Menon Economics

Demand for Norwegian Natural Gas in 2040

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Preface

On assignment for Greenpeace Norway Menon Economics has conducted an analysis of future demand for Norwegian natural gas in 2040. The aim of the project has been to assess how the European Commission's July 2025 proposal for a 2040 target of a 90% reduction in net greenhouse gas emissions may affect the long-term demand for natural gas, and to explore the implications for Norwegian gas exports. The target was proposed by the European Commission as an amendment to the European Climate Law. The analysis is based on publicly available data and energy system scenarios, with particular emphasis on the results presented in the European Commission's impact assessment for the 2040 climate target.

Even Winje has been responsible for the analysis, with Piotr Śpiewanowski serving as project leader. Frida Aulie, Andreas Becker Cappelen and Inger Nielsen Hole have contributed as members of the project team.

We thank Greenpeace for an exciting assignment. Menon is responsible for all content in the report.

August 2025

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About Menon Economics

Menon Economics analyses economic challenges and provides advice to businesses, organisations, and government agencies. We are a consultancy operating at the intersection of economics, policy, and market.

Menon combines expertise in economics and related disciplines, including cost-benefit analysis, economic valuation, industrial and competition economics, strategy, finance, and organisational design. We apply research-based methods in our analyses and collaborate closely with leading academic institutions across a range of disciplines.

About Greenpeace Norway

Greenpeace is the world's largest independent environmental organisation, active in over 40 countries. Founded in 1971, it uses peaceful protest, science, legal action and public campaigning to address global environmental issues.

Its work focuses on climate change, biodiversity, pollution, deforestation, and ocean protection. Greenpeace promotes solutions through non-violent direct action and advocacy.

To maintain independence, it accepts no funding from governments, corporations, or political parties, relying solely on individual donations.

Executive summary

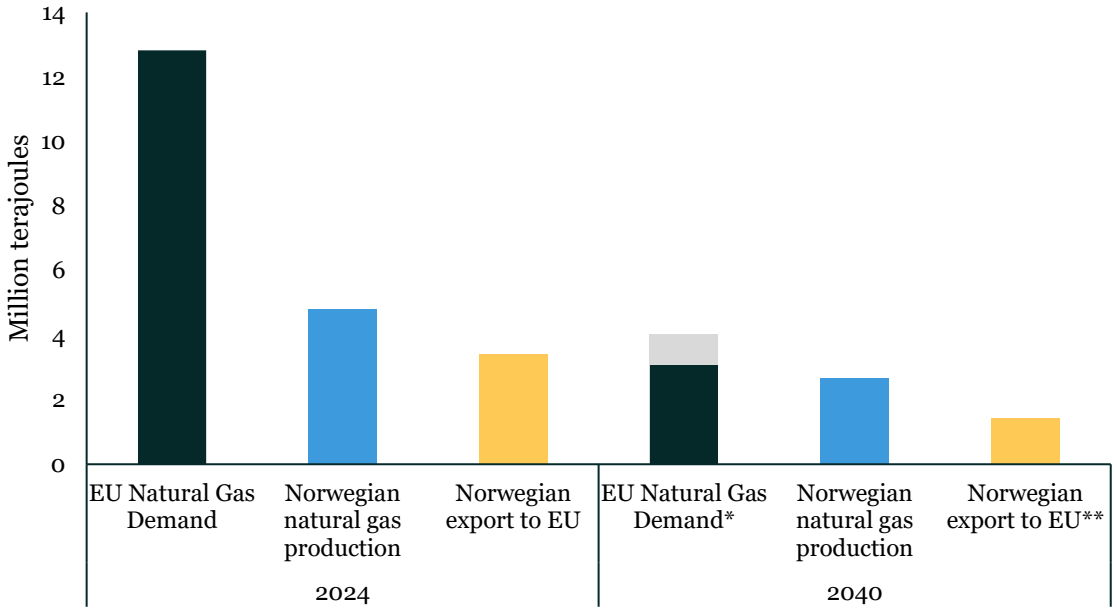
In July 2025, the European Commission proposed a new climate target to reduce net greenhouse gas emissions by 90 percent by 2040 compared to 1990 levels. This builds on the existing legally binding goal of at least a 55 percent reduction by 2030 and the aim of climate neutrality by 2050. If adopted, it would significantly strengthen the EU's climate policy framework. Meeting the target would require annual emission reductions in the 2030s to be roughly three times faster than the pace achieved between 2010 and 2023. This would lead to a sharp reduction in the role of fossil fuels, including natural gas. In this report, we assess what these developments could mean for future EU gas demand and examine the consequences for Norway as a major supplier.

Norway is the world's ninth largest producer of natural gas and the fourth largest exporter. In 2024, it delivered a record 4.6 million terajoules, equivalent to 124 billion cubic metres, with nearly all volumes exported via pipelines. Since 1990, production has grown nearly fivefold, but official forecasts indicate that it has now reached its peak, and our analysis of official data suggests it will decline gradually to around 55 percent of current levels by 2040. Maintaining output even at these reduced levels will depend on the profitability of new investment, which is closely tied to developments in key markets such as the EU. About three quarters of Norwegian gas exports go to EU countries, with the remainder delivered almost entirely to the United Kingdom, making Norway highly exposed to tightening climate policies in both markets.

Natural gas has helped the EU replace more carbon-intensive fuels such as coal, but its share in the energy mix is shrinking. Gas still accounts for around a quarter of total EU energy use, with power generation, households, and industry as the main consumers. Since 2021, demand has fallen by about 20 percent, driven by high prices, growing renewable generation, and improved efficiency. Nearly 90 percent of EU gas is imported, with Norway supplying 33 percent, and LNG imports have grown rapidly to cover close to 40 percent of imports. Norway's share of EU gas imports has increased in recent years, particularly following the sharp reduction in Russian pipeline deliveries after the invasion of Ukraine. Thanks to large investments in recent years, the EU's LNG regasification capacity now exceeds 10 million TJ per year, equivalent to more than 85 percent of its current import needs.

The European Commission's impact assessment for the 2040 target projects that total demand for natural gas will fall sharply, driven by lower overall consumption of gaseous fuels and rising biogas and biomethane output, which could supply about one third of total demand by 2040. Under a 90 percent emissions reduction pathway, fossil gas demand would drop to around 3 million TJ by 2040, or roughly 4 million TJ if flexibility mechanisms for carbon credits are fully used, as shown in Figure A.

Figure A: Natural gas demand in the EU and production in Norway in 2024 and 2040. Source: Menon Economics, European Commission and Norwegian Offshore Directorate



* The black segment represents natural gas demand without international credits, while the grey segment shows the additional demand enabled by the credits.
** Norwegian export to the EU, assuming a 35 percent market share.

Implications for Norwegian Natural Gas Demand

According to our analysis, the respective production plans and demand scenarios imply that Norwegian production in 2040 could, in principle, meet 66 to 86 percent of the EU's remaining fossil gas demand. In practice, however, the EU is unlikely to allow such a high level of dependence on a single supplier, particularly given its emphasis on diversifying energy imports. If Norway were to maintain its current market share in the EU, this would correspond to supplying about 1.1–1.4 million TJ in 2040, or around 40–50 percent of its total output in 2040. The UK, which currently takes about a quarter of Norwegian exports, is also expected to cut gas consumption even more sharply under its own climate targets. If UK demand for natural gas were to fall at a rate similar to that projected for the EU, Norwegian exports to the UK could decline to around 0.4 million TJ by 2040. Maintaining current market shares in both the EU and the UK would leave a demand gap, meaning the share of projected production that would need to find new markets, of roughly 0.9 million TJ, equalling about a third of Norway's projected production.

This surplus would need to be placed on the highly competitive global LNG market, where Norway will face expanding supply from the United States, Qatar and other major producers, without the cost advantage it enjoys in supplying the EU via pipelines. Norwegian gas will also face continued competition from other non-Russian pipeline exporters such as Algeria and Azerbaijan, which are likely to seek to maintain or expand their foothold in the European market, as well as from increasing EU biomethane production that directly displaces fossil gas demand.

In summary, if the EU adopts the proposed 90 percent emissions-reduction target for 2040, the long-term outlook for Norwegian natural gas will be characterised by falling demand and rising competition. This could depress prices, reduce revenues, and increase the likelihood that the new upstream

investments needed to achieve the Norwegian Offshore Directorate's production projections become stranded assets.

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1 Introduction and background

In July 2025, the European Commission proposed a new legally binding climate target: a 90 percent reduction in net greenhouse gas emissions by 2040, compared to 1990-levels. The proposal, which must still be approved by the European Parliament and Council, represents strengthening of the EU's climate policy framework. It amends the EU Climate Law, which previously included binding targets only for 2030 (at least a 55 percent reduction) and 2050 (climate neutrality). By introducing a 2040 milestone, the Commission aims to place the Union on a clearer and more predictable path toward net-zero emissions, with the aim to meet its requirements under the UN Paris Agreement. According to the Commission, setting the target now is intended to provide "predictability and a clear indication of the transition pathway needed,"[1] enabling governments, industries, and investors to make long-term decisions aligned with climate objectives.

The 2040 target is not only a climate milestone but also closely aligned with the EU's evolving industrial strategy and renewed focus on long-term competitiveness. As highlighted in the recent Draghi report on European competitiveness (2024), Europe faces the dual challenge of decarbonising its economy while ensuring that industry remains competitive in a global market. Although electricity and gas prices have fallen from their 2022 peaks, they remain significantly higher than in competing economies such as the United States and China. The Draghi report argues that accelerating the clean energy transition could help to reverse this trend by lowering long-term energy costs, enhancing investment predictability, and reducing dependence on external energy suppliers. At the same time, the report recognises that maintaining energy system reliability during the transition may require a continued role for gas in the near to medium term.[2]

Achieving a 90 percent reduction in net greenhouse gas emissions will require deep decarbonisation across all sectors of the economy, significantly narrowing the space for unabated fossil energy in the EU energy mix. However, the full impact of the target is dampened by the Commission's proposal to allow the use of certain flexibilities in achieving these emission reductions. These include a limited use of international carbon credits and domestic carbon removals. Specifically, up to 3 percent of the EU's 1990 emissions level may be offset through high-quality international credits from 2036.[3]

The implications of the 2040 target extend beyond the EU itself and pose challenges for external energy suppliers. As the EU moves toward deep decarbonisation and reorients its energy system around renewables, low-carbon gases, and greater efficiency, the long-term role of unabated natural gas is expected to decline. This is particularly relevant for Norway, which in 2024 became the EU's largest supplier of natural gas, accounting for one-third of total imports (European Council, 2025). The EU now accounts for nearly three-quarters of Norwegian gas exports, closely linking Norway's gas sector to European demand. These developments raise important questions for Norwegian policymakers: How much fossil gas will the EU consume in 2040? And what share of that demand could realistically be met by Norwegian exports?

[1] European Commission (2025). Available here.
[2] The report also points to other structural challenges, such as higher CO_2 prices, fragmented taxation across Member States, and limited export infrastructure, as key contributors to Europe's higher energy costs, and calls for greater policy coordination across Member States.
[3] European Commission (2025). Available here.

This report explores these questions by assessing the projected evolution of EU gas demand under the EU's 90 percent emission reduction target, and analysing the implications for Norway.[4] The analysis is based on publicly available data and scenario modelling, with a particular focus on the European Commission's impact assessment. (European Commission, 2024) The remainder of the report is structured as follows: Section 2 reviews Norway's role as a gas producer and exporter; Section 3 provides an overview of historical and current gas use in the EU; Section 4 outlines relevant climate targets and policy instruments; Section 5 presents future demand scenarios; and Section 6 discusses Norway's competitive position and potential role in the future European energy mix.

[4] For implications of other emission reduction pathways for Norwegian natural gas production see a recent Menon's report on the topic (Menon Economics, 2025).

2 Norway's role as a natural gas producer

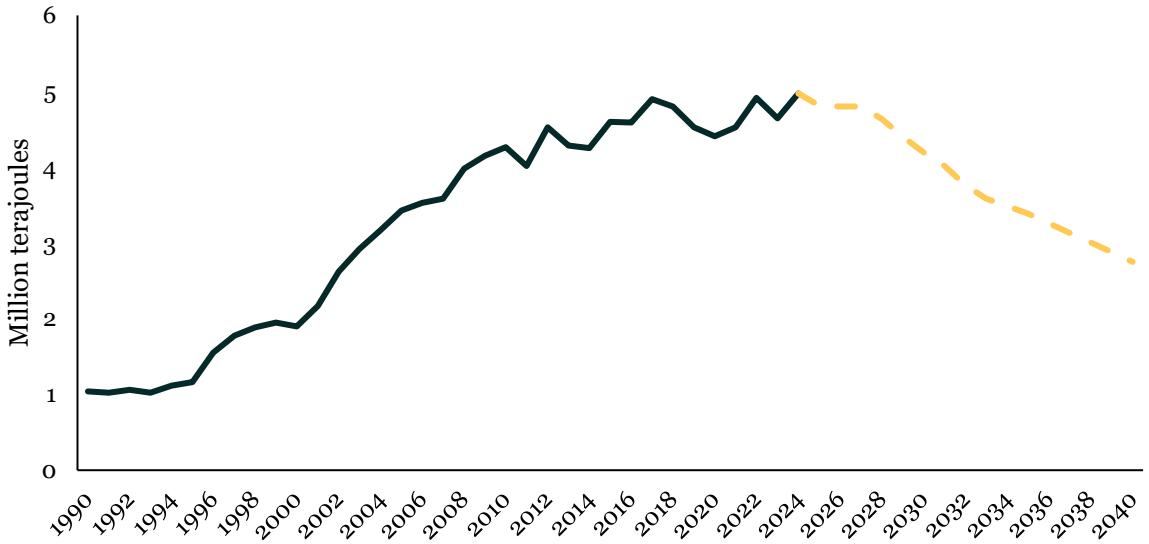
Norway is a major global supplier of natural gas, accounting for approximately 10 percent of global exports. It ranks ninth in production and fourth in exports worldwide. In 2024, Norway reached a record output of 124 billion cubic metres. While gas production has grown fivefold since 1990, official forecasts suggest it peaked in 2024 and is expected to decline gradually, falling to around 55 percent of current levels by 2040. Nearly three-quarters of Norwegian gas exports are delivered to EU countries, with most of the remainder going to the United Kingdom. This makes Norwegian gas exports highly dependent on European demand and increasingly exposed to the tightening climate policies of both the EU and the UK.

Norway stands for a significant share of global natural gas production and exports. In 2024, Norway achieved a record production of approximately 124 billion cubic metres (bcm) of natural gas, equivalent to nearly 5 million terajoules. This ranks Norway as the ninth-largest natural gas producer globally and the fourth-largest exporter, behind only the United States, Russia, and Qatar.[5]

Over the past three decades, Norway's natural gas production has grown nearly fivefold since 1990. According to the Norwegian Offshore Directorate (NOD), output is now at or near its peak and is expected to enter a gradual decline from the late 2020s, with a steeper drop after 2028. [6] Our analysis of the Norwegian Offshore Directorate data suggests that by 2040, production could fall to around 55 percent of the 2024 peak.[7] By 2035[8], about 70 percent of this output is expected to come from fields already in production, while about 10 percent is projected to come from new discoveries, which would require additional exploration investment. Over time, the share from new discoveries is expected to increase as existing reserves are depleted. The total projected production over the next 15 years exceeds by 20 percent the current level of natural gas reserves, meaning that future output will depend on the profitability of new investment, which is be highly correlated with the development in in key markets such as the EU.[9]

[5] Norwegian Petroleum (2025). Exports of oil and gas. Available here.
[6] Norwegian Petroleum (2025). Exports of oil and gas. Available here
[7] Menon analysis based on information from the Norwegian Offshore Directorate, compiled by Norskpetroleum.no - a website managed jointly by the Ministry of Energy and the Norwegian Offshore – on projected natural gas production until 2035 (available here), and on the Directorate's estimates for total hydrocarbon production on the Norwegian Continental Shelf for the period 2035–2040 (Norwegian Offshore Directorate, 2025). Since 2035 is the last year for which separate natural gas projections are available, when using data on total carbohydrate production we assume that natural gas production beyond 2035 follows the same trend as total production.
[8] The last year for which such a breakdown is available.
[9] According to the Norwegian Offshore Directorate, natural gas reserves as of 31 December 2024 were 1,260 bcm (available here), while our analysis suggests total production of 1,520 bcm in the years 2025–2040.

Figure 2-1: Historical and forecasted natural gas production in Norway. Source: Norwegian Petroleum, Norwegian Offshore Directorate and Menon Economics[10]



Practically all of Norway's gas production is exported: around 95 percent is transported via pipelines, and the remaining 5 percent as liquefied natural gas (LNG) from the Melkøya/Hammerfest facility. Pipeline exports flow through Gassco's roughly 8,800-kilometre subsea network, which delivers gas to major receiving terminals - Zeebrugge (Belgium), Dunkerque (France), Dornum and Emden (Germany), Easington, Teeside and St Fergus (UK) - as well as, since late 2022, through the Baltic Pipe via Nybro (Denmark) to Poland. [11] In 2024, roughly three-quarters of Norwegian gas exports were delivered to EU member states, mostly via pipeline, while most of the remainder went to the UK. Today, Norwegian exports accounts for 33 percent of EU gas imports.[12]

Norwegian gas exports are therefore closely tied to demand in Europe, particularly in the EU and the UK. However, as both regions have adopted more ambitious climate goals - such as the EU's target of a 90 percent reduction in greenhouse gas emissions by 2040 and the UK's Net Zero Strategy - natural gas consumption is expected to decline. At the same time, global LNG supply continues to expand. This raises a question for the coming decades: what role will Norwegian gas play in Europe's future energy mix given increasing supply of LNG from countries like the US, Qatar or UAE or Canada?

[10] Historical data and forecasts up to 2035 are based on information from the Norwegian Offshore Directorate, compiled by Norskpetroleum.no. For subsequent years, the Directorate only provides scenario-based projections for aggregate total carbohydrate production on the Norwegian Continental Shelf (Norwegian Offshore Directorate, 2025). See footnote 7 for details.
[11] Gassco. Available here.
[12] European Council (2025). Available here.

3 Natural gas demand in the EU

Natural gas remains a key part of the EU's energy mix, accounting for around one-quarter of total consumption, with power generation, households, and industry as the largest users. After decades of growth, demand has dropped sharply since 2021 - falling by about 20 percent across all major sectors - driven by soaring prices, expanding renewable generation, and improvements in energy efficiency. Nearly 90 percent of the EU's gas is imported, with Norway supplying around one-third and increasing its share following the war in Ukraine. At the same time, LNG has grown even more rapidly, now covering close to 40 percent of imports. Large investments in regasification infrastructure since 2022 have pushed the EU's LNG import capacity above 10 million TJ, enough to meet more than 85 percent of its current import needs.

This chapter looks at gas demand in the EU from a historical perspective, focusing on how consumption has developed across different sectors and end-uses.[13]

3.1 Gas use by sector

In 2024, total natural gas consumption in the EU reached 12.8 million TJ, accounting for approximately 24 percent of the EU's total energy use of 54 million TJ. The power generation sector was the largest consumer, responsible for 34 percent of total gas demand. Households and industry each accounted for 24 percent, primarily for heating and process energy, respectively. Commercial, public services, and transport made up a combined 14 percent, while non-energy use in industry - such as chemical feedstocks - contributed the remaining 3 percent.

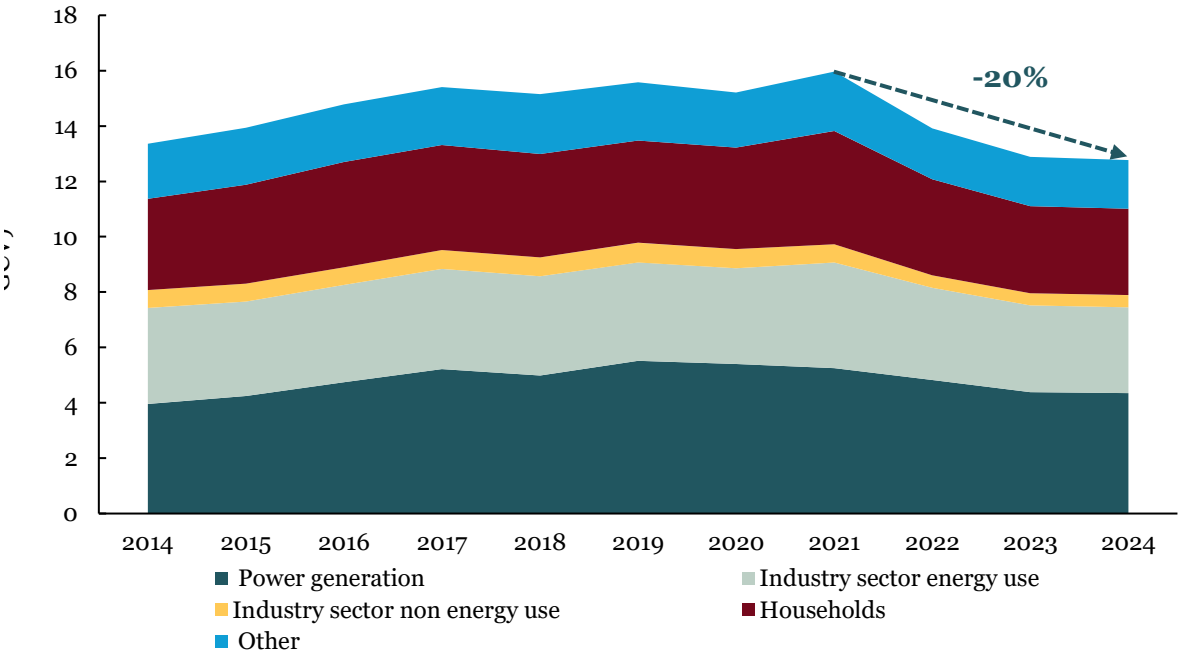
Since 1990, natural gas consumption in Europe has experienced an overall growth, albeit with significant fluctuations. Between 1990 and 2010, demand increased by 45 percent, driven by economic expansion, fuel switching, and greater use in power generation and industry. This upward trend reversed between 2010 and 2014, with consumption falling by over 20 percent, mostly in power generation due to relatively high natural gas prices and low emission costs.[14] From 2014 to 2021, demand gradually recovered, increasing by nearly 20 percent. A sharp rise occurred in 2021, largely due to a rebound in economic activity following the COVID-19 pandemic, which temporarily boosted energy demand. However, between 2021 and 2024, gas consumption declined by 20 percent, equivalent to 3.2 million TJ, primarily due to soaring gas prices following Russia's invasion of Ukraine. In addition, the EU introduced several emergency measures to reduce EU's dependency on imported gas.[15]

Gas consumption patterns across EU sectors have evolved unevenly since 2014, as illustrated in Figure 3-1. From an overall increase in total consumption from 2014, we see a clear shift from 2021 and

[13] It examines both energy and non-energy uses of gas, "Energy use" refers to gas that is combusted to produce heat, electricity, or mechanical energy - commonly used in households, power generation, and industrial processes.
"Non-energy use" refers to gas used as a raw material in industrial processes, where it is not burned but instead transformed into products such as plastics, fertilizers, or chemicals.
[14] Sandbag (2016). Review of European Power Sector in 2015. Available here.
[15] In 2022, the EU adopted emergency energy measures under Article 122 of the TFEU, which allows fast-track action in times of energy crisis. In this context, the EU introduced a gas demand reduction target as part of the REPowerEU Plan, calling on Member States to voluntarily reduce gas consumption by 15percent over six months (from August 2022). Member States collectively met and exceeded the target, achieving an average reduction of around 19percent compared to the average of the previous fire years (Commission Staff Working Document (2023). *Analysis of coordinated demand reduction measures for gas*. Available here.

onwards, where total gas consumption fell by 20 percent between 2021 and 2024. In the power generation sector, gas use increased by 40 percent between 2014 and its peak already in 2019, largely due to a shift from coal to gas and favourable policy support. However, between 2019 and 2024, consumption fell by 21 percent. This decline was driven by the rapid expansion of renewable energy, reduced electricity demand during the COVID-19 pandemic, and rising gas prices following Russia's invasion of Ukraine. Those factors together have made gas-fired power generation less competitive. Non-energy use in industry, such as chemical feedstocks, also peaked in 2019 with a modest 10 percent increase from 2014, followed by a sharp decline of nearly 40 percent by 2024. Other sectors, including energy-related industrial use, households, and the 'other' category (primarily commercial and public services), saw their gas consumption peak in 2021. Between 2014 and 2021, industrial energy use rose by 10 percent, household consumption by 24 percent, and 'other' sectors by 8 percent. From their respective peaks to 2024, the gas consumption in each of these sectors experienced a decline of approximately 20 percent, influenced by factors such as increased energy efficiency, adoption of alternative heating solutions, and economic adjustments to elevated natural gas prices in the last few years.

Figure 3-1: Total consumption of natural gas in EU27 from 2000 to 2023, divided into sectors. The dotted arrow marks the reduction in total consumption between 2021 and 2024. Source: Eurostat, nrg_cb_gas and nrg_cb_gasm



At the country level, Germany experienced the most significant reduction in natural gas consumption since 2021, cutting usage by around 760,000 TJ - a 20 percent decrease. This sharp decline reflects a broader energy transition, marked by increased reliance on renewables, improved energy efficiency, and efforts to reduce dependency of Russian gas following the 2022 energy crisis.[16][17] The industrial

[16] IEFA (2024). Europe's gas consumption falls to 10-year low as peak LNG demand nears. Available here.
[17] Also important is power dependent industries moving out of Germany, as documented by this article in Financial Times: https://www.ft.com/content/6c345cf9-8493-4429-baa4-2128abdd0337

sector stood for the majority of the decline, cutting energy-related gas use by 357,000 TJ (a reduction of 18 percent) and an additional 51,000 TJ in non-energy applications. Households also played a major role, reducing their gas consumption by 261,000 TJ, or 22 percent. The power generation sector saw a more modest decline in gas use. Other countries that have reduced gas consumption significantly between 2021 and 2024 include Italy, Türkiye, the Netherlands, France, and Spain.

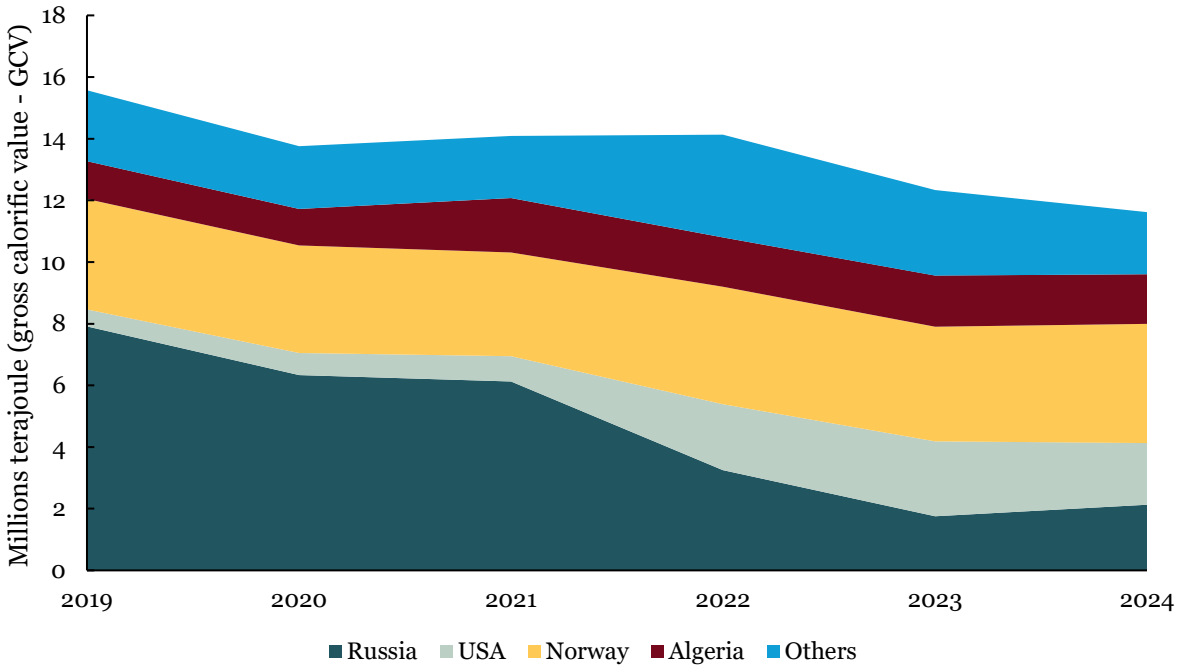
3.2 Sources of natural gas in the EU

The European Union remains heavily reliant on natural gas imports. In 2024, it imported approximately 10.5 million TJ, while domestic production - down nearly two-thirds since 2014 - covered only 10 percent of total demand. Norway was the EU's largest supplier, delivering 3.9 million TJ (33 percent of total imports), followed by Russia (20%), the United States (17%) and Algeria (11%) (European Council, 2025). In line with a falling gas demand, gas imports to the EU have also fallen. Between 2019 and 2024, total EU gas imports fell by around 25 percent. Russian deliveries have fallen sharply - by about 65 percent or 4 million TJ - since 2021, due to sanctions against Russia, and pipeline shutdowns such as Nord Stream. These shutdowns refer to the deliberate or forced halting of gas flows through key infrastructure, including sabotage (as with Nord Stream in 2022) and political decisions to reduce or cease deliveries.

Over the same period of 2019-2024, EU's LNG imports increased significantly. More specifically, LNG imports rose from around 20 percent (level in 2019-2021) to around 40 percent (level during the last three years). In absolute terms, this implies an increase from 3.1 million TJ in 2019 to almost 4.0 million TJ in 2024.[18] This increase was mostly driven by an increase in imports from the United States, of about 1.4 million TJ between 2019 and 2024. During the same period gas imports from Norway to the EU rose by roughly 8 percent (260,000 TJ).

[18] Brugel (2025). European natural gas imports. Available here.

Figure 3-2: EUs import of natural gas, by export country. Source: European Network of Transmission System Operators for Gas (ENTSOG)



The EU's growing reliance on LNG has been made possible by a rapid expansion of supporting infrastructure. This infrastructure allows natural gas to be transformed from its gaseous state into liquid form. Today, the EU is the world's largest importer of LNG. This infrastructure shift has in large been a response to the need to reduce dependence on Russian pipeline gas after the 2022 invasion of Ukraine. Since 2022, around 2 million TJ of new LNG regasification capacity have been added in the EU. With recent project completions, total capacity now consists of approximately 10.4 million TJ, which is enough to cover 85 percent of EU imports in 2024.[19]

[19] ACER (2025). Analysis of the European LNG Market Developments. Available here.

4 EU climate targets and climate and energy policies

The European Commission has proposed a new target to cut greenhouse gas emissions by 90 percent by 2040, as part of the EU's long-term climate strategy, with the aim of achieving climate neutrality by 2050. If approved by the European Parliament and the Council, this would become a legally binding milestone between the existing targets for 2030 (at least a 55 percent reduction) and 2050 (climate neutrality), which are already enshrined in EU law. The EU is currently on track to meet the 2030 target. The proposed 2040 goal is intended to provide investors and policymakers with a clearer understanding of the pathway to net-zero emissions. It also carries important implications for the long-term demand for natural gas.

To support this transition, the EU has introduced a broad set of policies and legislative acts that directly and indirectly reduce the demand for natural gas. These include carbon pricing schemes that increase the cost of gas use, binding targets that accelerate the deployment of renewables and low-carbon alternatives, and stricter energy efficiency rules that lower overall demand. At the same time, access to public funding and permitting is increasingly conditioned on compatibility with long-term climate goals, making fossil gas projects less attractive for investors. New infrastructure planning rules prioritise clean energy, while regulatory reforms aim to replace natural gas with hydrogen and other low-emission gases in key sectors.

This chapter outlines the EU's evolving climate policy framework and its implications for the future role of natural gas. It begins with a review of the EU's long-term emission reduction targets, including the newly proposed 2040 goal, and places these in the context of earlier targets for 2020, 2030 and 2050. The chapter then traces how the EU's view of natural gas has shifted - from a transitional fuel to a fuel targeted for phase-down - and describes the wide range of policy instruments that affect gas demand. These include carbon pricing, renewable energy targets, energy efficiency rules, infrastructure regulation, and public funding priorities, all of which collectively reduce the long-term role of fossil gas in the European energy system.

4.1 Evolution of EU climate and energy policies

In June 2025, the European Commission introduced a 90 percent reduction target for greenhouse gas emissions by 2040 into the EU Climate Law. Until now, the law only included binding climate goals for 2030 (a reduction of at least 55 percent from 1990 levels) and for 2050 (climate neutrality). The addition of a 2040 target defines the trajectory toward net zero and adds predictability needed by investors, industries, and governments to make long-term decisions in line with climate objectives.

The 2040 target builds on a pattern of increasingly ambitious EU climate goals over the past two decades. The first major milestone was the 2020 Climate and Energy Package, adopted in 2009, which aimed for a 20 percent reduction in emissions, a 20 percent share of renewables, and a 20 percent improvement in energy efficiency by 2020 - all of which were achieved or exceeded.[20] In 2021, the

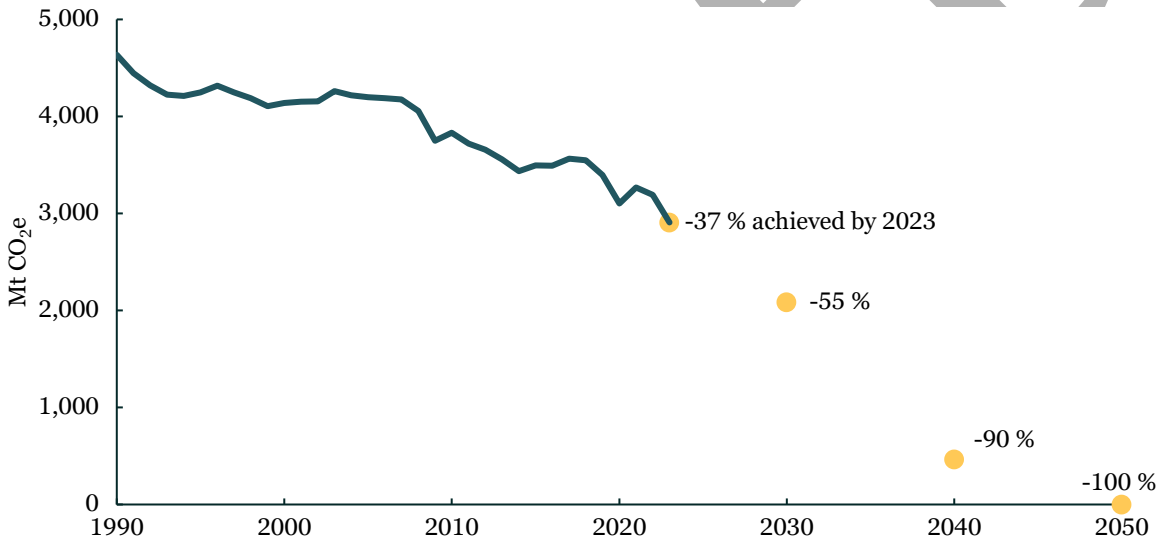
[20] European Environment Agency (2021). Available here.

European Climate Law made both the 2050 climate neutrality goal and the 2030 target of reducing emissions by at least 55 percent legally binding at the EU level.

Meanwhile, actual emissions have steadily declined. By 2023, the EU-27 had reduced its GHG emissions by approximately 37 percent relative to 1990, as shown in Figure 4-1. EU is currently on track to meet its 2030 target.[21]

However, reaching the 2040 target will require a substantial acceleration. Between 2010 and 2023, annual emissions fell at an average rate of about 1 percentage point per year relative to 1990 levels, as we can see in Figure 4-1. In order to reach the 90 percent target by 2040, that pace must triple, requiring annual reductions of about 3 percentage points throughout the 2030s.[22]

Figure 4-1: EU27 historical greenhouse gas emissions (green line) and reduction targets (yellow dots). *Source: Eurostat and European Commission*



4.2 The role of natural gas – from bridge fuel to substantial reduction targets

Since the mid-2000s, natural gas has played an increasingly important role in EU climate and energy policy as a lower-emission alternative to coal. The launch of the EU Emissions Trading System (ETS) in 2005 introduced a carbon price that improved the competitiveness of gas relative to more carbon-intensive coal, particularly in the power sector.[23] This strengthened the role of natural gas a substitute for other, more carbon-intensive fuels. In the following years, EU strategies started to described gas as a transitional fuel. For example, the 2011 Energy Roadmap 2050 stated that "gas will be critical for the transformation of the energy system," and the 2015 Energy Union Strategy reinforced this view. During the same period, the EU's TEN-E regulation designated fossil gas pipelines and LNG terminals as Projects of Common Interest (PCIs), making them eligible for EU funding and fast-track permitting.

[21] According to the European Commission's assessment of the National Energy and Climate Plans. More details available here.
[22] For comparison, the annual linear reduction rate for carbon allowances adopted for the EU Emission Trading System (ETS) is 4,3 percent until 2030. This however only covers parts of the economy. For more information, see chapter 4 of this report.
[23] There are also instances where natural gas has been introduced as a substitute for energy sources being phased out for political reasons unrelated to climate policy. A notable example is the phase-out of nuclear power in Germany.

The narrative of natural gas a transitional fuel was supported by several public funding mechanisms, such as the Modernisation Fund and national state aid approvals. These provided support for new gas-fired power plants, particularly in the new member states. Natural gas power plants have been also supported.

As the EU's climate ambitions intensified, its view on the role of natural gas has evolved. More specifically, the European Green Deal (2019) and subsequent legislation has formalized the EUs commitment to full decarbonization by mid-century. An example of this is the 2022 revision of the Trans-European Networks for Energy (TEN-E) regulation, which ended EU-level support for new natural gas pipelines - except for those that are hydrogen-compatible or deemed necessary for short-term energy security. In the EU's sustainable finance taxonomy, the classification of natural gas as a "transitional" activity still allows for continued investment in natural gas projects. However, such investments must meet specific conditions, such as emissions thresholds and a plan to switch to cleaner energy sources by 2035.

At the same time, the energy crisis triggered by Russia's 2022 invasion of Ukraine prompted the need for the Union to ensure its energy security. While this led to a massive political push for the roll-out of renewable energy, it also sparked a wave of public investment in gas infrastructure, notably new LNG import terminals. The terminals were officially presented as emergency, short-term measures, but have been criticised of risking a lock-in of long-term gas use. As a consequence, natural gas continues to play a role in Europe's energy system, even as the broader policy direction moves toward phase-out.

Furthermore, modernised high-efficiency combined heat and power plants can still receive state aid from Member States. One example is the Czech state aid scheme of €3.2 billion for new gas-powered power plants[24], approved by the European Commission in 2024. While the scheme excludes coal and oil, it allows natural gas where the installation commits to switching to renewable or low-carbon gases by 2050.

4.3 Policies affecting gas demand

In order to achieve the climate goals outlined in section 4.1, the EU has introduced a broad set of policies that, directly or indirectly, affect demand for natural gas. Some put a price on carbon emissions, while others set binding targets for renewable energy, hydrogen, and biofuels. Several aim to reduce the overall energy use through stricter efficiency rules, or support the infrastructure and technologies needed to shift to low-carbon solutions. Financial regulations and public funding also help steer investment away from fossil fuels. Together, these policies make it increasingly difficult and costly for the EU to rely on natural gas.

Carbon Pricing

A central pillar of the EU's climate policy is carbon pricing. The EU Emissions Trading System (EU ETS), established in 2005, has evolved through several phases to become the main mechanism for reducing emissions in the power and industrial sectors in the EU today. Initially, it covered major emitters in electricity generation and the energy-intensive industry, accounting for about 45percent of EU greenhouse gas emissions. Over time, its scope expanded to include intra-EU aviation and, more recently, maritime transport. Emissions from ETS-covered sectors have fallen by approximately 50percent since 2005. The ETS effectively places a price on carbon, which directly affects the cost

[24] European Commission (2024). Available here.

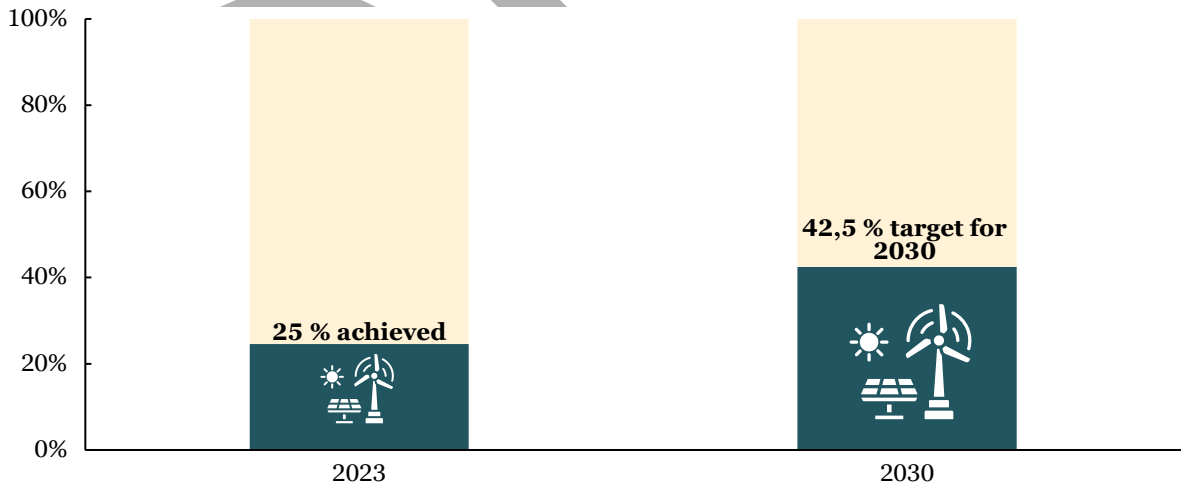
competitiveness of fossil fuels, including natural gas.[25] At today's carbon price of around €70 per tonne of CO_2, it increases the effective cost of natural gas by nearly 50percent at current fuel prices.[26]

To expand the scope of carbon pricing, the EU has implemented a new, separate emission trading system (ETS2). The ETS2 includes CO_2 emissions from fuel combustion in buildings, where gas is widely used for space heating and hot water today. Furthermore, the new system covers road transport and certain small industrial sectors not covered by the original ETS. Its directive formally adopted in the EU in 2023, the system is scheduled to be fully operational in 2027. Introduced as part of the Fit for 55 package, ETS2 cap will be set to comply with a 42 percent emission reduction by 2030 compared to 2005 levels.[27] As in the case of the original ETS, the carbon price under ETS2 will be determined by market forces, driven by the declining emissions cap. This is expected to put further cost pressure on the use of natural gas across the EU economy.

Targets for Renewable and Low-Carbon Alternatives

A central element of the EU's strategy to replace fossil gas is setting binding targets for renewable and low-carbon energy sources. The Renewable Energy Directive III (RED III) establishes a legally binding goal for renewables to account for 42.5 percent of final energy consumption by 2030, with an aspirational target of 45 percent. This target drives investment in wind, solar, and sustainable biomass, helping to replace natural gas across electricity, heating, and transport systems. According to the IEA's World Energy Investment 2024, the EU now invests more than USD 10 in clean energy for every USD 1 in fossil energy.[28] The Energy Institute's Statistical Review of World Energy 2024 likewise reports that the share of fossil fuels in Europe's energy mix continues to decline.[29]

Figure 4-2: Renewable energy shares, achieved in 2023 and in the REDIII target for 2030.



[25] The EU Emissions Trading System (ETS) operates on a cap-and-trade principle, setting a limit on total greenhouse gas emissions from the above mentioned sectors. This limit, or "cap", is reduced each year. The cap is reduced by 4,3 percent annually until 2030. The emission allowances, each permitting one tonne of CO_2 equivalents, are auctioned or traded in the carbon market. As the cap tightens, the number of available allowances shrinks and the carbon price increases, driving emission reductions over time.
[26] Natural gas emits approximately 0.202 tonnes of CO_2 per MWh. At €70/tCO_2, this adds about €14.14/MWh to the cost of gas. If the base gas price is €30/MWh, the effective price becomes €44.14/MWh - an increase of nearly 47 percent.
[27] European Commission. Available here.
[28] IEA (2024). European Union. Available here.
[29] Energy Institute (2025). Statistical Review of World Energy. Available here.

In addition to the overall target, RED III includes technology-specific quotas that also affect natural gas demand. In industry, at least 42 percent of the hydrogen used must be renewable by 2030, increasing to 60 percent by 2035. This is particularly relevant for the future demand for gas in the EU, as nearly all hydrogen consumed in the EU today is produced from natural gas.[30]

Furthermore, the RePowerEU plan of 2022 aims to increase biomethane production with 50 percent by 2030. This is equivalent to nearly 5 percent of the Union's natural gas consumption today[31]. Because biomethane is a direct substitute for gas, this target has direct implications for the demand for natural gas in the EU. At the same time, estimates suggest that implementing the RePowerEU in full could lead to a 52% reduction in EU fossil gas demand by 2030, compared to 2019 levels.[32]

The EU has also introduced additional renewable targets for the transport sectors, including road, rail, aviation and maritime. RED III sets a 29 percent renewable energy target and a 14.5 percent greenhouse gas intensity reduction for the transport sector by 2030, alongside a requirement that renewable fuels of non-biological origin (RFNBOs) - mainly hydrogen-based e-fuels - must supply at least 1 percent of total transport energy. Complementary regulations reinforce these targets, such as the ReFuelEU Aviation and FuelEU Maritime regulations. The former mandates a rising share of sustainable aviation fuels, including a minimum RFNBO share from 2030, while the latter imposes life-cycle GHG limits on marine fuels. Although maritime shipping uses limited natural gas today, the new rules could increase LNG demand as a transitional compliance option in the maritime sector. However, concerns remain about the realism of reaching the various RED III targets within the allotted timeframe. The complexity of the new requirements together with fragmented implementation approaches, amongst other factors, contributed to most member states missing the deadline in May 2025 for implementing the RED III into national law.

Efficiency, Infrastructure, and Finance

Beyond setting renewable energy targets, the EU is implementing a suite of policies aimed at reducing energy demand, reshaping energy infrastructure, and redirecting investments - all contributing to diminishing the role of fossil gas.

Energy efficiency: The revised Energy Efficiency Directive mandates that EU Member States achieve an average annual energy savings rate of 1.49percent from 2024 to 2030, nearly doubling the previous requirement of 0.8 percent for 2021–2023. Complementing this, the updated Energy Performance of Buildings Directive (EPBD) according to which the building sector will have to reach emission reductions of at least 60percent by 2030, compared to 2015. Furthermore, Member States will have to ensure a reduction in the average primary energy used in residential buildings of at least 16 percent by 2030 and in a range between 20-22 percent by 2035 and will be obliged to renovate the stock of worst-performing non- buildings.

Infrastructure Planning and Gas Market Reform: As previously mentioned, the revised Trans-European Networks for Energy (TEN-E) regulation excludes natural gas projects from Projects of Common Interest (PCI) status, effectively ending EU-level support for new fossil gas infrastructure.

[30] Publication Office of the European Union (2024). Available here.
[31] Although this is a nonbinding target it has been followed by legislation increasing the supply of organic feedstock for biomethane production (Waste Framework Directive) and accelerating investment.
[32] EG3 (2022). Repowering towards EU gas demand reduction. Available here.

Furthermore, the Hydrogen and Decarbonised Gas Market Package, adopted in May 2024, introduces significant reforms to the gas market. It sets 2049 as the cut-off year for long-term contracts involving unabated fossil gas and establishes rules to facilitate the integration of renewable and low-carbon gases into the existing gas infrastructure. These measures include providing renewable and low-carbon gases better access to markets and infrastructure, ensuring more flexible gas trade, and promoting the development of dedicated hydrogen infrastructure and markets. There are already several examples of of national legislature aiming to reduce the use of natural gas in several member states. In Germany, the 2024 reform of the Building Energy Act (GEG) requires that newly installed heating systems must use at least 65% renewable energy, marking a shift away from fossil gas in buildings. To meet the 65% threshold, households can choose from technologies such as heat pumps, district heating, electric heating, solar thermal systems, or hydrogen-ready boilers. New subsidy schemes have been put in place to support this reform.[33] In the UK, the government promotes gas demand reduction through targeted policies for achieving net zero heating, first outlined under the Heat and Buildings Strategy.[34] Furthermore, the Boiler Upgrade Scheme offers specific grants for heat pump and biomass boiler installations, alongside zero VAT on installations until 2027[35], and the Future Homes Standard bans gas boilers in new homes from 2025.

To accelerate the deployment of renewable energy, the EU is also working on streamlining permitting processes. RED III introduces a presumption of "overriding public interest" for renewable energy projects, simplifying environmental permitting procedures. Additionally, the Net-Zero Industry Act (NZIA) encourages Member States to designate "net-zero acceleration areas" with streamlined permitting and grid connection processes to facilitate the development of clean technologies.

Industrial Strategy and Public Funding: In addition to regulatory and pricing measures, the EU supports its climate goals through industrial policy and public funding instruments that help scale up low-carbon technologies and reduce the reliance on fossil gas. These initiatives aim to strengthen domestic supply chains, accelerate clean energy deployment, and direct resources toward strategic projects across energy, industry, and transport. According to EU legislature, all revenues from the EU Emissions Trading System (ETS) are supposed to be reinvested in emission reduction measures and technologies that compete directly with natural gas.[36] Part of the revenues from ETS are made available through EU funds. More specifically, the Innovation Fund supports large-scale projects in renewable hydrogen, industrial electrification, and carbon removal, with an expected budget of up to €40 billion by 2030. For lower-income Member States, the Modernisation Fund provides similar ETS-based support for energy system upgrades. Countries such as Poland, Romania, and Greece have used it to finance renewables, energy efficiency, and grid infrastructure, however, as already mentioned in section 4.2, support for efficient natural gas power plants is still allowed under this scheme as long as transition to zero-emission sources is guaranteed in the long term.

The Net-Zero Industry Act (NZIA) complements these financial instruments by streamlining permitting and prioritising strategic projects in clean technology manufacturing. It sets a target for the EU to meet at least 40 percent of its annual deployment needs for key technologies - including batteries, electrolysers, heat pumps, and CCS - with domestic production by 2030. These supply-side measures are reinforced by broader initiatives like the Clean Industrial Deal, which together aim to strengthen Europe's green industrial base and reduce dependence on fossil gas technologies. The recently unveiled

[33] OSW (2023). Germany: a controversial heating law. Available here.
[34] UK Government (2021). Heat and Buildings Strategy. Available here.
[35] Climate Change Committee (2022). Independent Assessment: The UK's Heat and Buildings Strategy. Available here.
[36] Norway does however not have the same earmarking rules for the use of revenues from EU ETS as EU Member States.

Action Plan for Affordable Energy strengthens the Clean Industrial Deal's objective to reduce dependence on fossil gas. It does so by setting out a plan to reform electricity pricing to favor renewables, support investments in electrification and clean energy alternatives, and offer incentives to lower gas demand.[37] The plan also accelerates infrastructure upgrades to support a more flexible, renewable-based energy system. At its core, its aim is to ensure that the shift away from fossil fuels remains affordable and inclusive, with special attention to vulnerable consumers and energy-intensive industries.[38]The recently adopted Action Plan for Affordable Energy strengthens the Clean Industrial Deal by targeting one of the key structural drivers of high energy costs, namely Europe's reliance on imported fossil fuels. It aims to lower electricity bills and enhance energy security, by accelerating investments in clean energy[39], offering more financing solutions for energy efficiency products, and ensuring increased efficiency in grid infrastructure.[40] An important feature of the Plan is to decouple retail electricity bills from high and volatile gas prices. [41] In sum, the Plan shall serve a just and inclusive transition, addressing energy poverty and supporting vulnerable households and energy-intensive industries in the move toward a decarbonized energy system. An overreaching aim for the EU is to reduce temporary support schemes which were put in place to protect consumers from high energy prices. This will also promote the EU's economic competitiveness.

Collectively, these measures - spanning efficiency mandates, infrastructure planning, and financial regulations - are systematically reducing the space for fossil gas in the EU.

[37] European Commission (2025). Unlocking the true value of our Energy Union to secure affordable, efficient and clean energy for all Europeans. Available here.

[38]

[39] More specifically, specific measures are: more use of more long-term contracts, more flexibility and faster permits for clean power and grids, more interconnectors, a stronger grid and more cross-border trading.

[40] European Commission (2025). Factsheet: An Action Plan to ensure all Europeans have access to affordable energy. Available here.

[41] European Commission (2025). Unlocking the true value of our Energy Union to secure affordable, efficient and clean energy for all Europeans. Available here.

5 Climate policy impacts on future gas demand

Achieving the EU's 2040 climate target will require a sharp decline in natural gas use, but projections of future demand vary. According to the European Commission's impact assessment, total EU demand for gaseous fuels (natural gas and biogas combined) is projected to fall from 14 million TJ in 2024 to 4.5 million TJ by 2040—a decline of nearly 70 percent. Around one-third of this demand is expected to be met by biogas and biomethane, leaving just 3 million TJ for fossil natural gas. The forecasts shown in the analysis are consistent with several other analyses compatible with the 90 percent emissions reduction target.

Achieving the EU's 90 percent emissions-reduction target by 2040 will require a major reduction in fossil fuel use - including natural gas. Yet the future of gas demand remains uncertain, as it will depend on how quickly low-carbon alternatives such as electrification technologies, heat pumps, hydrogen, energy efficiency, carbon capture and negative emission technologies become available and cost-competitive across different sectors. Given the many possible routes to decarbonisation, system-wide energy models are employed to map cost-effective pathways that reflect varying assumptions about technologies, prices, and policies. This chapter reviews the European Commission's modelling scenarios aligned with the 90 percent target and compares them with examples of two other high-ambition projections from the IEA and DNV. Together, these scenarios illustrate the range of outcomes for gas demand in the EU - and their implications for long-term energy strategy.

5.1 Results from the EU's 2040 climate impact assessment

In its impact assessment for the 2040 climate target, the European Commission has developed several policy scenarios using the PRIMES energy system model, described in the textbox below. Among these, Scenario 3 aligns with the 90 percent emissions reduction goal and assumes widespread deployment of carbon capture technologies, and increased use of synthetic fuels. This scenario, serves as the primary focus of our analysis.[42] However, it does not account for the international carbon credits included in the Commission's final proposal. These credits are likely to result in higher demand for natural gas. We discuss the potential impact of these credits on gas demand in Chapter 5.

[42] Other scenarios assessed in the document include Scenario 1, which follows a linear reduction path aligned with current policies; Scenario 2, which builds on enhanced technology uptake aiming for an 85 percent reduction as well and the LIFE scenario, which examines the impact of societal and behavioural changes such as sustainable lifestyles and circular economy practices.

Textbox 1: The European Commission's PRIMES model

The European Commission's quantitative analysis relies on the PRIMES ("Price-Induced Market Equilibrium System") model, which is an energy-system model. Its purpose is to project future supply, demand, prices, investment and emissions.

The model finds a forward-looking partial-equilibrium: prices adjust until supply meets demand in each member state, while firms and households select least-cost technologies within policy and technical limits.

A dedicated gas module represents domestic output, pipeline and LNG imports, storage and network constraints, so scenarios translate directly into gas-price and consumption paths.

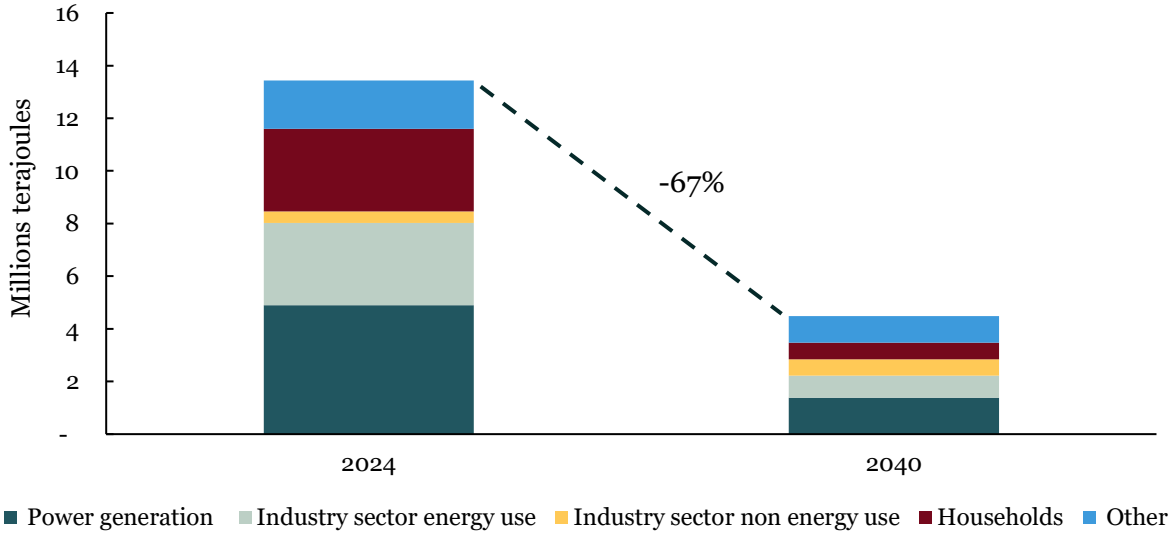
In scenario 3, which represents a 90 percent reduction, a reduction of 2.8 percentage points in greenhouse gas (GHG) emissions is expected between 2021 and 2030 compared to 1990 levels. This is followed by a reduction of 3.5 percentage points per year between 2031 and 2040, and an additional 1 percentage point reduction from 2041 to 2050.

Achieving the EU's 90 percent emissions-reduction target will require a profound transformation of the energy system, including a steep reduction in gaseous fuel use (that includes both natural gas and biogases). According to the analysis in the PRIMES model, combined consumption of natural gas and biogas is projected to decline by around 67 percent between 2024 and 2040. This drop is driven by ambitious decarbonisation efforts and the large-scale rollout of renewable hydrogen and e-fuels, which displace gas in sectors such as industry and transport. However, the decline in gas use is less pronounced than the overall 80 percent reduction in greenhouse gas emissions required between 2024 and 2040.[43]

As the Figure 5-1 below shows, the largest decline in gas use is seen in the power generation sector, where consumption drops by 3.5 million TJ, corresponding to a 72 percent reduction. This is followed by household and industry sector energy use, with reductions of 2.5 and 2.3 million TJ respectively, equating to decreases of 80 and 73 percent. These reductions reflect fuel switching, energy efficiency improvements, and widespread electrification, particularly in heating and industrial processes.

[43] This corresponds to a decrease 53 percentage points from the 2024 emission levels.

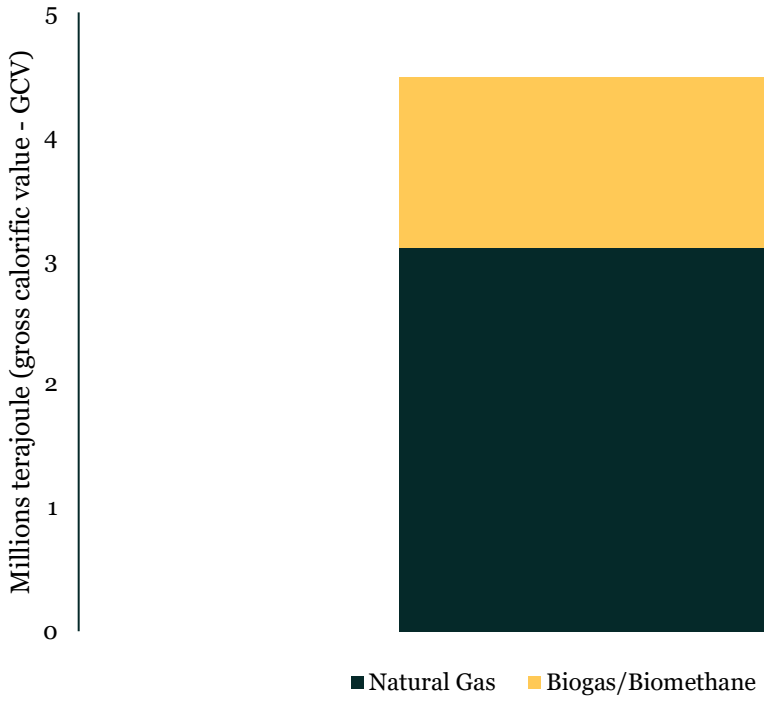
Figure 5-1: Projection of natural gas and biogas consumption across different segments.[44] Source: Eurostat, European Commission/ PRIMES



It is important to note that the modelling exercise estimates the demand for gaseous fuels that can be met not only by natural gas but also by biogas or biomethane. According to the PRIMES calculations, roughly one-third of the residual need in 2040 is expected to be met by biogas/biomethane, which implies about doubling the production of biogas from current levels of about 0,85 million TJ.[45] The remainder will be covered by domestic natural gas production and imports as shown in Figure 5-2.

[44] Note that the 2024 numbers here are somewhat different from earlier presented numbers, as these also include biogas as well as natural gas. This is done to better compare with the European Commission numbers, as they included biogas.
[45] European Biogas Association (2025). Statistical Report 2024. Available here.

Figure 5-2: Projected consumption of natural gas, biogas and biomethane in 2040. Source: European Commission/ PRIMES

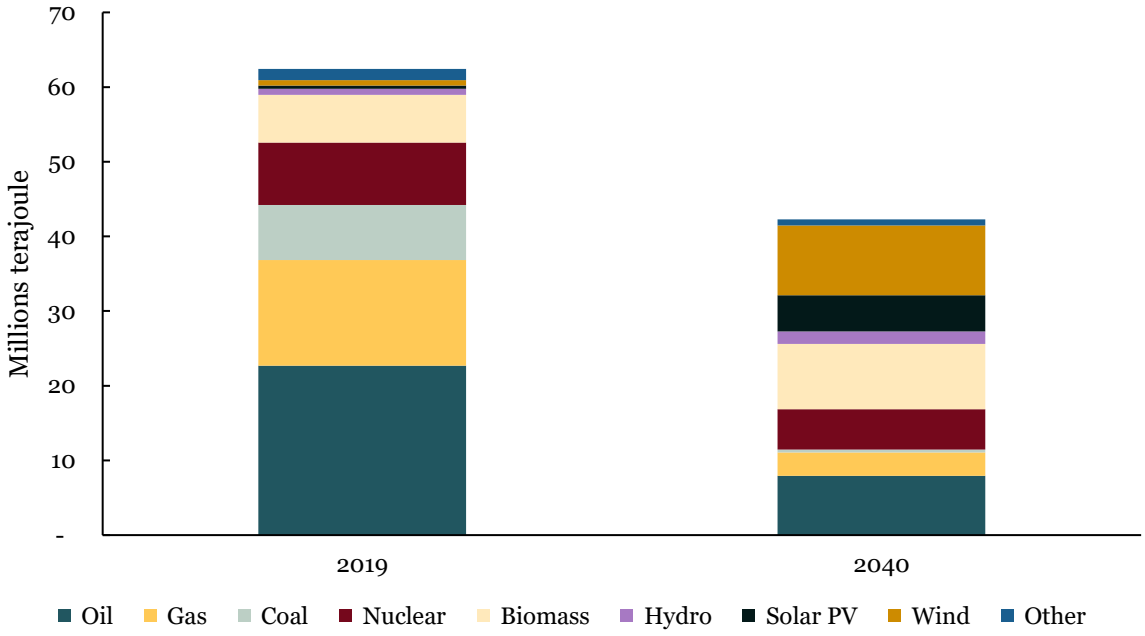


In the PRIMES modelling, EU natural gas net imports decline from 11 million TJ in 2024 to 3 million TJ by 2040. This decrease is driven by falling demand and increased domestic production of biogas and biomethane. As a result, gas is expected to play a much smaller role in the EU's energy mix by 2040.

In the Commission's 90 percent reduction scenario, fossil fuel use declines sharply - especially coal, but also oil and gas as shown in Figure 5-3. Natural gas falls from 23 percent of total energy use in 2019 to 7 percent in 2040. Oil remains the most important imported energy source in 2040, with around 7.3 million TJ imported and a 19 percent share of total energy use.

At the same time, renewable energy sources such as wind, solar PV, and biomass gain prominence. Wind power sees the largest increase, rising from 1 percent in 2019 to 22 percent by 2040.

Figure 5-3: Gross available energy by energy vector in 2019 and 2050.[46] Source: European Commission/ PRIMES



CCS is expected to play a role in reducing emissions from natural gas, albeit not at a significant scale. In the Commission's 90 percent reduction scenario, the impact assessments assumes that only around 5 percent of the fossil fuels still in use by 2040 will be equipped with CCS, for example for production of blue hydrogen.

5.2 Future gas demand in light of higher climate ambitions

As the PRIMES model projects a *significant decline* in natural gas and biogas consumption under the EU's 90 percent emissions-reduction scenario, we compare it with other analyses with similar emission-reduction assumptions for 2040 to assess consistency in projected demand.

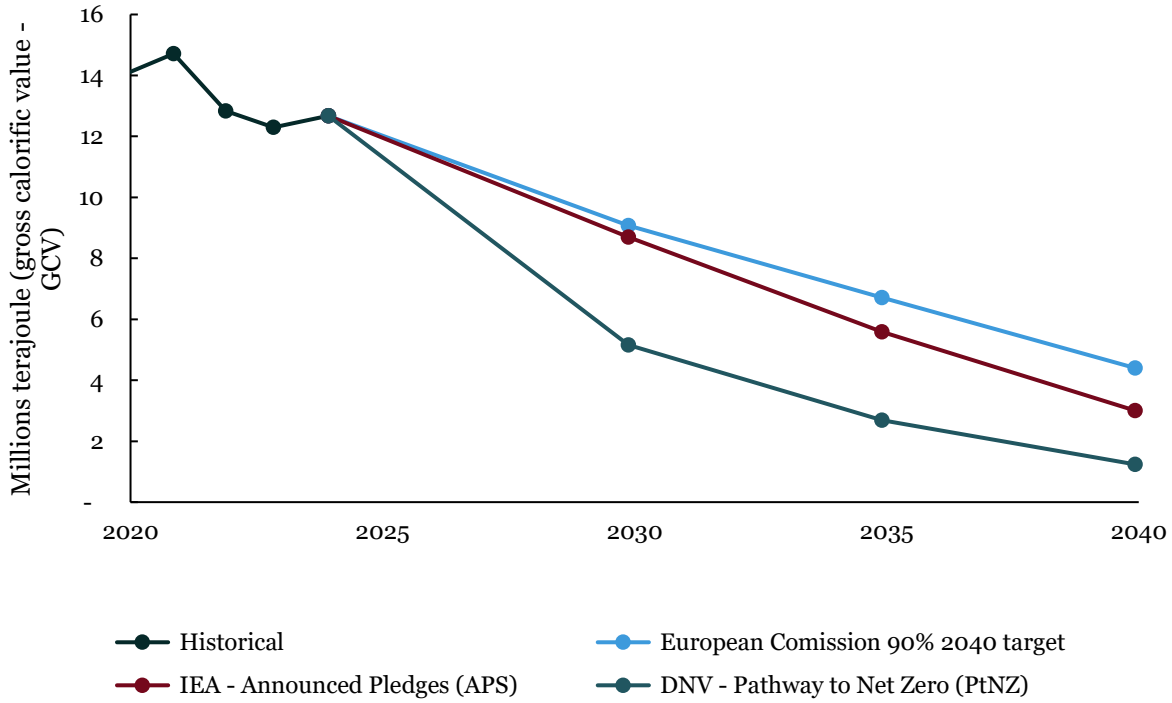
Figure 5-4 compares gas demand in 2040 from the EU's impact assessment report discussed in the previous section with two other ambitious scenarios from the IEA and DNV. Note that all three sources present also alternative scenarios. Below we only use to the scenarios that are closest to the 90 percent emissions reduction target in the EU in order to compare the sensitivity of gas demand with regards to emission reductions. In this figure, we focus on the following scenarios:

- The EUs 90 percent emissions-reduction by 2040 scenario
- The IEA's Announced Pledges Scenario (APS), which reflects full implementation of current national pledges and underpins our estimate of approximately an 84 percent emissions reduction in the EU by 2040 (as it does not include the recent proposal by the EU Commission).[47]

[46] The "Gas" category includes fossil natural gas and manufactured gas, but **excludes biogas and biomethane**, which are instead counted under "Biomass" or other, which is why the gas category is somewhat smaller here than inFigure 5-1.
[47] 84 percent reduction calculated using the data in the IEAs Climate Pledge Explorer available here.

- DNV's Pathway to Net Zero (PtNZ), a technically feasible scenario aligned with limiting warming to 1.5 °C and suggests an about 93 percent in the EU by 2040 (estimated).[48]

Figure 5-4: Natural gas demand in the EU in selected ambitious scenarious. Source: European Commission, IEA and DNV[49] [50] [51]



Among the three scenarios considered, selected for their broadly comparable levels of emissions reductions, the European Commission's PRIMES scenario projects by far the highest gas consumption in 2040. Despite aiming for a 90 percent reduction in emissions, gas demand in the EU analysis is nearly 50 percent higher than in the IEA's APS, which assumes an approximately 84 percent reduction in EU emissions. Compared to DNV's Pathway to Net Zero scenario—which targets a more ambitious 93 percent cut in emissions—PRIMES projects almost three times more gas use, despite the emissions difference being only 3 percentage points. Some of this discrepancy stems from methodological differences: the Commission includes biomethane in its definition of gaseous fuels, whereas both the IEA and DNV consider only fossil natural gas.

[48]The scenario assumes net zero in the EU by 2042. The 93 percent reduction figure is a linear extrapolation between current emissions and those in 2042.
[49] Zero Carbon Analytics (2024). Existing gas supplies to meet EU demand under 2040 emissions target. Available here.
[50] In addition to the APS-scenario, IEA also presents the STEPS scenario (Stated Policies Scenario. STEPS IEA reflects the world's likely energy trajectory based on currently implemented policies and regulations. It shows a gradual energy transition, but falls short of reaching global climate goals, leading to around 2.4–2.7 °C warming by 2100. In the STEPS scenario, EUs demand for natural gas is expected to be significantly higher than APS.
[51] In the report Energy Transition Outlook (DNV, 2025) DNV forecasts that global natural gas demand will remain stable until 2030, before entering long-term decline. In Europe, gas demand is expected to fall by 50% by 2050, driven by electrification, efficiency, and climate policies. (Source: Energy Transition Outlook 2024, DNV, pp. 22–24). As illustrated in the figure, the Pathway to Net Zero scenario projects a significantly steeper decline in European gas demand compared to DNV's main Energy Transition Outlook.

Even after accounting for the expected one-third share of biogas in the PRIMES scenario, projected fossil gas use remains broadly comparable to the IEA's estimate, despite the EU scenario aiming for a deeper emissions reduction. Moreover, fossil gas use in PRIMES is still more than twice as high as in DNV's scenario. This highlights that, relative to other comparable analyses, the Commission's outlook is relatively generous in its assumptions about the future role of gas.

6 Market outlook for Norwegian gas in 2040

The projected drop in EU gas demand will have major consequences for Norway. While Norwegian production is expected to fall by the 2040s, the decline will be slower than that of EU demand. According to our analysis, the respective production plans and demand scenarios imply that Norwegian production in 2040 could cover roughly 66 to 86 percent of the EU's remaining fossil gas demand.

In practice, the EU countries are unlikely to allow such a high level of dependence on a single supplier. Also, the UK currently consumes about a quarter of Norwegian exports (around 1.2 million TJ in 2024) and is expected to cut gas consumption even more sharply under its own climate targets. This, together with our estimates of EU demand, implies that the demand gap, meaning the share of projected production that would need to find new markets, would reach about 0.9 million TJ, or roughly one third of total projected production in 2040. This would need to be placed on the highly competitive global LNG market, where Norway will face expanding supply from the United States, Qatar, and other major producers. In this market, Norway would no longer enjoy the cost advantage it has when supplying the EU via pipelines. It will also face growing competition within Europe from domestic natural gas production and increasing biomethane output, which directly displaces fossil gas in the EU market.

In summary, the long-term outlook is characterised by falling demand, tightening emissions constraints and rising competition. This increases the risk of lower revenues, driven by both reduced sales volumes and weaker prices. This could in turn mean that investments in new fields needed to achieve the Norwegian Offshore Directorate's production projections become stranded assets, meaning they lose their economic value and fail to recover their investment costs before being phased out.

The sharp decline in projected EU demand for natural gas raises important questions about the future role of Norwegian exports. While Norway has long been one of Europe's most reliable and cost-effective suppliers, increasingly ambitious climate targets are reshaping the conditions under which natural gas can remain part of the European energy mix. This chapter examines how Norwegian gas may align with these changes, considering the balance between EU demand and Norwegian supply, competitive pressures from alternative energy sources, and the implications for Norway's future position in the European market.

6.1 Norwegian production vs. EU demand

Our analysis of the gas demand scenario in Section 5.1 shows that the EU's demand for fossil natural gas is expected to decline sharply over the next 15 years. In the scenario consistent with a 90 percent reduction in greenhouse gas emissions by 2040, fossil natural gas consumption in the EU falls from approximately 70percent from 10.5 million TJ in 2024 to 3.1 million TJ in 2040.

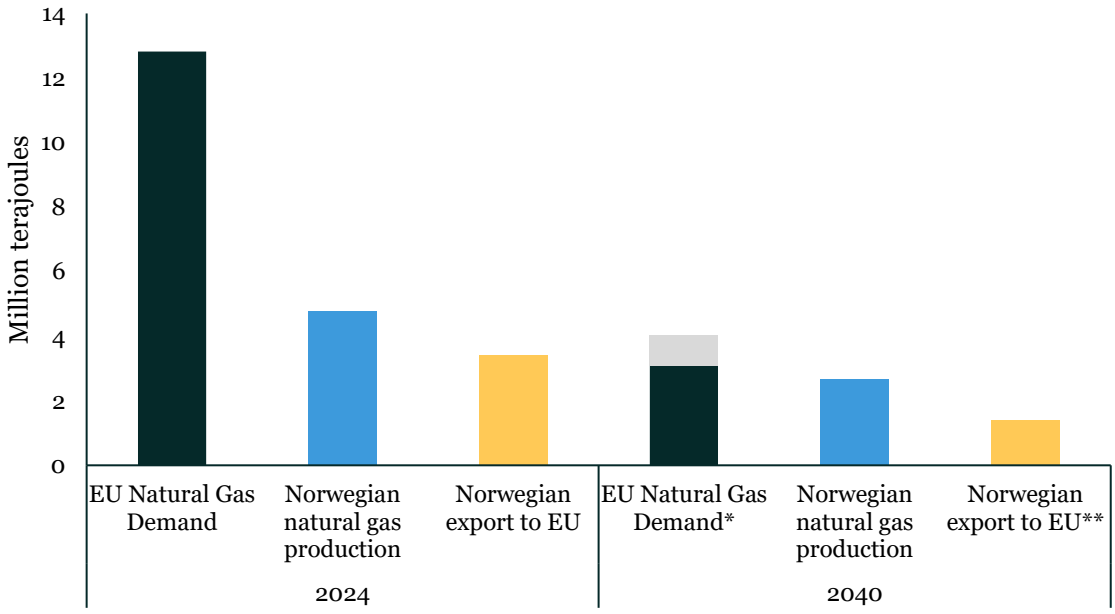
However, the proposed amendment to the EU Climate Law would allow up to 3 percent of the EU's overall 2040 emissions reduction target to be met through international carbon credits. If this flexibility is fully used and allocated proportionally across sectors, it could result in a 30 percent

increase in allowable natural gas use, raising projected demand to approximately 4 million TJ in 2040.[52]

As described in more detail in Chapter 2, Norwegian gas production is also expected to decline over the next 15 years, though less steeply than the projected reduction in EU fossil gas consumption. In 2024, total Norwegian production amounted to about 4.8 million TJ, with roughly 3.4 million TJ exported to the EU. As shown in chapter 2, our analysis of data from the Norwegian Offshore Directorate suggest that production could fall to around 2.7 million TJ by 2040 - a 45 percent drop from current levels. If exports continue to account for more than 95 percent of production, this volume could, in principle, remain available to the European market.

What does this imply for Norway's role in Europe's gas mix in 2040? As illustrated in Figure below, if Norway continues to export nearly the entire production, its 2040 production could cover 86 percent of the EU's fossil gas demand in the base scenario, and 66 percent of EU demand once carbon credits are allowed.[53] These are significantly higher shares than today, where Norwegian exports account for approximately 27 percent of total EU demand and 33 percent of total EU gas imports. In other words, even as total production declines, Norway could theoretically supply a much larger share of a significantly smaller market.

Figure 6-1: Natural gas demand in the EU and production in Norway in 2024 and 2040. Source: Menon Economics, European Commission and Norwegian Offshore Directorate



* The black segment represents natural gas demand without international credits, while the grey segment shows the additional demand enabled by the credits.
** Norwegian export to the EU, assuming 35 percent market share.

[52] The use of international carbon credits would effectively raise the allowable level of domestic EU emissions in 2040 from 10 percent to 13 percent of 1990 levels - a 30 percent increase. For simplicity, our calculations assume that gas demand would rise in proportion to this increase in allowed emissions.
[53] As mentioned in Chapter 2, production volume in 2040 will depend on the level of investment, highlighting the risk of overinvestment and stranded assets.

If Norway maintained its current share of total EU gas demand, purchases from Norway in 2040 would be about 1.1 million terajoules. If its share increased to match the current 35 percent share of EU imports as domestic production declines, the figure would rise to about 1.4 million terajoules. These volumes represent 40 to 50 percent of Norway's planned production in 2040, with the remainder needing to be sold to the UK or on the highly competitive global LNG market.

In the next section, we analyse Norway's competitive position-relative to LNG, biofuels, other pipeline exporters, and domestic EU production – to assess the prospects for Norwegian natural gas.

6.2 Competitors in the future EU gas market

While EU gas demand is set to decline in the coming decades, there remains no shortage of alternative ways to meet that demand. These include imports delivered either via pipelines or as LNG as well as domestically produced biofuels and natural gas. In this section, we review the prospects for each of these competing supply sources and assess the implications for Norwegian gas.

6.2.1 LNG

Norwegian gas is expected to face much stronger competition from LNG as global LNG export capacity is set to expand rapidly toward 2030. According to ACER, capacity will increase by nearly 50 percent in just five years - from about 25 million TJ today to almost 40 million TJ by 2030 (ACER, 2025). This expansion - roughly equivalent to the EU's current annual gas consumption and about 7 percent of global demand - represents the largest capacity increase ever recorded over a comparable period. The new supply is primarily driven by large-scale developments in the United States and Qatar, with additional contributions from projects in Africa, Asia-Pacific, and the Eastern Mediterranean.

The rapid expansion of LNG capacity is expected to intensify competition in the global gas market. LNG demand remains high—especially in Europe, where imports have increased following the drop in Russian pipeline deliveries. However, the IEA projects that global natural gas demand will peak around 2030 and then level off (International Energy Agency, 2024). Combined with the record growth in supply, this means global availability is likely to exceed demand well into the 2030s. European buyers will have access to ample and flexible alternatives to pipeline gas.

6.2.2 Pipeline

As the overall gas demand in the EU is projected to decline, competition among suppliers is set to intensify. Norwegian gas will have to contend with a growing supply of LNG, a rapidly expanding biomethane sector, and limited but stable pipeline imports from non-Russian suppliers. The Russian invasion of Ukraine in 2022 led to a steep reduction in pipeline gas deliveries to the EU - from 5.5 million TJ in 2021 to just 1.3 million TJ in 2023, dropping to zero in 2025. This created a substantial supply gap that was filled almost entirely by LNG. The episode demonstrated that the remaining European pipeline infrastructure was already operating at or near full capacity and therefore lacked the flexibility to scale up further.

Other pipeline suppliers, such as Algeria, Azerbaijan, and Libya, together accounted for nearly 16 percent of Europe's gas supply in 2024. These countries show no indication of reducing their export volumes to Europe, further increasing competitive pressure on Norwegian exports.

6.2.3 Biofuels

Biogas and biomethane are renewable alternatives to fossil natural gas, with potential to decarbonise sectors where electrification is limited or costly. External estimates indicate a larger potential for production expansion than assumed in the presented scenario.

According to the European Biogas Association, Europe could feasibly produce up to 4.2 million TJ of biomethane annually by 2040, with approximately 3.8 million TJ of that within the EU-27 (European Biogas Association, 2025). This would represent nearly 85 percent of the EU's total consumption gaseous fuels in 2040. Although this figure reflects technical potential and should be viewed with caution, it is not entirely speculative. The EU's REPowerEU plan sets a near-term target of 1.3 million TJ of annual biomethane production by 2030, a 50 percent increase from 2023 levels. This indicates that a significant scale-up is already underway.

While the theoretical potential for biomethane is high, its full realisation is likely to be constrained by economic and logistical barriers. Feedstock sources such as organic waste and agricultural residues are costly to collect and process at scale, making some of the projected volumes economically unviable without strong policy support. Nonetheless, biomethane is expected to play an increasingly important role in the EU's energy transition, benefiting from compatibility with existing gas infrastructure and contributing to reduced fossil gas demand - even if production falls short of the most ambitious forecasts.

6.2.4 Domestic production

Europe's domestic natural gas production has declined significantly over the past decade, falling from approximately 3.6 million TJ in 2010 to about 1,2 million TJ in 2023.[54] This reduction is primarily due to the depletion of mature gas fields and the closure of major production sites, notably the Groningen field in the Netherlands, which ceased production in October 2023.

While new discoveries, such as Romania's Neptun Deep and Cyprus's Aphrodite field, each estimated to hold around 4 million TJ of recoverable gas, may contribute to regional supply, they are not expected to reverse the overall declining trend in domestic production. Consequently, Europe will remain heavily reliant on external gas supplies.

6.3 Overall assessment and implications

If the European Union successfully meets its 2040 climate target of a 90 percent reduction in greenhouse gas emissions compared to 1990 levels, the implications for natural gas demand will be profound. According to the European Commission's estimates, this ambitious target could reduce total demand for natural gas by over 70 percent from 2024 to 2040, dropping from approximately 10.5 million TJ to as low as 3 million TJ by 2040. This projection aligns with low emission scenarios such as those from IEA and DNV[55].

The projected drop in EU gas demand could have major consequences for Norway. Today, Norwegian stands for about 33 percent of EU imports and 27 percent of total EU consumption. In the EU's 90 percent emissions-reduction scenario for 2040, fossil gas use is set to fall sharply, with international

[54] Eurostat. Table Complete energy balances (nrg_bal_c).
[55] More conservative climate scenarios for both the Commission, IEA and DNV also show a reduction in natural gas demand, but to a lesser extent due to more limited emission reduction.

carbon credits lifting the total consumption to around 4 million TJ. Norwegian production in 2040 could in theory cover up to two-thirds of the EU's remaining fossil gas demand, which is far above today's share. In practice, maintaining today's market share would mean supplying about 1.1–1.4 million TJ to the EU in 2040, around 40–50 percent of Norway's output. As Norwegian production is projected to decline by roughly 45 percent to 2.7 million TJ in 2040 when current reserves are depleted, this level of supply will require new exploration investments. Such dependence on a single supplier would be politically difficult for the EU to sustain, where diversification of energy imports is an important priority. |

Meanwhile, there is no shortage of alternative supply options. Although domestic gas production in Europe continues to decline, other sources are expanding. Biogas and biomethane production are increasing rapidly. Imports from non-Russian pipeline suppliers - such as Algeria, Azerbaijan, and Libya, which together accounted for nearly 16 percent of Europe's gas supply in 2024 - are expected to continue, with no indications of decline. Most significantly, the global LNG market is undergoing a period of unprecedented expansion. By 2030, global LNG export capacity is projected to increase by nearly 50 percent, offering Europe ample and flexible alternatives to pipeline gas. At the same time, the International Energy Agency expects global gas demand to peak around 2030, suggesting that the 2030s will be marked by excess supply, intensified competition among natural gas producers and reduced prices.

Another potential threat for future Norwegian gas exports comes from the trade negotiations between the EU and the US. Recently, the EU has pledged to scale up purchases of U.S. energy products, including LNG. More specifically, the EU has pledged to spend $750 billion over the next three years on energy imports from the U.S implying more than a threefold growth in energy imports from the US.[56] However, the pledge is not legally binding and regarded by experts as unrealistic, leaving significant uncertainty about its actual impact on EU gas imports.[57]

Textbox 2: EU – US trade deal: $750 billion dollars in energy imports. Sources: Reuters, EIA[58]

The US–EU trade pledge implies annual EU energy imports from the United States worth around $250 billion – more than triple the 2024 level of $76 billion and equivalent to nearly 80 percent of total US energy exports in 2024 ($318 billion). While framed as a political commitment rather than a binding trade contract, the scale is extraordinary. Meeting it would require a major expansion in US exports across oil, LNG, and other fuels.

For LNG in particular, the target is unrealistic in the short term: according to the EIA, US export capacity is expected to reach around 6 million TJ in the coming years, while tripling EU imports from today's level would require nearly 5 million TJ - almost the entire US capacity - and would necessitate diverting cargoes from existing long-term contracts with Asian buyers. Although US LNG capacity is set to grow further, most new projects will not come online early enough to meet the increase in demand implied by the pledge. Under full fulfilment, the US could supply close to 50 percent of EU LNG imports, leaving less space for other exporters and directly squeezing Norwegian gas out of part of its current market.

[56] European Commission (2025). EU-US trade deal explained. Available here.
[57] Reuters (2025). EU's $250 billion-per-year spending on US energy is unrealistic. Available here.
[58] EIA (2025). Short-Term Energy Outlook. Available here.

The outlook for Norwegian natural gas is further affected by climate policies in the United Kingdom, which are more ambitious than those of the European Union. The UK has committed to reducing greenhouse gas emissions by at least 81 percent by 2035 compared to 1990 levels—a target far stricter than the EU's 2035 goal.

However, ff UK demand were to fall at a rate similar to that projected for the EU, Norwegian exports to the UK could decline to around 0.4 million TJ by 2040. Combined with reduced EU exports (to 1.4 million TJ), this would leave a demand gap of about 0.9 million TJ—roughly one third of Norway's projected production in 2040—that would need to be placed on markets outside Europe.

Meeting this challenge will be difficult. Global demand for natural gas is expected to peak around 2030, while supply remains abundant. Norwegian LNG would therefore face intense competition from major producers such as the United States and Qatar, without the cost advantage provided by existing pipeline connections to Europe.

In summary, if the EU adopts the proposed 90 percent reduction target, our analysis show that the effect on gas European demand could be significant. This increases the risk of lower revenues due to weaker prices and limited market access for Norwegian gas, which could in turn mean that parts of Norway's gas, infrastructure - particularly investments tied to recently discovered and undeveloped gas fields - could become stranded assets.

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