Liquid Gas Europe Response to the European Commission's Call for Evidence on the EU Heating and Cooling Strategy

Date: 9 October 2025

Executive Summary

Liquid Gas Europe (LGE), representing the European liquid gas sector (LPG, bioLPG, rDME), welcomes the opportunity to contribute to the EU Heating and Cooling Strategy. We fully support the Commission's ambition to decarbonise heating and cooling while ensuring affordability, competitiveness, and energy security for all Europeans.

Across the EU, 49.2 million rural households remain off the gas grid, often relying on high-carbon fuels such as oil and coal. Much of this rural building stock is old and inefficient — over a third of domestic buildings were built before 1970, and homes constructed before 1945 lose heat up to five times faster than modern ones. These characteristics make the energy transition in rural areas particularly challenging.

In rural communities, liquid gases play a vital role as a reliable and cleaner-burning energy source, particularly in areas where extending the gas grid or achieving full electrification is not feasible. They ensure secure and continuous energy supply while enabling an immediate transition to renewable alternatives such as bioLPG and renewable dimethyl ether (rDME).

Renewable liquid gases (rLGs) — such as bioLPG and renewable dimethyl ether (rDME) — provide a drop-in renewable solution that can cut lifecycle GHG emissions by 80–90% while using existing infrastructure and appliances. They offer a cost-effective, immediate, and scalable pathway to decarbonise heating in off-grid homes, rural communities, and hard-to-electrify industries.

By 2050, renewable liquid gas supply could reach 27 million tonnes under LGE's High Scenario — enough to replace all fossil LPG currently used in the EU and reduce sectoral emissions by over 80%. By embracing renewable molecules alongside electrification, the Strategy can deliver a more rapid, just, inclusive, and affordable energy transition, ensuring no citizen or industry is left behind.

Summary of the policy asks:

The EU Heating and Cooling Strategy should adopt a technology-neutral framework that recognises the specific needs of rural and off-grid areas and unlocks the potential of renewable liquid gases (rLGs). The Commission should explicitly support rLGs under RED, ETD, and ETS II, ensuring their verified GHG savings count toward national targets. Targeted funding (e.g. Social Climate Fund, renovation plans) and fiscal incentives reflecting emissions performance are essential to make rLG conversions affordable and to secure investment confidence.

Liquid Gas Europe Rue d'Arlon 80, 1040 – Brussels, Belgium
✉ info@liquidgaseurope.eu ⓘ www.liquidgaseurope.eu ▪ AISBL
Transparency Register Number 63503202933-02 ▪ VAT Number 0879.660.039

1. Context and Problem Definition

Heating and cooling represent approximately 50% of the EU's final energy consumption, with 70% still derived from fossil fuels. As indicated in the call for evidence, heating and cooling are directly tangible to citizens; they represent more than 60% of the energy households use, affecting people's comfort and health.

Around 137 million Europeans live in rural and off-grid areas, where households typically rely on oil, coal, wood (solid biomass), or LPG for heating and cooking. These communities face specific structural and economic barriers that require tailored, technology-neutral solutions in the EU Heating and Cooling Strategy.

Structural Challenge - Limited Access to Infrastructure:

Many rural areas are not connected to the natural gas grid, and electricity distribution networks are often weak or underdeveloped. Large-scale electrification risks overloading local grids, especially during winter peaks, and is not feasible in all locations (France Gaz Liquides | Energies et Ruralité, 2023).

Economic Barrier - High Upfront Costs of Electrification:

The installation of heat pumps, while efficient, often costs between €15,000 and €30,000 per household - a prohibitive investment compared to average rural incomes. By contrast, switching from oil or coal to a bioLPG-ready boiler is far more affordable and can save households around €900 annually (LGE LPG Heating Incentive Policies, 2021).

Environmental Concern - Air Quality and Emissions:

While solid fuels such as wood and pellets can help meet renewable energy goals, they emit high levels of particulate matter, nitrogen oxides, and carcinogens like benzo[a]pyrene, contributing to poor air quality. Even the most efficient stoves produce significantly more pollutants than gas-based systems or renewable gaseous fuels.

Decarbonisation Opportunity - Immediate and Scalable Impact:

Renewable liquid gases (rLGs) such as bioLPG and renewable dimethyl ether (rDME) offer a drop-in solution compatible with existing infrastructure and appliances. They can reduce lifecycle CO2 emissions by over 80%, providing a cost-effective, clean, and rapidly deployable pathway to decarbonise heating in off-grid homes and hard-to-electrify industries.

Policy Gap - Need for Targeted EU Support:

Current EU frameworks focus heavily on electrification and grid-based solutions, with limited recognition of renewable gaseous fuels. To ensure a just and inclusive transition, the EU Heating and Cooling Strategy should explicitly integrate rLGs as viable, complementary solutions for rural and off-grid areas

Industrial Challenge – Hard-to-Electrify High-Temperature Processes:

Many energy-intensive industries—such as ceramics, glass, food and beverages, chemicals, and metallurgy—are located in rural or off-grid areas and rely on high-temperature heat (400–1,000°C). For these sectors, electrification is often technically challenging or economically unviable. Renewable liquid gases provide a low-emission alternative with near-zero particulate emissions, no carcinogenic compounds, and enhanced energy security, supporting industrial decarbonisation and air quality improvements.

2. The Role of Renewable Liquid Gases

- Renewable liquid gases are sustainable fuels produced from waste, residues, and renewable electricity. They deliver GHG reductions of more than 80% depending on feedstock (LGE Renewable Liquid Gas Outlook 2025), and are fully compatible with existing LPG infrastructure, enabling immediate deployment.
- In residential heating, rLGs provide a drop-in renewable alternative for off-grid homes currently using more polluting alternatives. They can be blended with conventional LPG to support a progressive decarbonisation pathway and do not require immediate costly renovations. Moreover, LPG and bioLPG produce virtually no particulate matter and very low NOx emissions, significantly improving local air quality (LGE Climate Law Response, 2025).
- In industrial process heating, rLGs deliver reliable, controllable high-temperature heat, making them suitable for continuous processes. Their high energy density (46 MJ/kg) and combustion stability ensure operational continuity in sectors where electrification is insufficient (LGE Bioeconomy Response, 2025).
- Furthermore, rLGs can support hybrid systems that combine renewable gases with electrification, enhancing system flexibility and resilience while optimising costs and emissions.
- The use of renewable gases results in reduced peak electricity demand, this significantly reduces power grid reinforcement and dispatchable power costs.
- By valorising European feedstocks such as used cooking oils, agricultural residues, and biogas, rLGs strengthen EU energy security and reduce import dependency.

3. Renewable Liquid Gas Outlook to 2050

- LGE's Renewable Liquid Gas Outlook 2040–2050 projects that, under the High Scenario, renewable liquid gas supply could reach 27 million tonnes by 2050, enough to replace all fossil

LPG currently used in Europe. This supply would yield over 80% GHG savings, relying on a diversified mix of biogenic and synthetic production pathways (LGE Outlook 2025).

- Such scaling would support residential decarbonisation, industrial competitiveness, rural economies, and energy independence, contributing significantly to the EU's climate neutrality target.

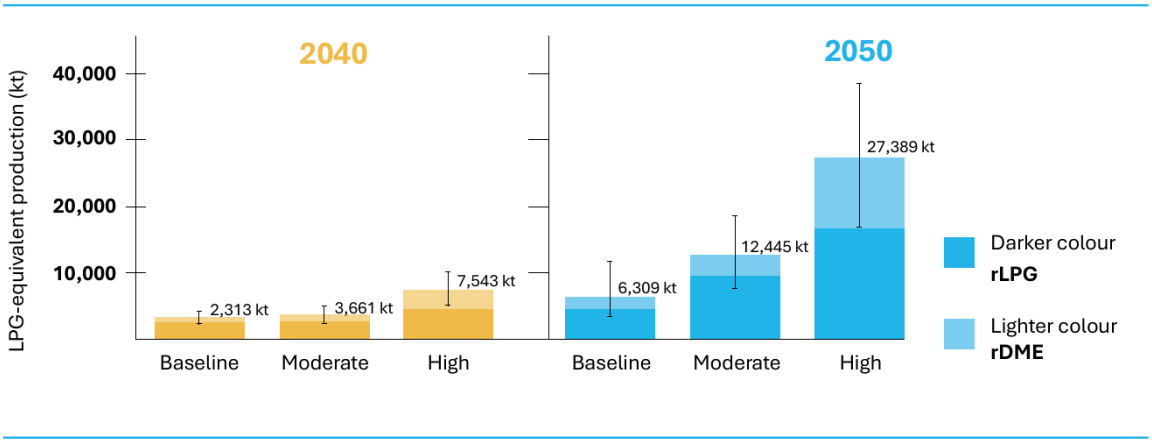

Chart 1. Production scenarios for renewable liquid gas production in 2040 and 2050, Source, NFCC and Frazer Nash

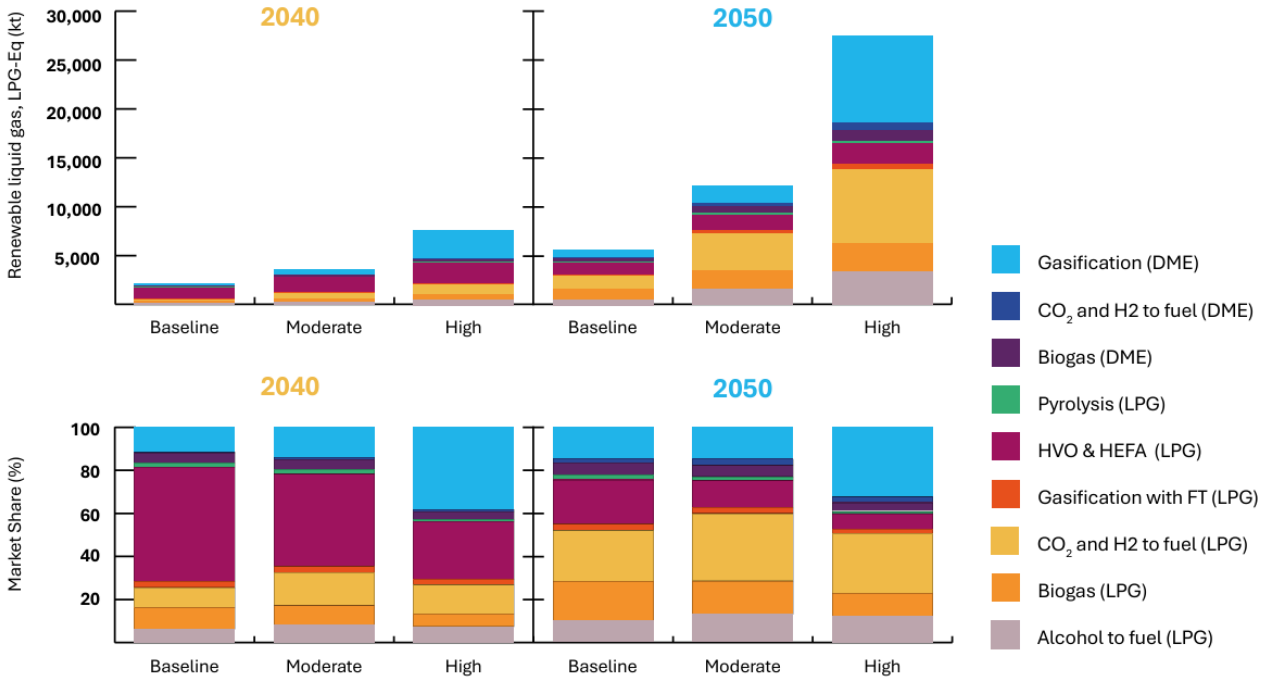

Chart 2: Contribution of each pathway to the production outlook volumes of rLG, source NFCC and Frazer Nash

4. Policy Recommendations

- The EU Heating and Cooling Strategy should establish a coherent, inclusive, and technology-neutral framework to that incorporates specific energy needs of rural areas and unlock the potential of renewable liquid gases.
- The Commission should explicitly support rLGs under RED, ETD, and ETS II, ensuring their verified GHG savings contribute to national renewable energy and emissions reduction targets.
- A technology-neutral approach is essential—policy should reward emissions performance, not prescribe specific technologies. This ensures fair treatment for renewable molecules alongside electrification and district heating.
- The Strategy should also prioritise targeted financial support for off-grid households and industries switching from oil, coal or solid biomass to rLGs. Instruments such as the Social Climate Fund and national renovation plans should recognise rLG conversions as eligible measures.
- Finally, fiscal incentives must reflect verified emissions savings. Certified rLGs should benefit from reduced excise duties under the ETD and be treated as low- or zero-carbon under ETS II, maintaining affordability and investment confidence.

6. Conclusion

- Renewable liquid gases are immediately deployable, cost-effective, and socially inclusive solutions for decarbonising heating and cooling. They complement electrification, deliver deep emissions reductions, improve air quality, and support energy security.
- By embedding renewable liquid gases and specificities of rural energy needs into the EU Heating and Cooling Strategy, the Commission can deliver a balanced, integrated, and resilient approach that ensures affordability, choice, and fairness for all Europeans — including the nearly 50 million rural households across the EU that are not connected to the gas grid and require practical renewable solutions for heating and cooking.