1. General Observations

ENTSOG supports proactive efforts to strengthen the EU's energy security framework and stresses the need to adapt it to evolving challenges, as reflected in the preliminary findings of the Fitness Check. The future energy security framework should account for:

- Physical threats
- Geopolitical instability
- Cybersecurity
- Supply chain disruptions
- Energy affordability

2. Consumer Protection

- The definition of "protected customers" should reflect national specificities in natural gas consumption and provide Member States (MSs) with the necessary flexibility to decide on the distribution of gas resources. This should allow MSs to act according to their national consumption patterns while still ensuring an appropriate level of curtailment to support cross-border solidarity. The guideline should also help MSs to avoid significant discrepancies between MSs in how they define and manage demand for such customers across the EU.
- Member States (with support of TSOs or other relevant market participants) should be able to anticipate (calculate) and share information about consumption levels of "Protected customers" and "Solidarity protected customers" to improve preparedness for crisis events.
- In cases where a MS has consumers that are highly dependent on renewable energy sources (such as renewable gases or electricity), their supply should be secured and duly considered within the energy security framework. However, this should not result in any form of discrimination between consumers reliant on renewable energy and those using other energy sources.
- Under no circumstances should energy production (in particular, biomethane) be disrupted during a crisis or the application of demand curtailment.

3. Storage and Supply Standards

- ENTSOG simulations confirm the critical role of gas storage facilities.
- Adequate level of gas in Underground Gas Storage (UGS) provides the flexibility needed during peak demand and ensures stable supply during winter periods.
- Early UGS withdrawal results in low storage levels at the end of the winter and might have negative impact on the flexibility of the gas system and filling level before the next winters. This should be considered in the energy security framework. The MSs are affected differently (especially countries in the centre of Europe and in Central and Eastern Europe (CEE) being more severely impacted due to their landlocked position).
- A volume-based approach, used in parallel with a percentage-based approach, should guide storage targets at national, regional, and EU levels.

- Any regulation aimed at ensuring adequate filling of European gas storages should consider cost-effectiveness and avoid interventions that create distorted incentives for market participants and unnecessarily inflate gas prices and costs associated with the filling of UGS.
- Coordination on a regional level on needed (for security of supply) storage filling levels on a regular basis (before, after, during injection/withdrawal seasons).
- Promotion of investments in increasing working volumes and withdrawal capacities, particularly in areas where such an increase is supported by assessments.
- Gas storage capacity hoarding should be avoided.
- Given the diverse UGS roles (system buffers, supporting grid stability by balancing pressure, supporting flows from LNG terminals), the different functions and their technical specificities might be also duly considered in the energy security framework.

On gas supply standards:

- The Security of Supply regulation must better reflect geopolitical risks and prepare for longer-duration supply disruptions.

The Security of Supply should consider the increasing importance of molecules, including methane and hydrogen, in providing flexibility, particularly as the share of renewable energy sources as power generation continues to rise.

4. Infrastructure Standards

- Based on risks assessments (national, regional, and Union-wide) infrastructure projects strengthening energy security should be coordinated on a regional and EU level and agreed accordingly
    - Costs incurred by TSOs in developing such infrastructure should be recognised by National Regulatory Authorities (NRAs).
- The framework should address investment asymmetry, where some MSs invest heavily while others benefit without contributing, in particular, on regional and EU levels, while also considering the different levels of interconnection capacity, and LNG capacities and obligations.
- The energy security framework should include provisions to promote investment in and development of infrastructure projects that are critical for security of supply, and at the same time considering cost-effectiveness and capacity utilisation.
- Future repurposing of gas assets for hydrogen and its impact need to be assessed in the context of maintaining infrastructure and supply standards.
- The infrastructure standard should take into account the recent changes in gas flow patterns and the policy of phasing-out Russian energy imports, in certain regions or areas. This should be duly taken into account in the energy security framework.

5. Risk Assessment

- Cross sectoral risks should be considered appropriately for each sector.
- Given the increasing importance of non-EU LNG supplies, the EU should:

- Address LNG supply risks separately within risk assessments.
- Ensure coordinated measures among MSs, shippers, and other stakeholders in respect to LNG supply during crises.

Roles and responsibilities of TSOs, other relevant infrastructure operators, producers, NRAs, network users, etc. during a crisis need a clearer definition to allow for increased cost-efficiency and predictability. The impact of declaring an EU emergency is unclear under current rules, and the rules for EU-wide crisis levels need improvement. Clear distinctions between regional and EU-wide levels are necessary. Increased interconnectivity among MSs allows the EU system to be used flexibly, and limiting crisis levels to a region would restrict this potential. We propose strengthening cooperation between MSs and clarifying the roles of those providing and asking for support.

The SoS Regulation should explicitly recognise interconnectors connecting the EU to non-EU countries (e.g. Energy Community Contracting Parties) as part of common risk assessments. These infrastructures play a crucial role in enabling flows between EU and non-EU systems. Their inclusion would ensure realistic scenario modelling and strengthen cooperation in line with the Regulation's cross-border solidarity principle.

Given its expertise, competences, and accumulated know-how, ENTSOG is well positioned to support the execution of analyses required for comprehensive risk assessments. By leveraging its experience, ENTSOG can contribute to the performance of simulations at European level that underpin the assessment process, helping ensure that the evaluations are robust and informative.

6. Preventive action plans and emergency plans

Roles and responsibilities should be clarified (national, regional, union levels).

7. Supply Diversification

- The energy security framework should recognise the strategic value of domestic energy production, including renewable gases, together with import sources in the EU.
- Investments in a decarbonised energy system and optimised use of existing infrastructure are vital.
- Infrastructure planning should consider changing production patterns, gas flow directions, and capacity constraints.
- The interruption of the largest sources of supply should be able to be covered by alternative routes with firm capacities.

8. Critical Entity Resilience

The energy sector remains a prime target for physical, cyber, and commercial attacks. ENTSOG recommends:

- Enhancing system flexibility through interconnections and infrastructure investments.

- Improving monitoring and early-warning systems.
- Ensuring backup solutions and spare parts availability.
- Strengthening cooperation between energy undertakings and defence and security authorities.
- Strengthening the protection of critical infrastructure by implementing advanced physical and electronic security measures.
- Organising simulations and training exercises that mimic physical and cyber-attacks in order to assess preparedness and responsiveness.
- Promoting information sharing between institutions and critical infrastructure operators regarding risks and threats.
- Strengthening civil preparedness for security threats, both natural- and human-made, whether accidental or intentional.
- Considering that publicly available open-source maps disclose the locations of critical energy infrastructure.

9. Monitoring and Transparency

Effective monitoring should cover:

- Prevention of artificial congestion, capacity hoarding, and unused capacity holding.
- Sudden changes in energy market behaviour (supply, demand, routes of transportation, usage of UGS, etc).
- Energy flows patterns.
- Energy storage and correspondence with planned and non-risky values.
- Incidents and crisis events, as well as signals which might lead to them.

10. Crisis Management

Roles and responsibilities during a crisis must be clearly defined, particularly for:

- TSOs, DSOs, NRAs, and network users.
- Improve procedures for declaring an EU emergency and distinguishing between regional and EU-level crises.

ENTSOG proposes:

- Establishing the Gas Crisis Management Group (GCMG) as a standing expert body, not just a reactive one.
- Including experts from the EC, ENTSOG, GIE, ENNOH and other relevant stakeholders (including interconnector operators).
- Conducting dry-run exercises and regular security of supply updates to improve readiness and information flow.

11. Solidarity Mechanism

To improve implementation of solidarity provisions, ENTSOG recommends:

- Clarifying roles and responsibilities of competent authorities, TSOs, network users, producers, DSOs, etc. while applying the solidarity measures.
- Clarifying the mechanism of applying solidarity measures in real-world gas crises.
- Defining clear rules for capacity allocation, reallocation, nominations, flow control, and balancing when solidarity measures are applied.
- Defining clear methods for calculating and delivering solidarity gas volumes.
- Establishing certainty and effective information exchange on gas demand values for solidarity protected customers - across different scenarios and timeframes (yearly, seasonal, monthly, daily, and peak day) to support better management of security of supply crisis events.
- Developing a clear transition strategy between market-based measures and solidarity regimes to avoid disruptions during emergencies.

12. Demand Reduction

- Gas demand reduction measures proved effective during the 2022 crisis but has a limited role in a future potential crisis and determined irreversible demand destruction with related EU de-industrialisation dynamics.
- Demand reduction measures should be considered if they are reasonable, realistic and socially sustainable.
- Clear roles and responsibilities must be defined for both MSs and gas undertakings to ensure timely and effective measures are taken to reduce demand. This includes pre-agreed actions and coordination mechanisms that can be swiftly activated during a crisis. To maximise efficiency and impact, demand reduction should be in principle managed not only at the national level but also through regional and EU-wide coordination. A unified approach helps avoid fragmented, country-by-country responses and ensures that efforts are proportionate, maintains stable gas prices, and aligns with the principles of solidarity and supply security from an EU perspective. Ultimately, this will strengthen cross-border solidarity by ensuring that all MSs contribute to and benefit from union crisis response efforts.

13. Coordination with Non-EU Countries

ENTSOG recommends that non-EU countries directly connected to the EU and involved in gas transit (transportation) or supply should be involved in activities and in solidarity mechanisms, provided a reciprocal adherence to the relevant EU regulatory and normative framework is guaranteed.

Countries, such as the UK, Switzerland, Norway, Algeria, and Turkey, Energy Community Contracting Parties should be engaged. Also, the Gas Coordination Group (GCG) could invite non-EU countries to facilitate dialogue on specific topics as already previously done.

This involvement may include:

- Direct representation by individual countries, or

- Representation via regional organisations, such as the Energy Community Secretariat.

Additionally, MS representatives should have the ability to invite sectoral experts (e.g., from TSOs, interconnector operators, LNG operators, storage operators) to enhance technical insight and informed decision-making.

This inclusive and flexible participation model would:

- Strengthen regional cooperation.
- Improve situational awareness.
- Enhance the GCG's ability to address cross-border security challenges effectively.

14. Hydrogen Network

The final configuration of hydrogen networks is still developing, creating challenges for establishing robust security of supply provisions.

ENTSOG proposes a step-by-step development of the energy security framework for hydrogen, aligned with the evolution of the hydrogen market.

Key ENTSOG recommendations:

- If cross-border hydrogen markets emerge, the security of supply approach should consider for the current approach for the natural gas market and be adapted to the specificities of the hydrogen market.
- During the early stages of the hydrogen market development, especially for repurposing activities, security of supply activities for the gas and hydrogen sectors should remain fully coordinated to deliver a common, integrated planning approach.
- Identifying protected customers in the hydrogen system currently is not required, as the customers will mainly be large industrial enterprises, which will not have the same need for protection as households and small businesses in the gas system.

With rising renewable electricity production, the risk of its curtailments is growing. Sector integration with hydrogen and other energy solutions must be considered.

15. Cross-Sector Cooperation Between Gas and Electricity

Closer coordination between the gas and electricity sectors is essential during energy crises, as their interdependence continues to grow. Coordinated crisis planning, scenario modelling, and usage of cross-sector cooperation protocols can prevent cascading failures, optimise use of resources (e.g., gas for power generation), and strengthen overall system resilience.

Molecules will play a role in ensuring adequate energy supply, especially during peak times or periods of low-RES infeed, to support electricity and maintain overall energy system security and affordability. During the 39th Madrid Forum in May 2025, ENTSOG proposed a new, mid-term analysis to be included in the reviewed Security of Supply Regulation. ENTSOG will present at the next Madrid forum in 2026 a mid-term infrastructure assessment framework, with special attention to flexibility options and

security of supply provided by gas infrastructure to the electricity system in the context of the energy transition and sector integration.

Enhanced coordination between the gas and electricity sectors is important, and efforts should focus on improving interoperability between the two systems while preserving distinct, fit-for-purpose regulatory approaches. Gas and electricity systems differ significantly in terms of infrastructure, physical properties, market design and rules, operational flexibility, response times, and, consequently, in their approaches to crisis management.

16. Cross-Border Cooperation

Promotion of regional cooperation among TSOs, MSs, and gas undertakings will enhance security of supply. Cross-border cooperation should be more prominently reflected in the energy security framework.

The interconnected nature of the EU gas system requires coordination among EU MSs, and between MSs and non-EU countries directly connected to the EU (e.g. the UK, Switzerland, Norway, Algeria, Turkey, and Energy Community Contracting Parties). Planning and response efforts should be collective, rather than undertaken in isolation.

To strengthen this cooperation, the energy security framework should:

- Enable closer cooperation between EU MSs, EU MSs and non-EU countries – improvement of the interconnectivity between their gas systems is crucial for enhancing energy security in the region.
- Encourage joint preparedness, including shared risk assessments, regular simulations and emergency exercises (running tests, dry-run exercises, modelling of different crisis scenarios).
- Establish clear and coordinated procedures for managing cross-border gas flows, balancing, and solidarity actions during crises.
- Promote information exchange and operational coordination between EU MSs, EU MSs and non-EU countries and their TSOs, NRAs, and other relevant stakeholders at regional and EU levels.
- Eliminate all possible barriers to cross-border gas flows between the EU MSs and non-EU countries.

A more robust and operationalised cross-border approach – both between EU MSs and between the EU and directly connected non-EU countries – will significantly enhance regional resilience, prevent fragmentation during emergencies, and improve overall response capabilities.

17. Regulatory Approach

At this stage, ENTSOG does not see a need for a standalone new regulation. Instead, relevant provisions and improvements should be integrated into existing legislative frameworks. This will:

- Ensure consistency and coherence.
- Avoid regulatory duplication.
- Allow for a more targeted and efficient enhancement of the EU energy security framework.
- Avoid uncertainty, especially during crisis events.