

GIE Position Paper on the Revision of the Security of Supply Framework

Abstract

Recent geopolitical developments and the ongoing integration of the energy system highlight the need for a future-proof revision of the EU Security of Supply framework. Should gas demand decline over time – in line with decarbonisation objectives – the need for flexibility, resilience and diversified energy supply will remain critical. Gas infrastructure, including LNG terminals, transmission pipelines and underground gas storage, continues to play an essential role in ensuring security of supply, enabling cross-border solidarity and supporting the integration of renewable and low-carbon gases. The revised framework should therefore strengthen risk and adequacy assessments, better reflect infrastructure developments and evolving demand patterns, and support the continued availability of infrastructure that remains necessary during the integration of the energy system. At the same time, security of supply can no longer be assessed through a single vector. Increasing interaction between gas, electricity and hydrogen systems requires a more integrated and technology-neutral approach. Additionally, the growing exposure of critical energy infrastructure to physical and cyber threats underlines the need to strengthen infrastructure protection, emergency preparedness and cross-border cooperation as core elements of Europe's future security of supply policy.

1. Introduction

Recent geopolitical developments have once again highlighted the critical importance of gas infrastructure in ensuring Europe's security of supply and strengthening the resilience of the energy system in times of crisis. However, future security of supply challenges will not be driven by geopolitics alone. The ongoing integration of the energy system, changing consumption patterns, increasing weather-related risks, infrastructure needs, and growing global competition for energy resources are reshaping the conditions under which energy security must be delivered. The revision of the European Union (EU) Security of Supply (SoS) framework should therefore adopt a forward-looking approach that reflects these evolving realities, supports a diversified, resilient and flexible energy system, and enables

the efficient integration of renewable and low-carbon energy carriers, including biomethane and hydrogen, while ensuring reliability and affordability for consumers.

Gas Infrastructure Europe (GIE) members connect supply sources to markets and enable cross-border solidarity in times of disruption. Together, they operate over 200,000 kilometres of high-pressure transmission pipelines, underpin Liquefied Natural Gas (LNG) access on an uncertain market, and represent natural gas (gas) storage flexibility up to three months of winter supply. Their investment and operational decisions directly contribute to Europe's security of supply, affordability and energy system integration.

In light of the revision of the framework, this position paper outlines GIE's key policy recommendations and considerations for the future evolution of the EU Security of Supply framework.

2. Value of gas infrastructure in ensuring security of gas supply

Gas infrastructure is a key element to ensure security of energy supply in Europe, both today and in the future. Energy crises in recent years have demonstrated the importance of constructing cross-border pipelines that enable changes in flow directions, having significant volumes of gas in storage with high deliverability rates, and being able to rely on LNG terminals to better accommodate diverse import routes and access to global gas markets. In the current geopolitical context, securing sufficient LNG supply has become challenging due to intense global competition. At the same time, the phase-out of Russian natural gas imports has reshaped European gas flow and storage patterns, increasing the importance of alternative supply routes and entry points. The revised Security of Supply framework should therefore reflect these evolving supply patterns and the growing strategic importance of infrastructure that enables broad access to diversified sources of gas supply.

The need for system flexibility in the coming years is projected to increase despite the expected decline in EU natural gas demand. **Figures 1 and 2** below, taken from the 2026 GIE study "*Securing Future Supply: Quantifying Gas Storage Needs for a Resilient and Integrated European Energy System*," illustrate that lower annual consumption does not eliminate nor reduce the need for flexibility and storage capacity. Although EU methane demand is projected to decline by 16% by 2030 and 36% by 2040, underground Gas Storage (UGS) is nevertheless projected to supply 58% of gas during peak days (up from 44% in 2024) and 51% during two-week peak periods (up from 34% in 2021).¹

¹ This increasing reliance on storage to manage seasonal and short-term demand fluctuations is consistent with the ENTSO-E & ENTSG Central Scenarios "National Trends" and "National Trends+", which project a continued role for methane, hydrogen and liquid fuels in the EU energy system, together accounting for around 40% of EU27 final energy demand in 2050.

Figure 1

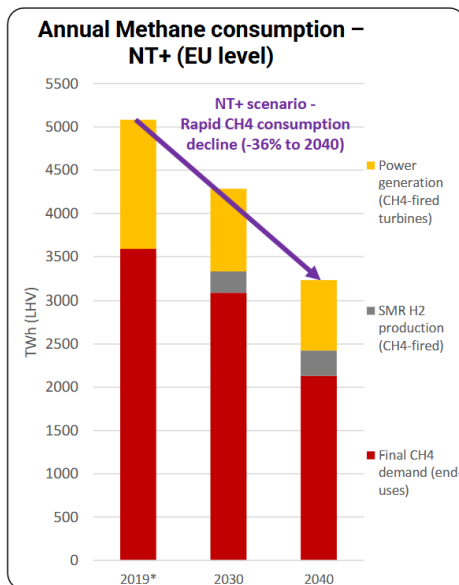


Figure 2

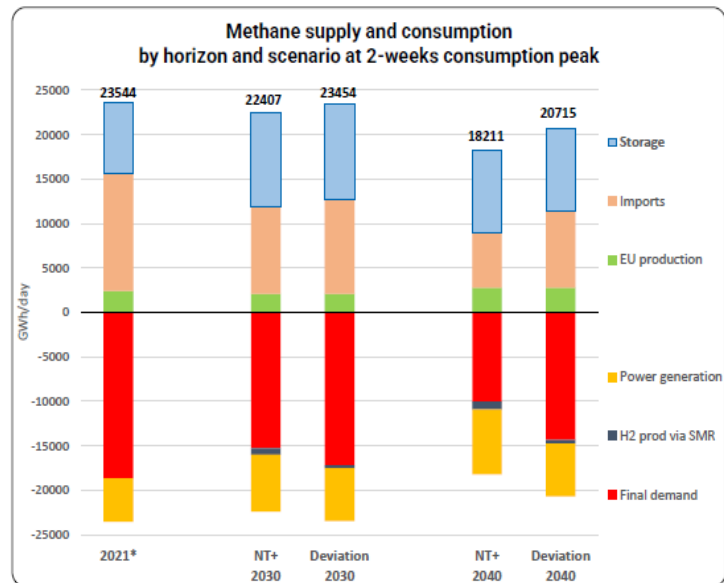


Figure 1 and 2: Methane consumption decreases in NT+ scenario (GIE Study “[Securing Future Supply: Quantifying Gas Storage Needs for a Resilient and Integrated European Energy System](#)”, p. 34 & 57, March 2026).

The GIE study introduces a “Toolbox of Storage Mechanisms capturing the insurance value” designed to complement market-based arrangements and reinforce a coherent, future-proof European approach to security of supply. Building on the findings of the study, the recommendations put forward in this position paper draw on the toolbox mechanisms identified in it, which provide practical options to preserve the insurance value of storage and strengthen Europe’s security of supply.

Under supply shock conditions, the study finds that deliverability margins become very limited, falling to around 2 TWh/day. In these situations, UGS plays a dominant role, covering up to 61% of deliverability, acting as a critical safety net for both gas and electricity security of supply. Against this background, and in line with the toolbox approach developed in the study, **GIE considers that storage filling and strong deliverability must be preserved as core elements of Europe’s Security of Supply framework.**

Drawing on the toolbox findings, **GIE further believes that risk and adequacy analyses should be strengthened to reflect a broader and more forward-looking set of supply and demand scenarios.** Shock scenarios should be expanded beyond traditional cold-spell assumptions to account for reduced and more volatile renewable power generation, electricity grid congestion, as well as other events linked to climate variability (e.g. heat waves, prolonged droughts) or unaccounted developments in an

increasingly uncertain geopolitical environment. Such assessments should not rely solely on aggregate storage volumes or short-term market signals, but also consider the geographical distribution of stored gas, the availability of transmission and cross-border capacity, regional bottlenecks, and the possibility of simultaneous supply stress across several Member States. This is particularly important in regions where storage capacities cover only a limited number of days of domestic consumption and where reliance on cross-border flows may become constrained during periods of widespread stress. GIE also recommends that the analysis horizon should be extended to cover 10 years, establishing a longer-term framework that goes beyond the current 2027 perspective.

Additionally, both infrastructure and supply standards should be updated to better reflect the changing energy system: Infrastructure standards should incorporate volume-based adequacy assessments, forward-looking demand trajectories, storage needs and regional perspectives, as well as new drivers of peak demand. In parallel, supply standards should be revised to better reflect cross-sectoral demand determinants and need to be enforced more adequately, ensuring that gas supply contracts to final customers are underpinned by firm physical instruments.

Energy system integration

Beyond methane, gas infrastructure can support the import, transport and storage of renewable and low-carbon gases, such as biomethane and hydrogen, which contribute to security of supply by diversifying energy sources and reducing exposure to external disruptions. These gases can be locally produced and stored while also being able to be imported through existing infrastructure – strengthening domestic resilience and improving energy system competitiveness and security. The repurposing of existing gas infrastructure in the medium to long term offers a cost-efficient pathway to enable hydrogen transport, while increased domestic biomethane production can provide homegrown renewable supply, contributing to increased self-sufficiency and supporting the stabilisation of the network where needed and reduce exposure to geopolitical disruptions that may unexpectedly affect gas flows.

Energy terminals are well positioned to enable the imports of low-carbon and renewable molecules, such as biomethane, synthetic methane and, over time, hydrogen and hydrogen-derived carriers including liquid hydrogen, ammonia, methanol and liquid organic hydrogen carriers (LOHCs). In addition to large-scale imports, LNG infrastructure increasingly supports a growing range of small-scale services, such as truck loading, bunkering and other distribution activities, supplying customers as well as maritime and road transport. Together, these services efficiently contribute to emissions and footprint reduction, while enhancing system flexibility and resilience across the energy system. **Infrastructure developments – including changes in storage and pipeline use due to the repurposing for hydrogen – should be fully taken into account when assessing future system adequacy and resilience.**

Ensuring security of supply requires not only a robust regulatory framework aligned with decarbonisation objectives, but also one that enables the economically sustainable operation of Europe's gas infrastructure throughout the integration of the energy system. LNG terminals, underground gas storage facilities and transmission pipelines, in combination with gas-fired power plants, continue to play an important role in keeping the energy system stable. Against this background, the value of existing and ongoing investments in the gas sector – including the ones provided in the PCI/PMI list – and their contribution to security of supply should not be underestimated. This requires sufficient infrastructure capacity and the availability of alternative routes with firm capacities, ensuring that gas can be delivered where and when it is needed. In this context, maintaining infrastructure availability is essential. Appropriate regulatory incentives are therefore essential to take investment decisions, ensure affordability for consumers, and enable a fair allocation of costs across the system. **The revised Security of Supply framework must support the use, maintenance and further improvement of gas infrastructure assets that will remain necessary during the integration of the energy system, strengthening both crisis prevention and emergency response while enabling decarbonisation objectives.**

Member State cooperation

While security of supply challenges and infrastructure configurations differ across Member States, the revised framework should ensure sufficient flexibility to reflect national and regional specificities. Infrastructure needs, supply patterns and available security of supply measures vary significantly across Europe and should therefore be appropriately considered when designing and implementing EU-level measures.

At the same time, Europe's gas system is highly interconnected and security of supply increasingly depends on interlinked infrastructure and mutual support between Member States. As a result, infrastructure, policy and investment decisions in one country can have direct implications for the resilience of neighbouring systems and for the EU as a whole. The revised framework should therefore strike an appropriate balance between respecting Member State specificities and existing national arrangements, while strengthening regional and EU-level coordination, cooperation and solidarity mechanisms. In this context, **the Security of Supply framework should require that compliance with supply standards can be effectively and proportionately ensured**, while leaving Member States the flexibility to determine the most appropriate implementation and enforcement measures at national level. Such measures could include penalties on suppliers or, where necessary, the withdrawal of a commercial supply licence.

Against this backdrop, differences in national system configurations should also be carefully reflected in the scope of protected customers. Given the strategic role of gas storage in safeguarding security of supply across the Union, **the revised framework should maintain a common EU baseline for protected customers while allowing Member States, where justified by national circumstances,**

to extend protection to additional categories of customers whose continued gas supply is essential during a crisis.

Policy Recommendations:

- ➔ The revision of the Security of Supply framework **should consider the Toolbox of Storage Mechanisms** introduced in the GIE study *Securing Future Supply: Quantifying Gas Storage Needs for a Resilient and Integrated European Energy System*, which provides Member States with a range of measures that can be tailored to national circumstances and specific security of supply challenges.
- ➔ In line with the toolbox, **identify the storage capacity needs and inventory levels required to safeguard supply**, taking careful account of withdrawal constraints and deliverability dynamics, and establish clear responsibilities for Member States to implement the regulatory measures necessary to achieve the required level of Security of Supply.
- ➔ **Risk and adequacy analyses under the SoS framework should be further strengthened** to reflect a broader and more forward-looking set of scenarios:
 - **Broaden the shock scenario assessments** beyond traditional cold-spell assumptions to reflect evolving supply and demand risks, including energy system interdependencies, regional and cross-border constraints, and the possibility of simultaneous stress across multiple Member States due to (global) crises.
 - **Extend the analytical horizon to ten years** and embed anticipated infrastructure developments, including the progressive repurposing of assets for CO₂ and hydrogen transport and storage.
 - **Update infrastructure standards** to incorporate volume-based adequacy assessments, forward-looking demand trajectories, storage filling requirements, and regional perspectives, as well as new drivers of peak demand-based adequacy assessments.
 - **Revise supply standards** to better reflect cross-sectoral demand determinants, the economic significance of uninterrupted supply for SMEs and industry, and the allocation of responsibilities within the market model. Supply standards should ensure that gas supply contracts to final customers, including gas fired power plants, are backed by firm physical instruments.
- ➔ **Strengthen the monitoring and oversight of supply standard implementation across Member States**, while leaving Member States the flexibility to determine the most appropriate implementation and enforcement measures at national level.
- ➔ **Infrastructure developments**, including asset repurposing for hydrogen, **should be fully reflected in future security of supply assessments**, while maintaining and supporting gas infrastructure assets that remain necessary for system resilience and security of supply during the integration of the energy system.

- ➔ **The revised framework should maintain a common EU baseline for protected customers** while allowing Member States, where justified by national circumstances, to extend protection to additional categories of customers whose continued gas supply is essential during a crisis.

3. Importance of Sector-Coupling in Security of Supply

In an energy system with increasing volumes of renewable and volatile electricity generation, the interlinkage between the energy sectors becomes even more relevant. A significant share of peak natural gas demand is linked to power generation, illustrating the growing interdependence between the gas and electricity systems (**Figure 3**). While overall gas demand is expected to decrease over time, the need for peak flexibility is likely to increase. In this scenario, gas infrastructure plays a critical role in balancing the energy system by providing large-scale, seasonal and peak flexibility that complements variable renewable electricity generation. As such, molecule-based infrastructure strengthens system resilience and safeguards security of supply during periods of peak demand, such as during cold and cloudy winter days (*Dunkelflaute*).

Figure 1

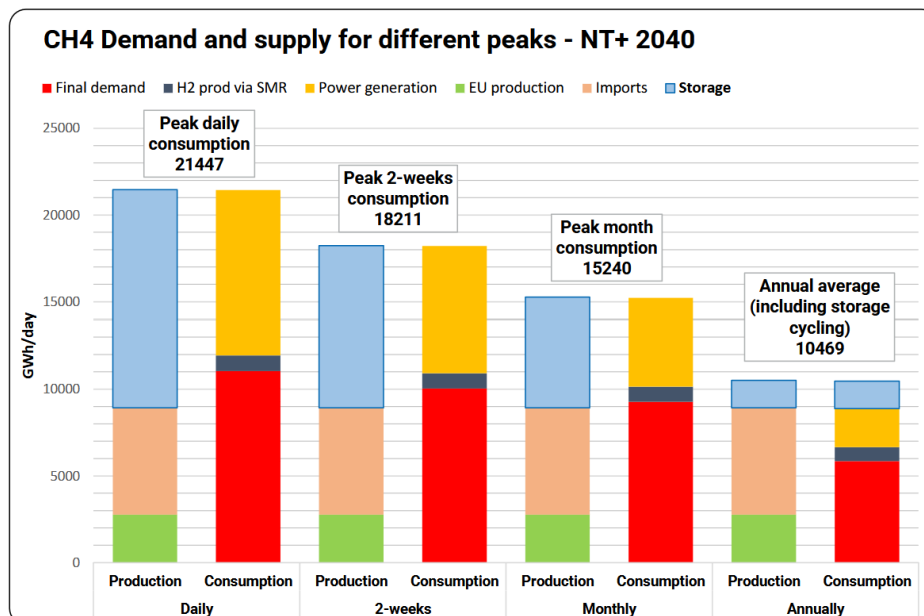


Figure 3: CH4 Demand and supply for different peaks – NT+ 2040 (GIE Study “[Securing Future Supply: Quantifying Gas Storage Needs for a Resilient and Integrated European Energy System](#)”, p. 45, March 2026)

Natural gas, as well as hydrogen and other low-carbon and decarbonised molecules in the future, provide highly scalable flexibility options for the electricity system. As energy vectors become more closely interconnected, security of supply assessments should move beyond a siloed approach and better reflect the contribution of molecule-based infrastructure to energy system adequacy and resilience. These molecules are essential to secure constant energy flows to European citizens and households, particularly in power systems with high shares of variable renewable generation. By providing flexibility across different timescales and mitigating congestion in other networks, gas and future hydrogen infrastructures support the efficient integration of renewable energy and contribute to price stability, affordability and efficiency, through a more diversified energy mix. **The revised Security of Supply framework should therefore take these evolving cross-sector interactions into account.**

In this context, the 2026 GIE Study "*Unlocking Energy System Efficiency: The Strategic Role of Hydrogen Infrastructure in Sector-Coupling*" highlights several key modelling outcomes with direct implications for the future Security of Supply framework.² The study demonstrates that security of supply and climate neutrality require a more diversified technology and vector mix in which sector coupling technologies will play a significant role to avoid electricity infrastructure congestion and foster overall market efficiency. Furthermore, the study identifies the hydrogen system as a key flexibility and security of supply solution for the future energy system, with the European hydrogen transport infrastructure, in combination with hydrogen storage facilities and a balanced mix of domestic production and imports, playing an essential role in strengthening flexibility, resilience and security of supply. The study shows that the hydrogen system including storages is more adequate to meet long-term flexibility needs across the integrated energy system than electricity sector specific short and min-term solutions. **The findings of the GIE study suggest that the future Security of Supply framework should explicitly consider the contribution of hydrogen infrastructure in supporting renewable integration, supply diversification and long-term energy system resilience.**

Policy Recommendations:

- ➔ **Recognise the essential role of gas infrastructure** in providing large-scale, seasonal and peak flexibility, supporting power system adequacy, renewable energy production growth, security of supply and enabling energy system resilience and integration.
- ➔ **Better integrate hydrogen into the Security of Supply framework** by acknowledging the role of hydrogen transport infrastructure, storage facilities, domestic production, imports and sector-coupling technologies in supporting flexibility, renewable integration, supply diversification and long-term energy system resilience.

² For further details, see the 2026 GIE study "*Unlocking Energy System Efficiency: The Strategic Role of Hydrogen Infrastructure in Sector-Coupling*," available at: https://www.gie.eu/wp-content/uploads/filr/13915/26.04.14_GIE-Sector-Coupling-Study-Energy_System_Efficiency.pdf

- ➔ **Ensure a technological-neutral and integrated approach to security of supply** by better reflecting the role, contribution and interdependencies of different energy vectors, infrastructures and technologies, including hydrogen and biomethane, recognising that their interaction is essential to delivering security of supply, affordability and decarbonisation objectives.

4. Relevance of physical security with impact on Security of Supply

In today's rapidly evolving geopolitical environment, the protection of critical energy infrastructure has become an integral component of energy security of supply. Security is no longer defined solely by sufficient capacity or diversification of sources, but increasingly by the resilience, operability and protection of assets from hybrid threats across the entire value chain. Recent incidents of sabotage, hybrid attacks and growing geopolitical tensions have demonstrated that energy infrastructure, particularly cross-border assets, LNG terminals, compressor stations and offshore pipelines are exposed to both physical and cyber-physical threats.

Strengthening physical security also requires a step change in cooperation between energy undertakings and national defence and security authorities. Critical infrastructure protection can no longer be treated as a purely civilian domain. Closer coordination and cooperation through joint risk assessments, contingency planning, and crisis response mechanisms should be systematically developed, building on existing frameworks.

The EU should make security and resilience a core criterion for energy infrastructure planning, funding and project evaluation. This should include explicit criteria related to physical protection, cybersecurity, and system resilience in project selection and evaluation of new and existing network infrastructure. Appropriate remuneration must be ensured to enable such high-capital intensive investments for the protection of Europe's critical infrastructure.

Furthermore, **structured and secure information sharing mechanisms between operators, Member States and EU institutions must be enhanced.** Timely exchange of threat intelligence, incident reporting and best practices is essential to anticipate risks and ensure coordinated responses across borders. Ultimately, ensuring the security of energy supply in the current geopolitical context requires a holistic approach that combines infrastructure investment, regulatory frameworks, industrial policy and security cooperation. Without integrating these dimensions, the EU risks building energy systems that are efficient but not resilient.

Policy Recommendations:

- **Integrate security and resilience considerations into EU energy infrastructure planning and funding frameworks**, ensuring that physical protection, cybersecurity, operational resilience and preparedness against hybrid threats are systematically reflected in the assessment, development and financing of both new and existing infrastructure.
- **Establish a structured EU framework for secure information sharing on energy infrastructure threats and incidents**, enabling timely exchanges between operators, Member States and EU institutions, while strengthening coordination on risk assessment, crisis preparedness and emergency response.