only a limited portion is available to the German market. The rest is, with some certainty, available to the Dutch market, and this has also in practice been the case historically: there has always been capacity (up to 30.3 GW) available for the Dutch market. The corresponding working gas volume for the Netherlands is estimated to be 20 to 30 TWh. The Netherlands has no influence over the minimum filling level of these caverns and/or control over their operation.
The capacity from these caverns available to meet the Dutch peak demand is based on the peak-demand simulations as described in the ENTSOG Winter Supply Outlook.

4 Results

4.1 Annual volume balance

he base case and the cases with higher and lower gas demand have been calculated for both an average and a cold gas year. For each of the three cases, the annual balance up to the end of gas year 2030/2031 is positive. This means that sufficient annual supply is available to meet annual demand and that import capacity does not need to be used throughout the year.



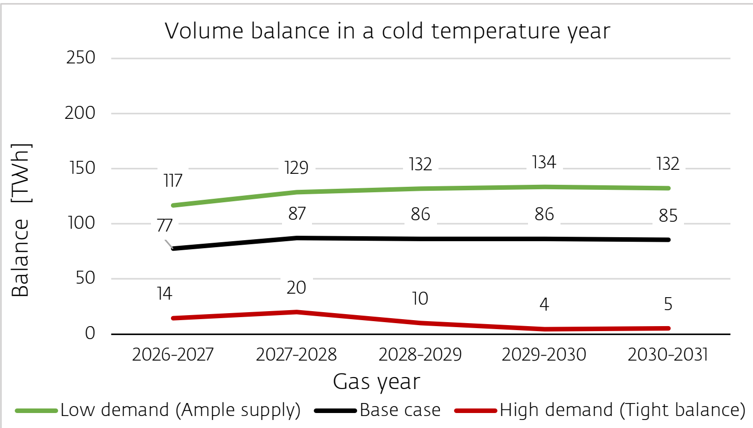


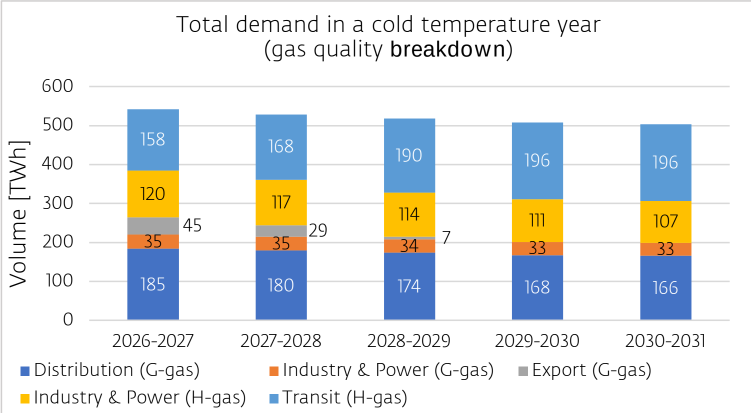
Figure 12

Volume balance in the Netherlands to the end of 2031, for an average and cold gas year.

The volume balance is more positive than was forecast in the 2024 review of the security of supply. This is the net result of:

- Higher domestic gas demand.
- Lower transit volumes to Germany in the first part of the forecast period.
- The assumption that the EET LNG terminal will remain available after 1 October 2027.

Volume demand per category



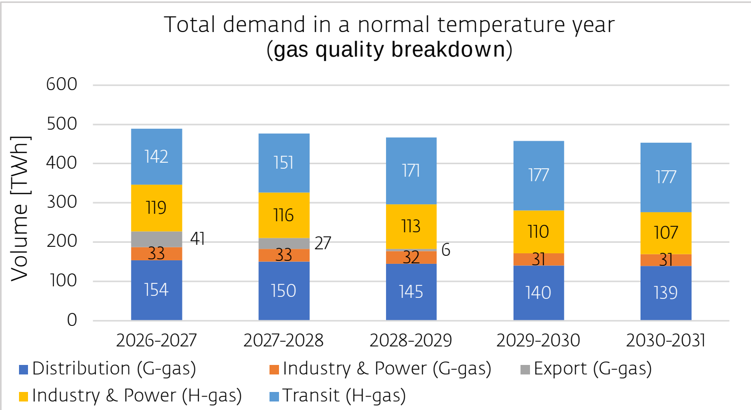


Figure 13

Volume balance in the Netherlands to the end of 2031, broken down per offtake category.

Volume supply per category

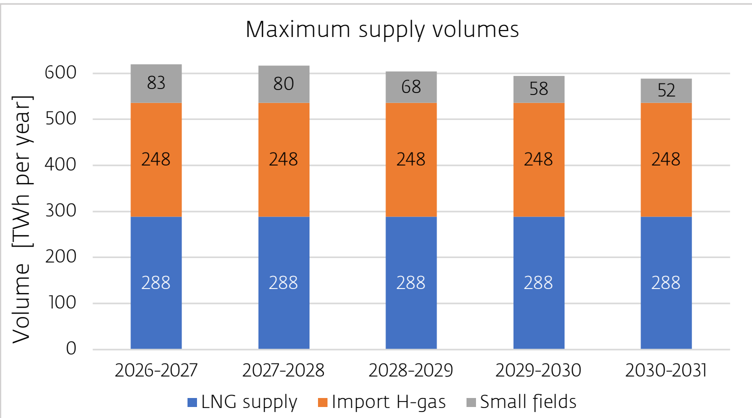


Figure 14

Supply of volume in the Netherlands to the end of 2031.

4.2 Capacity balance on peak demand day

Capacity balance at system level

The capacity balance at system level is positive for the period up to the end of 2030/2031.

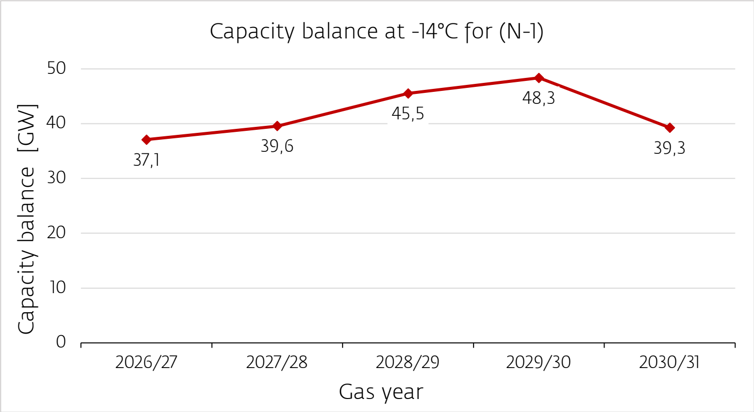


Figure 15
Capacity balance in the Netherlands up to 2031, at system level.

The surplus over the capacity balance for the 2026/2027 gas year has increased from the 14.9 GW forecast in the 2024 review of the security of supply to 34.2 GW in the current review. This is the net result of:

- a downward adjustment of the requested H-gas export capacity to Germany based on discussions with the German TSOs (united in FNB Gas)[38]; and
- an adjustment to the production capacity of the Bergermeer gas storage facility to a higher capacity, based on information from the operator of the facility.

The key adjustments for the period after 2026/2027 are:

- the assumption that the EET LNG terminal will remain available after 1 October 2027; and
- an increase in H-gas export capacity to Germany by almost 10 GW, exceeding the assumed capacity in the previous review.

38 *Vereinigung der Fernleitungsnetzbetreiber Gas e.V: https://fnb-gas.de/en/*

Capacity balance per category

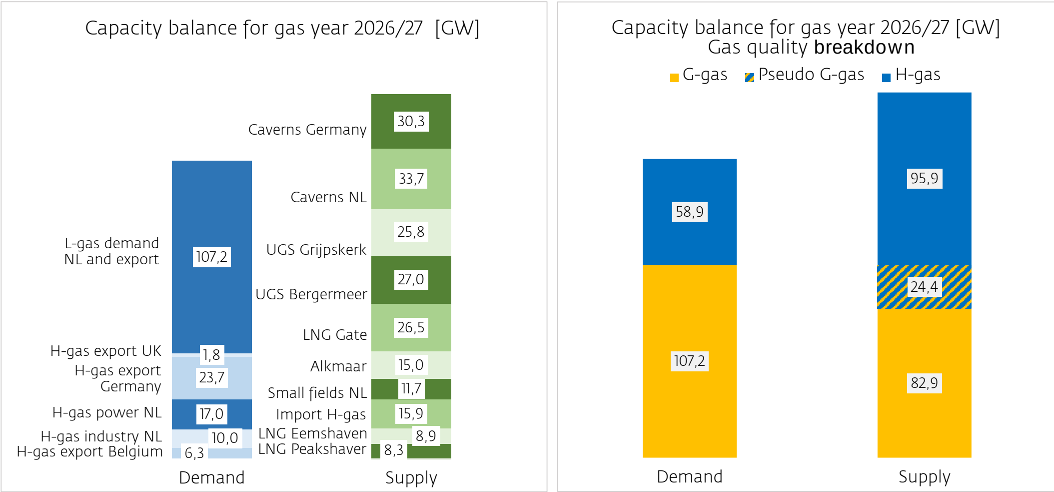


FIGURE 16

Capacity balance in the Netherlands in 2026/2027, broken down by category and gas quality.

4.3 EU gas supply standard: sufficient gas for protected customers

Pursuant to the Dutch Gas Act, GTS must provide a review of the volumes of high-calorific and low-calorific gas and the associated capacities required to supply gas to end users in the Netherlands in the three situations described in the EU gas supply standard.
These three situations are described in detail in 3.1.

1. Seven-day peak demand: 13 TWh from seasonal gas storage facilities

The required volume is determined based on the average effective daily temperature of -10.2°C (as determined by the Royal Netherlands Meteorological Institute) continuing over a seven-day cold spell, which occurs with a statistical probability of once every 20 years.

Balance 7-day peak demand		**Volume (TWh)**		**Capacity (GW)**
Effective daily temperature -10.2°C	G-gas	H-gas	Total	Period average
Gas demand from				
protected customers	7.0	0	7.0	42
▶ incl. domestic customers	10.9	4.3	15.2	91
▶ incl. export	13.4	9.7	23.1	137
Gas supply				
From production, import and LNG			10.6	63
Required supply from seasonal gas storage facilities			**12.5**	74

Under the specified circumstances this is deemed to be a regular situation and not an emergency situation, meaning that domestic non-protected end users may not be disconnected. Also, pursuant to the SoS Regulation, transit to neighbouring Member States without disconnection or reduced supply must be taken into account. This means that it must remain possible to supply the entire gas demand, comprising both domestic consumers and exports.
To meet gas demand, after deducting supply from production and imports an additional 12.5 TWh in supply is still required. Supplying this volume from seasonal or other gas storage facilities is an obvious and effective measure, given the availability of sufficient gas at the start of the winter period. The transmission capacity of the gas storage facilities is more than sufficient to handle the supply of the required 74 GW; see 3.4.

2. Thirty days with high gas demand: 45 TWh from seasonal gas storage facilities
The required volume is determined based on the average effective daily temperature of -5.7°C (as determined by the Royal Netherlands Meteorological Institute) continuing over a 30-day cold spell, which occurs with a statistical probability of once every 20 years.

Balance 30 days of high gas demand	Volume (TWh)			Capacity (GW)
Effective daily temperature -5.7°C	G-gas	H-gas	Total	Period average
Gas demand from				
protected customers	25.1	0	25.1	35
▶ incl. other domestic customers	39.7	17.5	57.2	79
▶ incl. export	50.0	40.3	90.3	125
Gas supply				
From production, import and LNG			45.4	63
Required supply from seasonal gas storage facilities			**45.0**	62

To meet the total gas demand of 90 TWh, after deducting supply from production and imports an additional 45 TWh in supply is still required. Supplying this volume from a seasonal gas storage facility is an obvious and effective measure. The transmission capacity of the seasonal gas storage facilities is more than sufficient to handle the supply of the required 62 GW; see 3.4.

3. Thirty days of average winter, with disruption: 44 TWh from seasonal gas storage facilities
According to the Royal Netherlands Meteorological Institute, a period of 30 days under average winter conditions corresponds to an average effective daily temperature of +3.6°C.
The disruption is defined as the disruption of Gate, the facility (infrastructure) that supplies the largest volume under average winter conditions.

Thirty day balance, with disruption		**Volume (TWh)**		**Capacity (GW)**
Effective daily temperature +3.6°C	G-gas	H-gas	Total	Period average
Gas demand from				
protected customers	14.3	0	14.3	20
▶ incl. other domestic customers	23.4	15.6	39.0	54
▶ incl. export	32.9	37.7	70.6	98
Gas supply				
From production, import and LNG			26.3	37
Required supply from seasonal gas storage facilities			**44.3**	62

To meet the total gas demand of 71 TWh, after deducting supply from production and imports an additional 44 TWh in supply is still required. Supplying this volume from seasonal gas storage facilities is an obvious and effective measure. The transmission capacity of the seasonal gas storage facilities is more than sufficient to handle the supply of the required 62 GW; see 3.4.

In summary
To meet the 'gas supply standard' as set out in the EU security of gas supply regulation, the largest volume of the three sub-standards must be available in the seasonal gas storage facilities. Based on the second sub-standard, i.e. 'any period of 30 days of exceptionally high gas demand', it follows that 45 TWh must be available at the beginning of the last winter month of 2026/2027, with an average capacity of 62 GW.

4.4 Filling target for Dutch seasonal gas storage facilities

4.4.1 Filling target

The filling target for gas storage facilities at the beginning of the 2026/2027 gas year has been set at 115 TWh. This volume meets the criteria for security of gas supply.
This filling target was determined based on the net demand for additional winter volume, as described in 2.5, applying the assumptions of the base case, and assuming a cold gas year (1995/1996).
Achieving the filling target of 115 TWh would also fulfil the obligation arising from:

- the EU filling target, and
- the gas supply standard.

In accordance with the latter, at least 45 TWh must be available in the seasonal gas storage facilities at the beginning of the last winter month; see 4.3.

This volume of 115 TWh comprises:

- 57.1 TWh for Dutch consumers,
- 8.3 TWh for the export of L-gas to Germany and France, and
- 49.4 TWh for the import and transit of H-gas.

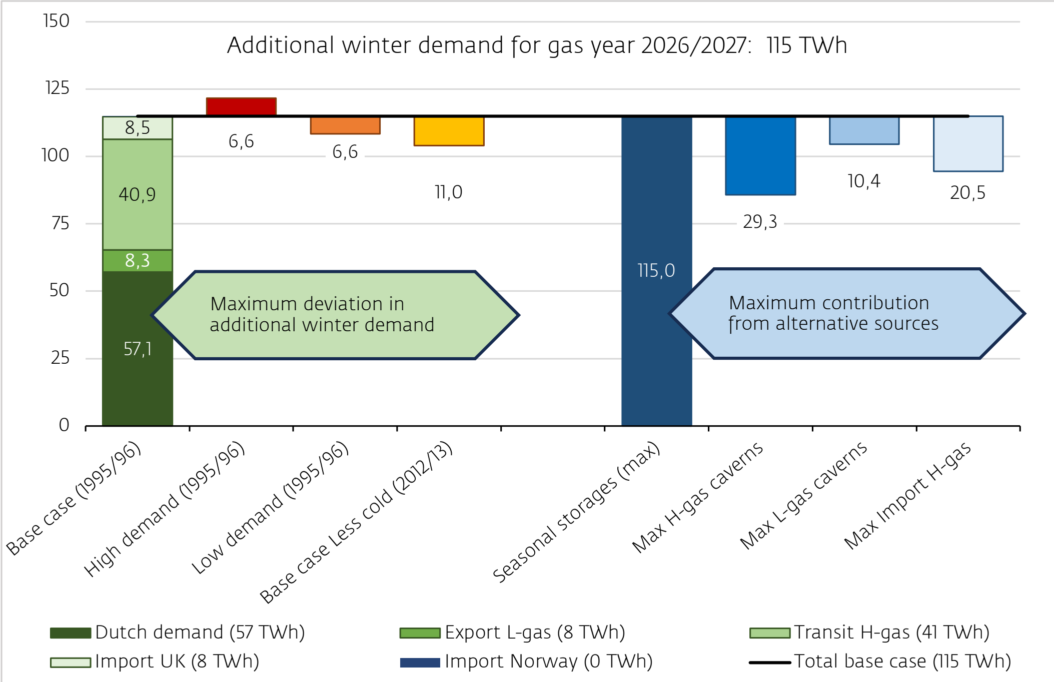


FIGURE 17

Supply and demand for additional winter volume in a cold year, including the effect of deviating principles.

4.4.2 Principles with regard to the demand side

The leading principle is the base case, which assumes a cold year and results in a filling target of 115 TWh for 2026/2027. Deviating assumptions and principles impact the demand for seasonal flexibility. The following gives an indication of the impact of this on the demand for seasonal flexibility.

- The impact of a case with lower demand is -6.6 TWh, and with higher gas demand this is +6.6 TWh.
- Using the base case with the less-cold climate year 2012/2013, the effect on the fill target is approximately -11 TWh.

4.4.3 Principles with regard to the supply side

The required supply is determined by the demand for seasonal flexibility. When the required gas is supplied from seasonal storage facilities, the requirement for security of supply is met, as stated in 2.5.3. Two aspects are important here, however:

- Gas stored in caverns is generally used for short-cycle imbalances. Historical gas years show that the capacity of a number of cavern facilities is also used to provide seasonal flexibility; this applies both to the L-gas caverns in the Netherlands and Germany and the H-gas caverns in north-western Germany. The *maximum* contribution from L-gas and H-gas caverns is 10 TWh and 29 TWh, respectively. However, it cannot be assumed with certainty that this will also be the case in the coming years.

- The base case assumes a flat profile in the LNG supply reaching the Dutch market. The case where LNG can deliver a seasonal profile, limited by the technical capacity of Gate and EET, has a maximum of 21 TWh being supplied through LNG.

4.4.4 Developments in demand for seasonal flexibility

Over the next five years, the demand for seasonal flexibility will decrease from 115 TWh in the 2026/2027 gas year to approximately 100 TWh in the 2030/2031 gas year.
This decrease is the net result of:

- a gradual decline in domestic gas demand,
- the phase-out of L-gas exports,
- an increase in the transit of H-gas to Germany.

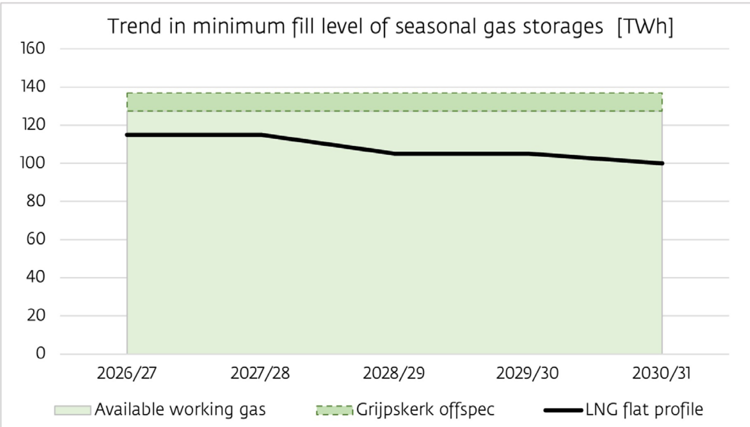


Figure 18
Filling target at the start of each gas year, based on a cold gas year (1995/1996).

4.5 High and low calorific gas

4.5.1 Gas quality trend

Natural gas is a natural product with a variable composition. For various gas flows, this means a range of possible gas qualities and calorific values. The Wobbe index is a measure of gas quality used as a safety parameter to assure safe application (combustion). With the depletion of small fields (of low calorific gas) and the increased supply from LNG terminals (high calorific gas), the average Wobbe index has increased in recent years. GTS has sufficient blending and conversion capacity available to convert the anticipated varying gas qualities to the required specifications.

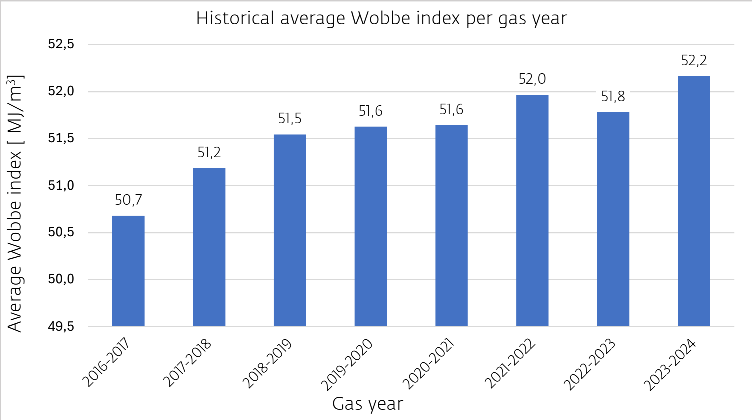


FIGURE 19
Historical average Wobbe index of gas converted in the GTS system per year.

4.5.2 Nitrogen and production of pseudo L-gas

With the closure of the Groningen field in April 2024, the Netherlands no longer has a natural source of L-gas. However, an L-gas market still exists in the Netherlands, as well as in Germany and France. This market consists primarily of homes, where demand is temperature-dependent, and small industrial parties. All L-gas is produced by blending nitrogen into H-gas, with the result being 'pseudo L-gas'. In recent years, through the increased utilisation of nitrogen plants and the expansion of these facilities, it has been possible to phase-out and ultimately close the Groningen field. The decrease in nitrogen use over the past two years can be attributed to diminishing domestic and international demand for L-gas. This is due both to these being above-average warm years and the changeover of L-gas markets in export countries to H-gas. The L-gas storage facilities in Alkmaar, Grijpskerk, Norg, Zuidwending, and Epe are filled with pseudo L-gas in the summer.

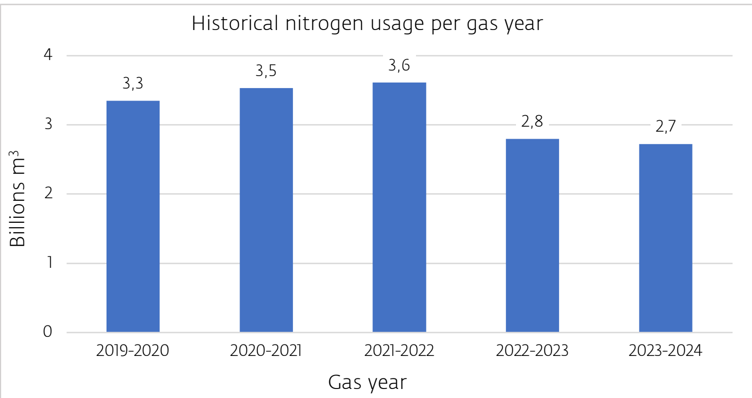


FIGURE 20
Historical nitrogen volumes (in bcm) used for pseudo L-gas production.

Given the decline in L-gas export demand, the need for converted H-gas will decrease in the coming years.

GTS currently uses five nitrogen plants and one cavern:

Nitrogen plant	Capacity (m^3/hr)
Wieringermeer	295,000
Ommen	146,000
Zuidbroek II	180,000
Heiligerlee	190,000
Pernis	60,000
Zuidbroek I	15,000

The planned nitrogen capacity available to the market varies per period, with this set at 621,000 m^3/h during the winter months of November to March inclusive. The remaining capacity serves as a backup for possible disruptions to plants. Maintenance is scheduled for the nitrogen plants during the other months of the year, when the expected use of the plants is lower. As a result, the planned nitrogen capacity decreases by 60,000 m^3/h in April and October and by 120,000 m^3/h in May to September inclusive.
For the current year, the GTS website shows the maintenance schedule for the quality conversion plants. It also shows whether there is reduced capacity at certain network points. Actual disruptions leading to restrictions at network points are announced via REMIT notifications.

GTS expects the available nitrogen capacity and volume to be sufficient to produce an adequate volume of pseudo L-gas, even for H-gas with a higher Wobbe index than is currently the case.

4.5.3 Use of L-gas storage facilities

Space heating dominates the demand for L-gas, making this demand highly temperature-dependent. Consequently, demand for L-gas has a strong seasonal pattern, with L-gas seasonal gas storage facilities playing a key role in supplying additional winter volume.
On the other hand, demand for L-gas for export to neighbouring countries is on the decline due to customers in these countries being switched from L-gas to H-gas. The changeover in Belgium has been fully completed and Germany and France will be fully converted by 2029/2030, at which point the demand for L-gas abroad will cease to exist. This changeover to H-gas is not happening in the Netherlands, though, meaning the L-gas market will continue to exist; the market will, however, decline over time as sustainability efforts progress.

In the long term, the use of L-gas storage facilities will be reduced in line with the declining size of the L-gas market. However, within the timeframe of this review of the security of supply, all L-gas storage facilities will be fully operational for all described cases in an average or cold winter. This takes into account current and future L-gas production from small fields and the operational minimum flow of the nitrogen plants. GTS is continuing to monitor the options and limitations regarding the use of L-gas storage facilities.

Colophon

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