



Navigating Towards 2040



*The Critical Role of the LNG Industry in
Achieving the EU's Climate Targets*

Overview of the Global LNG Market: Supply & Demand Dynamics

The global LNG market in 2023 marked a pivotal phase characterised by modest growth and dynamic shifts due to geopolitical and economic changes. The number of importing countries rose to 48, while the number of exporting countries remained steady at 20.

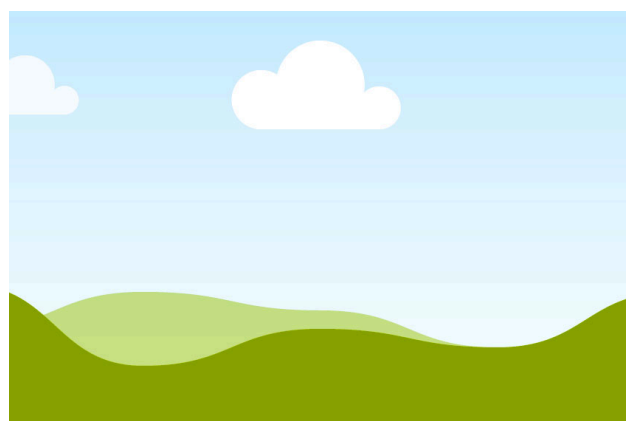
The LNG market saw a modest growth of 2.1%, reaching 545 billion cubic meters (bcm), a slowdown from the 5.6% growth in 2022. This growth was driven mainly by Asia (+9.5 bcm/+2.8%) and the Americas (+1.7 bcm/+10.6%) whereas Europe's demand remained stable at 164 bcm.¹

The LNG market reached 545 billion cubic meters (bcm). This growth was driven mainly by Asia (+9.5 bcm) and the Americas (+1.7 bcm).

European demand remained stable at 164 bcm, due to a balancing effect:

- Some countries (e.g. DE, NE) enhanced their regasification capacities, leading to significant import increases;
- Others (e.g. FR, UK) increased imports in 2022 due to the drop in Russian pipeline gas.

The attractiveness of the European LNG market will be key to ensure security of supply in the coming years as the competition increases with the growing LNG demand in emerging Asian and American economies.



Existing & Future LNG Infrastructure in Europe: Towards a Multi-Molecule Approach

In recent years, the EU has significantly enhanced its LNG import capacity and the utilisation rate of LNG terminals.

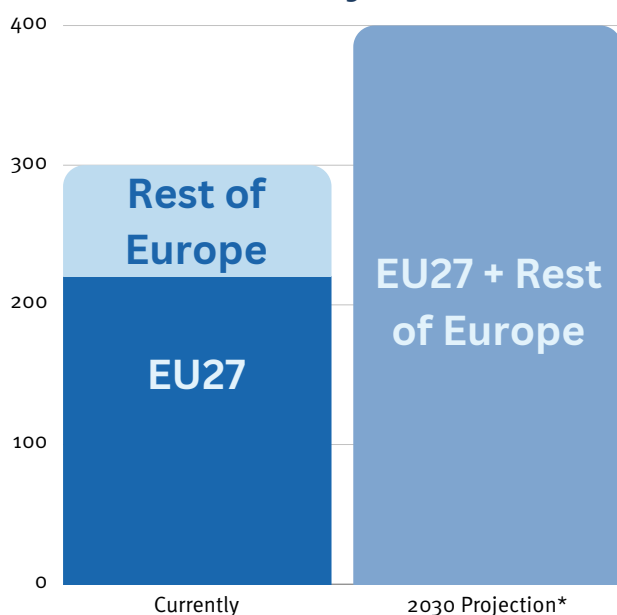
EU LNG regasification capacity has increased by 50 bcm/year because of surge in imports. This new infrastructure alleviated congestion and narrowed the price spreads between European gas hubs and LNG spot prices.²

The EU currently has 29 operational large-scale LNG terminals, including onshore and offshore.

Terminals (mostly in DE + SE Europe):

- Ensure security of supply and transition away from Russian pipeline gas
- Accommodate bio-LNG and synthetic LNG
- Can be adapted to handle hydrogen derivatives (e.g. ammonia), liquefied hydrogen, and captured CO₂
- Enable a gradual, cost-efficient, and secure energy transition

LNG Imports to Europe (in bcm/year)



*Based on projects under construction and planned capacity expansions.³

Beyond ensuring supply security and transition away from Russian pipeline gas, LNG terminals can play a key role in Europe's transition to renewable and low-carbon energy.

They can accommodate bio-LNG and synthetic LNG, two energy solutions enabling high GHG emission reductions, with minimal adaptation costs. By repurposing existing or building new infrastructure, terminals can handle hydrogen derivatives (e.g., ammonia), liquefied hydrogen, and captured CO₂. Acting as hybrid hubs for various molecules, they enable a gradual, cost-efficient, and secure energy transition.⁴

These pathways align with the recently adopted Hydrogen and Decarbonised Gas Market Regulation. Some pathways involve concrete actions at the terminal or downstream via Carbon Capture, Utilisation, and Storage (CCUS), while others involve emission reductions at production sites.

While there is no single solution for net-zero, the decision on the most suitable pathway should be made at the national or regional level.



Ensuring Security of Supply: The Strategic Role of LNG

The gas industry, and LNG in particular, has become crucial for the EU's energy security, particularly following the Russian invasion of Ukraine, which severely disrupted historical gas supply routes.

The industry contributed to the rebalancing of significantly reduced natural gas supplies from Russia, which fell from 154 bcm in 2021 to 46 bcm in 2023. The redirected global LNG flows towards the EU mitigated the immediate crisis by increasing LNG imports from 78 bcm in 2021 to 134 bcm in 2023.⁵

This shift helped balance the market, notwithstanding significant economic costs, demonstrating the flexible LNG market's ability to adjust to sudden supply shocks.

However, these adjustments came at a steep price, with the EU's wholesale gas prices averaging €103/MWh in 2022, compared to €32/MWh in Asia and €19/MWh in North America.⁶

With improvements in LNG imports, high storage filling levels and decreased demand in the EU, gas prices are expected to ease further towards pre-crisis levels. Conversely, higher prices in Asia lead to redirections of shipments from the EU to Asian markets.⁷

The EU's increased reliance on LNG alleviates supply pressure but underscores the need for a diverse and resilient natural gas supply mix.

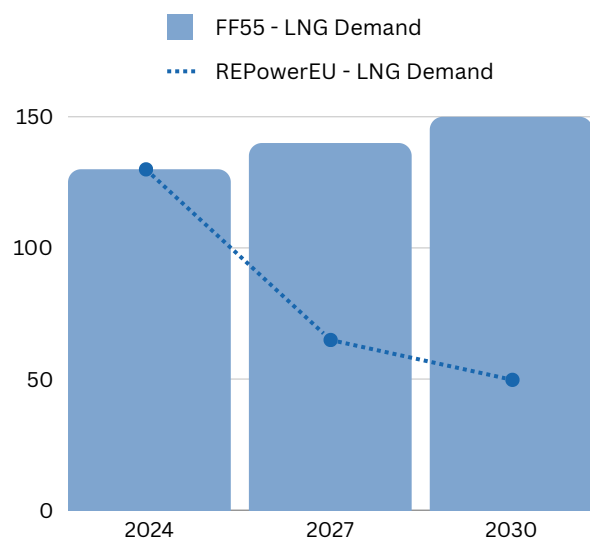
The quick mobilisation of LNG regasification infrastructure has partially offset the loss of Russian pipeline imports.

However, securing enough LNG is still a challenge due to global competition, especially from Asia, and especially in the long term. Realistic gas demand assumptions and clear political messages supporting EU buyers to sign long-term LNG contracts are crucial.

According to Rystad, under a 'Fit for 55' mix scenario, uncontracted volumes represent 43% of the LNG required for 2023-2040. To reduce its exposure to market fluctuations, the EU still needs to contract a significant part of these volumes.⁸

On the other hand, ACER's 'REPowerEU' scenario suggests that the European LNG market has too much LNG contracted between 2027-2030. This scenario considers an additional gas demand reduction of about 100 bcm by 2030 relative to the targets established by the Fit for 55 package. ACER also highlights that achieving the REPowerEU goals remains uncertain due to the current state of renewable energy deployment, energy efficiency, and various bottlenecks such as supply chain constraints and financing.⁹

Estimated LNG Needs Under Different Scenarios



Source: ACER based on data from Platts and REPowerEU

The significant gap between the two projections underscores the need for clarity at both the EU level and for third-country suppliers. This further emphasises that investments in LNG infrastructure and long-term contracts are vital to ensure stable energy supply in the EU and reduce vulnerability to price volatility.

The Energy Transition: LNG's Contributions

LNG, along with its bio- and synthetic substitutes, plays a critical role in ensuring energy security and in the transition of power generation, industry, and end-uses such as heating, cooling, and transport.

During the 2024-2029 mandate, the European Commission will propose to include the 2040 emissions reduction target in EU Climate Law. A supportive policy framework is needed to reach this, recognising the contributions of fuels like:



LNG



Hydrogen



Biomethane



Derivatives



Synthetic Methane

Taking into account both CO₂ and methane emissions, switching from coal to gas in power generation and heat applications reduces emissions by 50% and 33% respectively, making coal-to-gas switching an efficient and cost-effective method to lower emissions.¹⁰ In 2022, coal power plants were responsible for 62% of Europe's CO₂ emissions from electricity generation.¹¹



Therefore, transitioning from coal to gas leads to significant GHG emission reductions, which can be further enhanced by incorporating renewable and low-carbon gases.

Gas-fired power generation, which can utilise renewable and low-carbon gases, supports the integration of intermittent renewable electricity sources in Europe's energy mix.

With intermittent renewable sources accounting for 44% of Europe's electricity mix in 2023, gas-fired generation provides essential flexibility for a stable and reliable energy supply.¹²

Additionally, the LNG industry is actively reducing its environmental footprint through stricter reporting standards, advanced methane leak detection technologies, integration of renewable energy, and CCS investments.

Under the Global Methane Pledge, 155 countries, representing 50% of global anthropogenic methane emissions, have committed to reducing methane emissions across all sectors by at least 30% by 2030 compared to 2020 levels.¹³

Qatar, one of the largest LNG exporters, is significantly investing in CCS technology, aiming to store over 11 million tons of CO₂ annually by 2035.¹⁴ Such commitments improve the GHG performance of LNG throughout the value chain.

In transport, gases are emerging as alternative fuels of choice.

Starting with CNG/LNG, the heavy-duty transport sector can transition to net-zero emissions by gradually incorporating liquefied biomethane and synthetic methane into the fuel mix, in combination with other solutions.

These fuels can be blended at any ratio without changes to infrastructure, allowing for immediate introduction once available at scale.

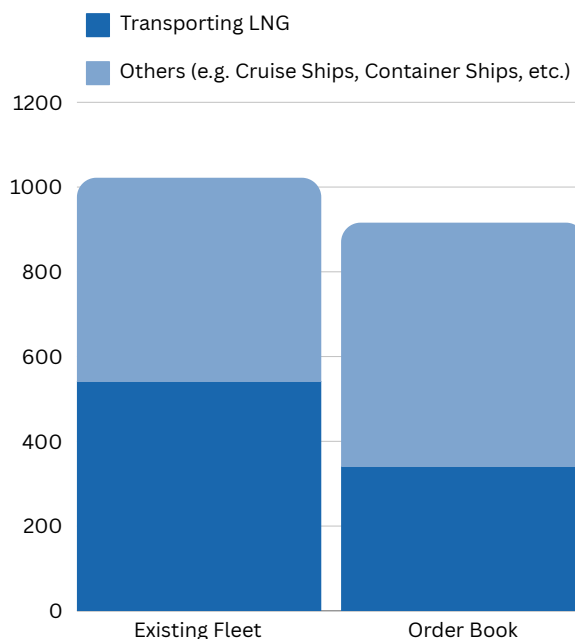
Furthermore, LNG and biomethane will serve as foundational sources for developing other energy solutions such as biomethanol and ammonia. This approach aims to allocate the appropriate molecules to the right end-users' needs, thereby accelerating the decarbonization of various sectors.

In the shipping industry, there are now over 1,000 LNG-fuelled vessels, with nearly 1,000 more on order.¹⁵ LNG is becoming a preferred alternative fuel in the maritime sector and contributes to preserving air quality, a major public health concern, by significantly reducing atmospheric pollutant emissions.

Compared to conventional fuels, LNG reduced sulphur dioxide emissions by 99%, fine particle emissions by 91% and nitrogen dioxide emissions by 92%.¹⁶

The requirements of FuelEU Maritime and the EU ETS will drive the rapid adoption of high-performance LNG ships and increased blending rates of liquefied biomethane and synthetic methane, furthering significant GHG emissions reductions.

LNG-Fuelled Vessels



For heavy-duty road transport, in 2024, more than 1,300 CNG and 45 LNG refuelling stations in the EU already offer biomethane refuelling options, out of the 4,100 CNG and 700 LNG stations.¹⁷ GHG emission reduction pathways relying on bio-LNG and synthetic LNG should be recognised in the European regulatory framework for road transport.

[1] GIIGNL, [Annual Report 2024](#) (2024)

[2] ACER, [Analysis of the European LNG market developments](#) (2024)

[3] GIE, [Aggregated LNG System Inventory](#) (2024)

[4] GLE, [Study on The Contribution of Terminal Operators to Securing and Greening Energy for Europe](#) (2024)

[5] Bruegel, [European Natural Gas Imports](#) (2024) Rystad, [Rystad Energy Cube](#) (2024)

[6] Rystad, [Rebalancing Europe's Natural Gas Supply – 2nd Edition Summary](#) (2023)

[7] ACER, [Analysis of the European LNG Market Developments](#) (2024)

[8] Rystad, [Rebalancing Europe's Natural Gas Supply – 2nd Edition Summary](#) (2023)

[9] Ibid.

[10] IEA, [The Role of Gas in Today's Energy Transition](#) (2019)

[11] IEA, [World Energy Outlook](#) (2023)

[12] Eurostat, [Renewables Take the Lead in Power Generation in 2023](#) (2024)

[13] Global Methane Plague, [Fast Action on Methane to Keep a 1.5°C Future Within Reach](#) (2024)

[14] QatarEnergy, [Climate Change and Environmental Action](#) (2024)

[15] Clarksons, [Research Data](#) (2024)

[16] CMA CGM, [Sustainable Development Report](#) (2020)

[17] Eurogas, [Stations Map](#) (2024)

Policy Recommendations: The LNG Industry's Role in Meeting the EU's 2040 Climate Goals

1. Enhance confidence in the EU LNG market

LNG is expected to provide significant flexibility for future EU gas demand, so the EU LNG market must be shielded from price volatility and global competition, while ensuring affordable energy and economic competitiveness.

To do this, it is crucial to:

- Use realistic natural gas demand forecasts for policy frameworks, long-term business decisions and infrastructure investments.
- Ensure that Regulations and reporting requirements are aligned with international standards to enhance international suppliers' ability to comply efficiently.

2. Enable LNG importers' compliance with the EU Methane Regulation

The regulation requires importers to provide detailed methane emissions data for EU LNG imports. Without consistency between measurement, monitoring, reporting, and verification (MMRV) standards, there is a risk of non-compliance. There are significant uncertainties arising from the importer obligations in the Regulation, potentially impacting the EU's security of supply.

Therefore, it is essential:

- For the EC to clarify provisions for importers as soon as possible, but no later than early 2025, while considering the complexity of global trade networks.

- To collaborate with LNG supplying countries at the earliest stage possible to accelerate the development of equivalent international measurement, monitoring, reporting and verification (MMRV) frameworks.

3. Align national and EU legislation on the role of LNG terminals

Terminals are pivotal for supply security and can serve as hubs for renewable and low-carbon energy, CCUS, and CO₂ handling.

The implementation of the Green Deal, and in particular the new Hydrogen and Decarbonised Gas Markets Package, should:

- Recognise the diverse capabilities of LNG terminals to be cost-effectively and gradually converted to hybrid hubs handling a variety of molecules.

- Encourage national regulatory frameworks to support terminal transformation and emissions reductions of energy imports.

4. Enable gases to contribute to emission reductions in the EU ETS sectors

The EU Emissions Trading System (EU ETS) is critical to recognise the benefits of gases such as biomethane and synthetic methane.

To ensure a level playing field and promote the use of sustainable gases, it is important to:

- Adopt a technology neutral approach and ensure that the EU ETS Monitoring and Reporting Regulation (MRR) creates a level playing field between renewable fuels specified under the RED and low-carbon fuels under the Gas Package.
- Facilitate zero-rating demonstration of fractions of biomass, RFNBOs, RCFs and synthetic low-carbon fuels based on a mass-balance approach within the interconnected infrastructure.

5. Remove barriers to trade for biomethane

Divergence in Member States' accounting methodologies for renewable energy shares and product requirements creates uncertainties for cross-border trade of biomethane and biomethane-based fuels in the EU. Although the launch of the Union Database may improve the situation, it is important to ensure its smooth functioning and consistent use across EU Member States.

Starting from 21 November 2024, the exclusions of most volumes of biomethane and biomethane-based fuels produced outside the EU from certification in the UDB will reduce the attractiveness of the EU market and threaten investments from non-EU countries. This may also apply to fuels bunkered in non-EU ports.

In this context, it is important to:

- ensure that renewable and low-carbon fuels produced outside the EU are eligible towards the EU's climate objectives

6. Facilitate emissions reduction in the shipping sector

To enable LNG, liquefied biomethane, and synthetic methane to contribute to emissions reductions in the shipping sector, the EU should:

- clarify how the sustainability certification of marine bunker fuels can be demonstrated for compliance with FuelEU Maritime and EU ETS, including through the integration of the marine bunker fuel supply chain in the RED Union Database.

7. Support road transport decarbonisation

LNG and CNG can enable emissions reductions in road transport at an affordable price.

CO₂ standards Regulations for light and heavy-duty vehicles should:

- adopt a technology-neutral approach and recognise the benefits of renewable and low-carbon fuels from a lifecycle perspective.

8. Integrate LNG data reporting

To support market efficiency along with transparency and integrity of LNG markets while maintaining simplicity and proportionality of reporting requirements, it is necessary to:

- better integrate LNG data reporting under REMIT and the LNG benchmark to avoid double reporting. Solidarity Regulation IT infrastructures such as Terminal should be aligned with the one used for REMIT reporting (ARIS).



LNG Protocol is the informal communication platform of five organisations that together drive the LNG industry forward. LNG Protocol members support the diffusion of knowledge, best practices and new technologies related to liquefied natural gas. Our vision is of an efficient and competitive global LNG chain for a sustainable future.

