LPG - The smart alternative, everywhere you need it

Energy Taxation Directive

Liquid Gas Europe Technical Paper

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EXECUTIVE SUMMARY

The ambition of the European Union is to be climate neutral by 2050. The European LPG industry is committed to supporting this ambitious goal. LPG and bioLPG, as clean-burning, versatile, and resource-efficient gaseous fuels are perfectly placed to immediately help reach this goal, especially in rural areas as well as in road transport. Thus far, the Energy Taxation Directive (ETD) has supported the development of the European LPG industry.

However, the revision of the ETD is an opportunity for policymakers to improve the framework. To fully harness the potential of LPG and bioLPG to reduce greenhouse gas (GHG) and air pollutant emissions, Liquid Gas Europe calls on the European Commission to:

- **Explicitly exempt bioLPG from taxation** to promote and stimulate its production and consumption
- **Include all renewable products effectively used as a heating fuel**, including solid biomass, in the scope of the Directive to ensure a level playing field for renewable energy from biomass sources
- **Continue support measures for alternative fuels in transport** with a track record of success, such as LPG
- **Consider heating products' impact on air quality** to improve citizens' wellbeing
- **Maintain the possibility to exempt residential heating to avoid energy poverty**, especially for the benefit of low-income households in rural areas
- Maintain the possibility to **choose a cost-effective route to deep emission reductions for industrial users** whose processes require an essential source of heat, not easily replaceable with electricity

Introduction

Liquid Gas Europe is the authoritative voice for the European Liquified Petroleum Gas (LPG) industry, and is composed of national LPG associations, the main European LPG suppliers, distributors and equipment manufacturers. With the support of its working groups of industry experts, Liquid Gas Europe is actively involved in concrete initiatives and programmes to ensure the sustainable, safe and efficient development of LPG and bioLPG in Europe.

The ambition of the European Union is to be climate neutral by 2050. The European LPG industry is committed to supporting this ambitious goal. LPG and bioLPG, as clean-burning, versatile, and resource-efficient gaseous fuels are perfectly placed to immediately help to reach this goal, especially in rural areas as well as in road transport. Thus far the Energy Taxation Directive (ETD) supported the development of the European LPG industry.

The LPG and bioLPG industry in Europe

LPG currently supplies more than 120 million European citizens.

- Autogas (LPG as transport fuel) is the most widely used alternative automotive fuel in Europe. It represented 77% of the entire alternative fuel market in 2019[1], and fuels a current fleet of over 8 million vehicles with a network of 30,000 refuelling stations in Europe
- LPG covers the off-grid heating needs of more than 20 million EU citizens and 700,000 businesses, predominantly in areas where the natural gas network is not available

There are additional avenues for LPG industry growth. Autogas has the potential to accelerate emissions reduction efforts not only from new car sales, but also from the 250 million passenger cars already on European roads. In rural areas, LPG can undoubtedly contribute to achieving the climate neutrality objective as there are around 40 million homes, and 100,000 businesses without access to the gas grid[2].

Today the LPG industry offers employment opportunities in the production and distribution system that is almost entirely European. Tasks such as the delivery of LPG to bulk tanks, selling cylinders, and manning fuelling stations are performed by a skilled workforce. The growing availability of bioLPG means that today's investments in the LPG supply chain and applications are future-proofed as they can operate on bioLPG without any additional upgrading or infrastructure costs.

The replacement of old and inefficient non-condensing boilers is a labour-intensive challenge. Such appliances still represent over 50% of all heating appliances installed in the EU, switching them to LPG or natural gas condensing boilers represents immediate growth opportunities for small and medium-sized enterprises.

Further, opportunities for creating jobs and European economic growth will stem from growing bioLPG production. BioLPG is a product of various technologies ranging from biorefining of lipids, gasification and pyrolysis, power-to-x or biogas conversion. Most of these processes are still in the

[1] EAFO Analysis: A look back at 10 years of Alternative Fuels cars in the EU (27) (2020) European Alternative Fuels Observatory
[2] Guidance Document on Vulnerable Consumers (2013) Vulnerable Consumer Working Group of the European Commission

research and development phase or demonstration-scale for bioLPG production. When commercialised, such production plants will create new jobs and growth in the EU.

LPG and bioLPG's contribution to the EU's climate objectives

LPG and bioLPG contribute to the European Union's decarbonisation goals. When it comes to CO_2 emissions, LPG is one of the cleanest fuels available in comparison with conventional fuels, such as coal or diesel. BioLPG further decreases the fuel's carbon footprint by up to 80% compared to conventional LPG.

- LPG is a lower carbon alternative to liquid and solid fuels for combustion purposes. Switching from an oil or coal boiler to an LPG one can reduce emissions respectively by 25% and 50%
- LPG well-to-wheel carbon intensity as defined in the Fuel Quality Directive is also significantly lower than diesel (-23%) and petrol (-21%)

The positive impact of LPG and bioLPG on air quality

Poor air quality is still a major concern for Europeans[3]. LPG has low particle emissions, low NOx emissions, and low sulphur content meaning it has significant potential to reduce air pollution compared to other energy sources. LPG can therefore contribute significantly to improved indoor and outdoor air quality.

- LPG cars have almost no pollutant emissions. They emit 98% less NOx than diesel cars and 90% less PN than gasoline cars in real driving conditions
- Boilers using LPG emit 80-99% less PM and 50-75% less NOx than solid and liquid fuels boilers (such as coal, heating oil, peat, and biomass)

Liquid Gas Europe's recommendations for the ETD revision

The current minimum rates have helped the LPG industry to grow and contribute to meeting the EU climate objectives. To further support the growth of the industry, Liquid Gas Europe urges policymakers to consider the following building blocks for the upcoming review. The revised Directive should address the following:

Please see below the rationale behind our recommendations.

[3] Attitudes of European citizens towards the environment (2017) Eurobarometer

1. Supporting renewable fuels to penetrate the European market

- *The revised Energy Taxation Directive should explicitly exempt bioLPG from taxation*
- *All renewable products effectively used as a heating fuel, including solid biomass, should be included in the scope of the Energy Taxation Directive*

Since the adoption of the Energy Taxation Directive in 2003, the energy sector has gone through several transformations. Several new energy products are now available on the market, including various gaseous fuels made from renewable sources, such as bioLPG and biomethane for example. The Commission's Energy System Integration Strategy notes that renewable gases will play an important role in Europe's energy system. However, where these new products that are used for heating are included in national tax systems, they often face challenges when applying for tax exemptions to increase their use. The Energy Taxation Directive can play a role in increasing, alongside other available renewable fuels, the use of bioLPG.

From 2004 to 2018, renewable energy grew from 11.7 to 21.1% of total energy use for heating and cooling in the EU-27[4]. Specifically, in households, renewables cover 27% of the energy needs for space heating[5]. Biomass has supplied about 80% of all renewable heating, mainly coming from solid biomass burning[6]. However, the current ETD specifies that products falling within CN-codes 4401[7] and 4402[8] used for heating are outside the scope of the Directive (Art. 2.4), which distorts the level playing with other renewable fuels.

BioLPG – renewable alternative

BioLPG, also known as bio-propane (RED II, Annex III), is a renewable gaseous fuel that provides up to 80% emissions reduction (as shown by the French Environment and Energy Management Agency, ADEME). It can be described as any molecules of propane and butane produced from biological sources or renewable electricity and CO_2.

Already available on the European market today in growing quantities, bioLPG is chemically and physically identical to conventional LPG. This allows the industry and consumers to seamlessly transition to a renewable solution. BioLPG can be 'dropped-in' to existing supply chains and can be used by consumers in their existing heating appliances or cars. Stored in existing bulk tanks and cylinders, and transported using today's infrastructure and skilled workforce, bioLPG (and conventional LPG) is the smart alternative, anywhere one needs it.

[4] Renewable energy statistics (2020) Eurostat
[5] Energy consumption in households (2020) Eurostat
[6] Renewable energy in Europe: key for climate objectives, but air pollution needs attention (2019) Europeqn Environment Agency
[7] Fuel wood, in logs, in billets, in twigs, in faggots or in similar forms; wood in chips or particles; sawdust and wood waste and scrap, whether or not agglomerated in logs, briquettes, pellets or similar forms
[8] Wood charcoal (including shell or nut charcoal), whether or not agglomerated

It is estimated that there are already over 2,000,000 LPG boilers[9] in the EU that can lock-into lower CO_2 emissions cost-effectively. This means that over time, carbon and air pollutant emissions from off-grid heat generation can be increasingly reduced. At the same time, the emission profile of a building will improve, without necessarily having to resort to expensive future retrofitting of the entire heating system, including deep renovation work, such as removal of radiators and piping and switching to floor heating for example.

Taxation as leverage for renewable energy uptake in the heating and cooling sector

According to the ETD (Art. 2.3), bioLPG shall be taxed at the same level as the equivalent fuel, which is LPG. Conventional LPG and bioLPG have the same CN code (CN codes 2711 12 11 to 2711 19 00). Consequently, both products are taxed in the same way with the same national tax rate. In theory, Member States can tax-exempt such gaseous fuels produced from biomass. But in practice, such an exemption today is treated as state aid which needs to be assessed by the Commission based on the current "Guidelines on State aid for environmental protection and energy". This creates an administrative burden that is counterproductive to promoting renewable energy sources such as bioLPG. It is noteworthy that these obligations do not apply for solid biomass for heating, including wood pellets which are exclusively commercialised for heating purposes, as it is excluded from the ETD scope.

The revised Directive should make it possible to promote bioLPG and stimulate its production and consumption. Therefore, Liquid Gas Europe calls on the European Commission to introduce a minimum tax level at a very low rate, for bioLPG and other renewable gases produced from biomass. In this way, bioLPG can benefit from favourable taxation without being affected by state aid rules. When the Commission includes all renewable products effectively used as a heating fuel in the scope of the ETD, a level playing field for renewable energy from biomass can be ensured. Should the minimum rate be higher than zero, it is important to maintain the possibility for Member States to fully exempt bioLPG, and other gaseous fuels produced from biomass, from both energy and, if introduced, carbon taxation.

[9] Mapping and analyses of the current and future (2020 - 2030) heating/cooling fuel deployment (fossil/renewables) (2016) Prepared for the European Commission

2. Continuing support measures for alternative fuels with a track record of success

There is a need for substantive efforts in all parts of the economy to reach the Green Deal objectives, and this includes road transport. This sector produces a quarter of the overall GHG emissions in the EU and is also a major contributor to the air quality infringements faced in various Member States. If we are to reach a 90% reduction of transport GHG emissions by 2050, as envisaged in the Sustainable and Smart Mobility Strategy, the EU must not only depend on deploying new technologies and infrastructures but also on continued support for alternative low-carbon and renewable fuel solutions that can already reduce GHGs and harmful pollutant emissions.

Autogas (LPG in transport) is the number one alternative fuel in the EU with over 8 million vehicles in circulation, representing 77% of the existing alternative fuel fleet, both through aftermarket conversions and a large offering of OEM vehicles. As such, LPG has arguably provided more environmental benefits to date than any other alternative fuel on the market, and will continue to do so in the short- to medium-term as hundreds of thousands of new cars every year use or are converted to run on Autogas. This makes Autogas a significant fuel in the light-duty segment for years to come, not only for new car sales but with regards to addressing emissions from the existing fleet through vehicle conversions. Autogas also has a strong historical presence in many markets and customers have developed confidence with its use as a cleaner fuel. As the supply of bioLPG grows, there is tremendous potential to further decarbonise road transport through its use. Given the uncertainty as to when other alternative fuels will be mass deployed, the importance of LPG should not be undervalued in the EU's objective of reaching climate neutrality. Further, the LPG industry has made massive private investments in the Autogas refuelling infrastructure. In fact, over the last five years, the network has grown by thousands of stations to over 30,000 throughout the EU.

However, despite all its benefits, the cost of fuel at the pump has a massive impact on consumer choice. Mobility should remain affordable and accessible, and as the EU revises important energy legislation under the European Green Deal, it should ensure a clear and stable policy framework in the form of consistent price signals to affect consumers' behaviour to support the transition towards cleaner, proven and cost-effective alternative low-carbon and renewable fuels, and to ensure continued investments by the private sector. The revised Energy Taxation Directive should:

- Base the motor fuel's CO_2 footprint on Well-To-Wheels (WTW) values based in the Fuel Quality Directive (FQD), which are the authoritative default values, instead of tail-pipe emissions
- Consider the impact of air pollutant emissions
- Maintain a sufficient price differential from conventional fuels to incentive consumer uptake and to send a clear market signal for continued investments
- Maintain the explicit possibility of derogations in Member States for alternative fuels

Transport decarbonisation needs acceleration

Despite gains in fuel efficiency, demand for mobility, and thus CO_2 emissions from road transport, are on the rise. To quickly reduce emissions, a practical approach is to encourage energy efficiency

and higher use of cleaner fuels that can easily penetrate the market and are compatible with Internal Combustion Engine (ICE) technologies, which will continue to play a significant role in the coming decades, and even beyond. In fact, over 90% of new car sales registered in the EU in 2019 contained an ICE. The average age of passenger cars keeps steadily increasing, and is now 10.8 years. Therefore, to have an immediate impact, all alternative and renewable fuels that can replace petrol and diesel and support all modes of transport should be considered and incentivised according to their potential to reduce emissions and the over-reliance on fossil liquid fuels.

Further, a holistic view is particularly important. A vehicle assessment through just one reference point, such as the sole emissions from the tailpipe does not take into account GHG emissions along the fuel chain. As it does not matter for the climate when and where greenhouse gases are emitted, terms like “zero emission vehicles” are misleading. A Well-To-Wheels (WTW) approach should be the basis to assess emissions and energy efficiency. Autogas (LPG as a transport fuel) is 23% less carbon intensive than diesel and 21% less compared to petrol as referenced in the FQD Annex I, part 2.

Air quality matters

Air quality is an issue for cities throughout Europe, with low- and middle-income communities suffering disproportionately from exposure. According to the EEA, 400,000 people die prematurely in the EU as a result of breathing polluted air. Road transport is a significant contributing factor to the levels of pollution in cities. Petrol and diesel-engine motor vehicles emit a wide variety of pollutants, principally carbon monoxide (CO), nitrogen (NOx), volatile organic compounds (VOCs) and particulate matter (PM10). The UK’s Department for Environmental Food & Rural Affairs (DEFRA), reports “the major threat to clean air is now posed by traffic emissions.” As well as addressing climate change, the need to reduce emissions extends to protecting public health.

Several Member States are in breach of EU air pollution limits, and the issue is further exacerbated by the ongoing Coronavirus pandemic, where several studies have linked regions with high-levels of air pollution to higher COVID-19 cases and deaths. The impact of COVID not only highlights the toll that poor air quality has on human health, but alongside this public health crisis, we also face an economic recession. According to the Commission, the EU economy will experience a deep recession this year despite the swift policy response at both the EU and national levels. The Summer 2020 Economic Forecast projects that the EU economy will contract by 8.3% in 2020.

This could slow down the ability of countries to invest more resources in ambitious schemes to lower emissions. Whilst this should still be encouraged where possible, one practical and complimentary approach to quickly reduce emissions of both air pollutants and GHGs in road transport, is to encourage higher use of cleaner, alternative fuels, such as Autogas, through appropriate price signals. These fuels can easily penetrate the market and are compatible with current internal combustion engine (ICE) technologies, which will continue to play a significant role in the coming decades, and even beyond.

Further, Autogas can reduce pollution from the existing fleet. Converting existing cars to LPG can be achieved with limited investment in new technologies or infrastructure, and the conversion decreases CO_2, particulate and NOx emissions as well as lowering running costs for the consumer. According to real driving emissions tests by Liquid Gas Europe, on a Well-to-Wheels basis, LPG emits virtually no particulate emissions, up to 98% less NOx compared to diesel, and up to 20% less CO_2 compared to petrol, helping keep cities cleaner and healthier.

The move towards LPG, however, critically depends on support from local and national government incentives. Consumers need affordable mobility, especially in a time of economic recession. Autogas is a practical solution that is ready and waiting to improve the sustainability of mobility. With an established refuelling network, lower fuel costs, and environmental benefits, it offers convenience for customers while reducing CO_2, NOx, and particulate emissions.

There are already many Autogas car models offered by automakers, and fuel systems can be easily retrofitted to LPG on existing vehicles. With over 250 million passenger cars on the road today with an average life span of almost 11 years, converting the existing fleet to Autogas would have an immediate and direct impact on emission levels. Overall, the readiness and ease of Autogas offers a quick win for governments in the fight to reduce pollution in our cities, improve the health of their citizens, and help protect our environment.

A price differential is imperative for market growth

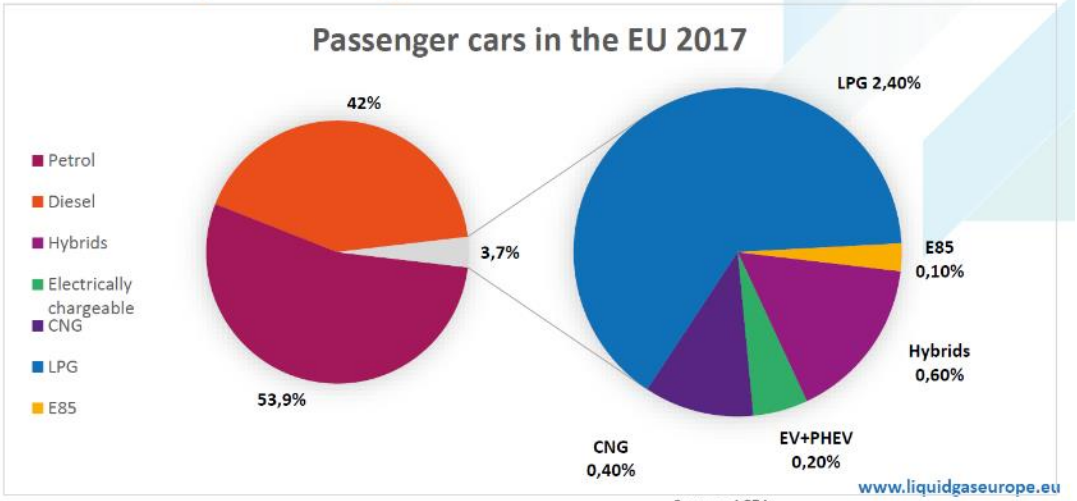
In light of the ambitions set out in the Paris Agreement and European Green Deal, and considering the lack of a "one size - fits all solution", it is imperative that all low carbon options, including alternative and renewable fuels, play a role in the energy transition. To guarantee an inclusive transition towards sustainable mobility, the ETD should aim at ensuring fair access to cleaner fuels to all. Therefore, any social or compensation measures should address the issue of fuel affordability, especially for people and areas that are dependent on car-based mobility.

Autogas is currently the number one alternative fuel in Europe, comprising 77% of the existing alternative fuels market share in 2019,[10] arguably providing the more environmental benefits to date than any other alternative fuel on the market.

[10] EAFO Analysis: A look back at 10 years of Alternative Fuels cars in the EU (27) (2020) European Alternative Fuels Observatory

LPG is the number one alternative fuel in Europe

The European Autogas market

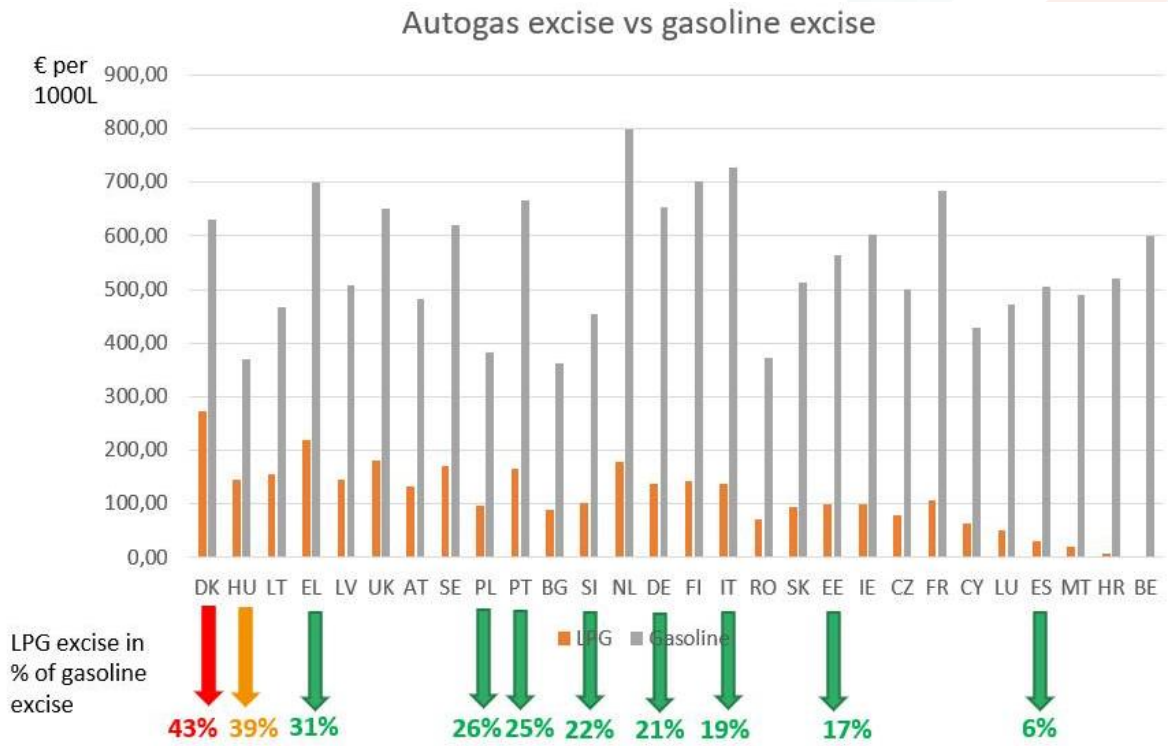


Source: ACEA

LPG is available for all vehicle segments from small city vehicles to delivery vans. It is an immediately available alternative to diesel and petrol with lower GHG life-cycle emissions (-23% vs diesel, and -21% vs gasoline) and emits a very low level of pollutants in real-driving conditions (up to -90% PN vs gasoline and up to -98% NOx vs diesel).

However, despite all its benefits, the consumer uptake of Autogas critically depends on a significant price differential from conventional fuels. All successful Autogas markets in Europe, and the world, have LPG taxation rates at 30% or less of gasoline excise tax. In Europe, LPG excise is on average 20% less than that of gasoline. We have also found that in European countries with LPG excise rates higher than 40% of gasoline, there is no LPG market.

It is proven that the markets with the highest price differential to gasoline. i.e., Italy and Poland (and Bulgaria) are some of the most successful Autogas markets in the EU. It is essential that these price signals continue not only for consumer uptake but also to provide the regulatory certainly needed for continued private investment in infrastructure development.



Without the continued taxation support measures for alternative fuels, the Autogas market could potentially dissolve, resulting in a negative emission impact given that the EU new car market has shifted further towards petrol as diesel demand declines. All of the gains achieved to date, as well as future gains, critically depend on a price differential from conventional fuels to incentive consumer uptake and to send a clear market signal for continued investments.

Keep flexibility to tailor policy measures to national contexts

It is important that the revised ETD continues to allow for national economic, social and environmental objectives. National derogations permit sufficient flexibility to adapt to a Member States' national context and sometimes rapid developments. Countries are best placed to understand their market needs, including infrastructure development, existing demand, and alternative fuel options.

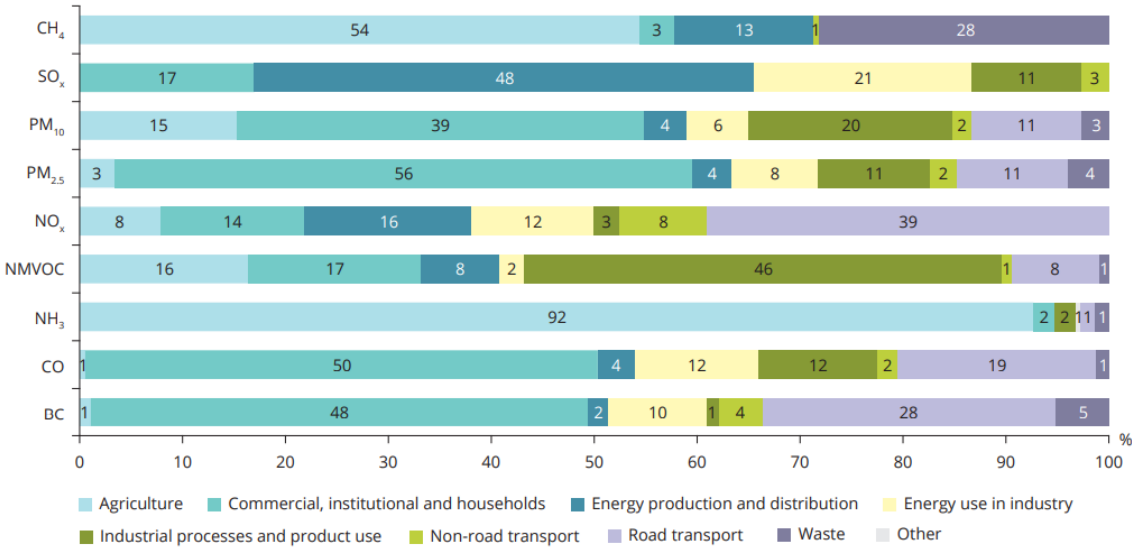
For Member States with a strong track record of alternative fuels uptake and investments in infrastructure developments, that wantto continue to incentivise the uptake of certain fuels to meet their specific market needs, the revised ETD should allow flexibility to maintain this standard practice in the spirit of policy continuity and fuel price stability for consumers.

3. Impact of products used in heating on air quality

- *The Energy Taxation Directive should consider heating products' impact on air quality*

Recent reports by the European Environment Agency (EEA) show that particulate matter (PM) directly released into the air and emissions of volatile organic compounds (VOCs) have increased since 2005. PM2.5 increased by 11%, PM10 by 7% and VOCs by 4%[11]. This indicates that more action is needed to encourage the switch to cleaner fuels and more efficient heating[12], such as LPG appliances, especially in off-grid areas.

Figure 2.4 **Contribution to EU-28 emissions from the main source sectors in 2017 of SO_x, NO_x, primary PM_{10}, primary $PM_{2.5}$, NH_3, NMVOCs, CO, BC and CH_4**



Notes: Only sectors contributing more than 0.5 % of the total emissions of each pollutant were considered.
When the sum of all contributions is either 99 or 101, it is due to rounding of the numbers.

Sources: EEA, 2019e, 2019f.

Improving the impact of the heating sector on air quality

By encouraging the use of LPG and bioLPG, the revision to the ETD offers an opportunity to reverse the trend of increasing air pollution from residential heating. Recent studies, including by Innovhub – Experimental Stations for Industry[13], have confirmed the great difference in the environmental performance of the different heating fuels currently used in Europe and the strong positive impact of conventional LPG on air quality when fuelling appliances for domestic use. The same clean-burning characteristics apply to bioLPG.

[11] Renewable energy in Europe: key for climate objectives, but air pollution needs attention (2019) European Environment Agency
[12] Household hearing and air quality. Saving energy and money (2019) European Commission
[13] Studio comparativo sulle emissioni di apparecchi a gas, GPL, gasolio e pellet (2016) Innovhub Stazioni Sperimentali per l'Industria

Benzo(a)pyrene, PM and VOCs from burning certain fuels such as coal harm human health[14]. The EEA estimates that exposure to particulate matter (PM) emissions contributed to over 400,000 premature deaths throughout Europe in 2016[15]. A damage cost is an established metric for monetising and expressing the negative impact on society caused by pollution that is otherwise not valued. These negative impacts include healthcare costs, reduced productivity and other economic costs that studies have shown result from dangerous levels of air pollution, and climate change. Damage cost estimates have been developed by the EEA[16] and national governments[17].

A 2020 Ecuity study for Liquid Gas Europe demonstrates that LPG can have the lowest overall damage cost in comparison to other fuels commonly used by off-grid homeowners[18]. This is largely attributed to a much lower air quality impact. While LPG's carbon footprint accounts for around two-thirds of the overall annual damage cost, this can be reduced when bioLPG is widely used, as the fuel has a very low carbon intensity.

Currently, a household's fuel bill does not include the external damage cost to society from the combustion of typical off-grid fuels. As a result, the true cost of pollution can often be understated, and this can hinder effective and equitable heat policy.

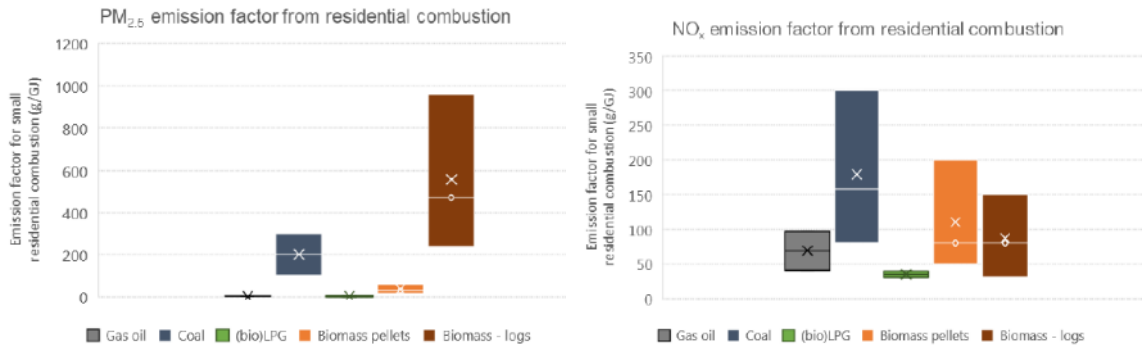


Figure 1 Source: Ecuity for Liquid Gas Europe (2020)

Alignment with the zero-pollution strategy and the new 2030 ambition

To maximise the climate and health co-benefits of the energy transition, the EEA calls on policymakers to pay attention to potential impacts from heating fuels[19]. The European Commission also notes that achieving the 55% GHG emissions reduction by 2030 would increase the wellbeing of EU citizens by, among others, improved air quality[20]. To this end, the ETD should be aligned with the upcoming zero-pollution strategy, developed under the European Green Deal and, more specifically, with its air quality objectives.

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[14] Household hearing and air quality. Saving energy and money (2019) European Commission
[15] Cutting air pollution in Europe would prevent early deaths, improve productivity and curb climate change (2019) European Environment Agency
[16] Damage costs of air pollution from industrial facilities in Europe (2011) European Environment Agency
[17] Air quality appraisal: damage cost guidance (2020) UK Government
[18] Including air quality and energy poverty in the revision of the ETD (2020) Ecuity
[19] Renewable energy in Europe: key for climate objectives, but air pollution needs attention (2019) European Environment Agency
[20] Stepping up Europe's 2030 climate ambition. Investing in a climate-neutral future for the benefit of our people (2020) European Commission

By including a NOx and PM emission factor, important pollutant emission reductions can be achieved. Ensuring that the ETD rates better reflect air quality impacts, would allow Member States to more easily support fuels with a superior environmental footprint. Such rates would stimulate households' transition from polluting fossil fuels such as coal and oil to fuels with lower air pollutant emissions. Therefore, Liquid Gas Europe calls for minimum tax rates to be developed to include an estimate of the product's impact on air quality.

4. Alignment of decarbonisation goals with energy poverty measures

- *Member States should maintain the possibility to exempt residential heating to avoid energy poverty, especially for the benefit of low-income households in rural areas*

In 2015, The European Commission was provided advice that the scope of energy poverty is not confined to the electricity and gas markets but is prevalent in households that are not on the gas or electricity networks[21]. It is estimated that there are around 40 million homes located in rural areas in Europe without access to the gas grid[22]. In addition, a higher proportion of the European population living in rural areas, compared with urban areas, faces the risk of poverty or social exclusion[23].

The specificity of rural heating needs

It is estimated that there are around 40 million homes located in rural areas in Europe without access to the gas grid[24]. These households are often forced to rely on high polluting energy sources for meeting their heating and cooking energy needs as the choice of flexible and affordable energy sources is often limited.

Fuel poverty is linked to the use of cheap and low-quality solid fuels for indoor heating and cooking, which contribute to poor indoor and ambient air quality. For example, Eastern Europe and south-eastern Europe are both poorer and more polluted than the rest of Europe. Those communities rely on the combustion of low-quality solid fuels, such as coal and unprocessed wood, in low-efficiency stoves for domestic heating. It is clearly identified as a significant source of particulates[25], with wood burning representing over 50% of total particulate matter emission in certain European countries[26]

Citizens who rely heavily on solid and liquid fuels (i.e. coal, peat, heating oil, and solid biomass) currently represent 21% (2/3 in the areas off the natural gas grid, including small islands) of the energy mix in the heating sector. In countries such as Poland and Belgium, 75% of off-grid heating comes from heating oil and coal. In Germany, the share of these energy sources reaches 68% and 42% in France[27].

[21] Energy poverty and vulnerable consumers in the energy sector across the EU: analysis of policies and measures (2015) INSIGHT_E
[22] Guidance Document on Vulnerable Consumers (2013) Vulnerable Consumer Working Group of the European Commission
[23] Statistics on rural areas in the EU (2017) Eurostat
[24] Guidance Document on Vulnerable Consumers (2013) Vulnerable Consumer Working Group of the European Commission
[25] Healthy environment, healthy lives: how the environment influences health and well-being in Europe (2020) European Environment Agency
[26] An EU strategy on heating and cooling (2016), European Commission
[27] Scenarios for decarbonising homes in Europe's rural areas (2018) Ecuity Consulting report

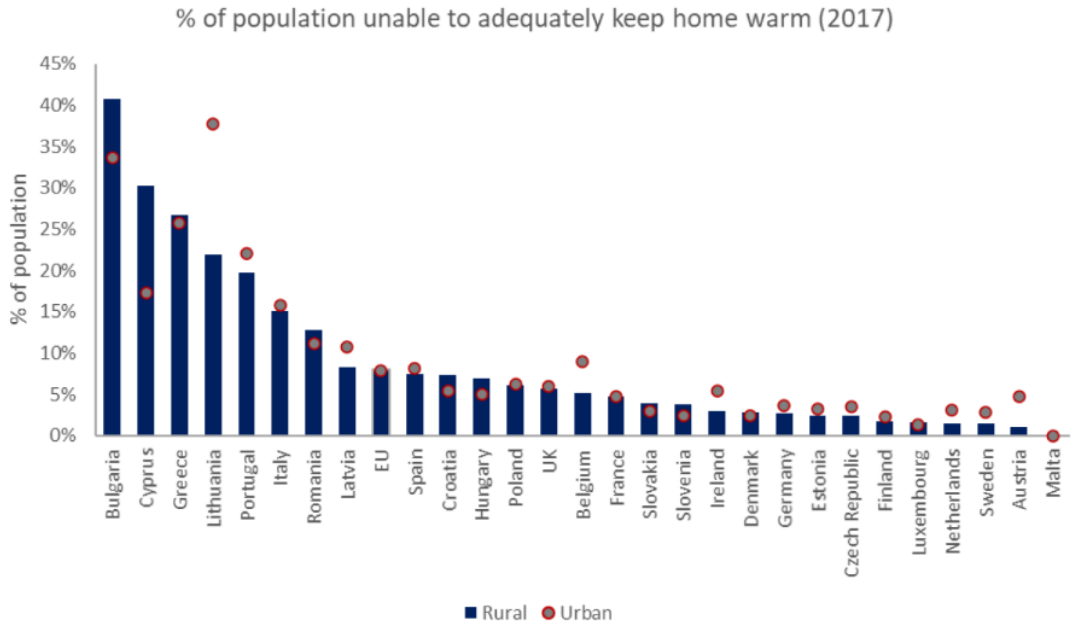
For example, in the Polish region of Małopolska, the anti-smog resolution under the region's air quality plan restricts the use of solid fuels. At the same time, the cost of replacing residential heating sources was estimated at over EUR 1 billion[28].

To enable their transition towards climate-neutral solutions, they should continue having access to cleaner-burning fuels at an affordable price. Simply switching from a conventional coal or oil boiler to a condensing LPG appliance can reduce CO_2 emissions by 50% or 25%, respectively.

Increasing the minimum tax rate on clean-burning fuel alternatives such as LPG increases the likelihood that these rural communities will resort to combusting low-quality solid fuels and scavenged wood, which has been shown to contribute to poor air quality and ill-health. Instead, the Commission should reflect the specifities and advatanges of LPG-use as a rural, clean-burning fuel by maintaining a low minimum tax rate for its use as a heating fuel.

Economic impact on rural households

According to the Buildings Performance Institute Europe between 50 and 125 million people in the European Union are currently suffering from fuel poverty and are unable to afford proper indoor thermal comfort. The problem is particularly common in Central and Eastern Europe, in many of the Southern EU countries, but also in Ireland and France. The households which are mostly affected are those already vulnerable to income poverty[29]. In fact, a higher proportion of the European population living in rural areas (25.5% in 2015), compared with urban areas, faces the risk of poverty or social exclusion[30].



[28] Healthy environment, healthy lives: how the environment influences health and well-being in Europe (2020) European Environment Agency
[29] How to end Energy Poverty? (2015) Study for the ITRE Committee
[30] Statistics on rural areas in the EU (2017) Eurostat

Bulgaria ranks first in terms of the percentage of the rural population that cannot adequately keep their home warm. This percentage falls from 41% in rural areas to 34% when looking at households in urban areas. Some EU member states show a higher share of the urban population not being able to adequately heat their homes. For example, Belgium and Germany have a higher share of the urban population in energy poverty. This could be attributed to the fact that these countries also have one of the highest household electricity prices in the EU[31].

In addition, figures for 2015 show that the share of household expenditure on energy (excluding transport fuels) continues to rise. Poorer households were the most affected, with the share of their overall spending which is dedicated to energy costs reaching 10.4%[32].

To address this issue, the report "Addressing Energy Poverty in the European Union: State of Play and Action" states that more targeted measures to a specific vulnerable group, such as heating oil users, would be generally more effective at tackling energy poverty than non-targeted measures[33]. However, difficulties with tackling energy poverty stem largely from the fact that who is identified as 'fuel poor' strongly varies from country to country[34].

In this context, the Commission should not exclude the possibility for each Member State to set minimum rates aimed at addressing energy poverty and the specific needs of underprivileged areas. Therefore, Member States should maintain the possibility to exempt residential heating from minimum tax rates to avoid exacerbating energy poverty, especially for the benefit of low-income households in rural areas.

Last, but not least, increasing the current rates of taxation, when applied to an essential commodity, such as energy (meeting the primary needs of warming homes, cooking and heating water), can have a disproportionate impact on lower-income groups. Therefore, the Commission's attempt to carefully consider the impact that the revised ETD could have on people living in rural Europe should be supported.

[31] Household energy prices in the EU increased compared with 2018 (2020) Eurostat
[32] Energy prices and costs in Europe, European Commission
[33] Addressing Energy Poverty in the European Union: State of Play and Action (2019) EU Energy Poverty Observatory
[34] How to end Energy Poverty? (2015) Study for the ITRE Committee

5. Maintaining Member States' flexibility to meet the needs of commercial users

- *Member States should maintain the possibility to choose a cost-effective route to deep emission reductions for industrial users whose processes require an essential source of heat, not easily replaceable with electricity*

Businesses located off the gas grid will be required to switch away from the highest carbon fuels, such as heating oil and coal, to meet the climate neutrality objectives. The pathway from LPG to bioLPG is the most cost-effective way to decarbonise off-grid businesses with high-temperature processes. Fuel switching creates business value by allowing companies to market the sustainability of their production process to consumers.

Rural businesses' heating needs

Businesses located in rural areas, especially those using relatively large amounts of space and process heat, tend to rely for a significant part on some of the highest carbon fuels, such as heating oil and coal. They will increasingly be required to switch away from those energy sources, to comply with decarbonisation policies.

Maintaining low rates for lower-carbon alternatives to oil and coal is critical to encourage the hard to abate industries make the switch. For example, LPG has an emission intensity of approximately 20% than oil, and 30-40% lower than coal.

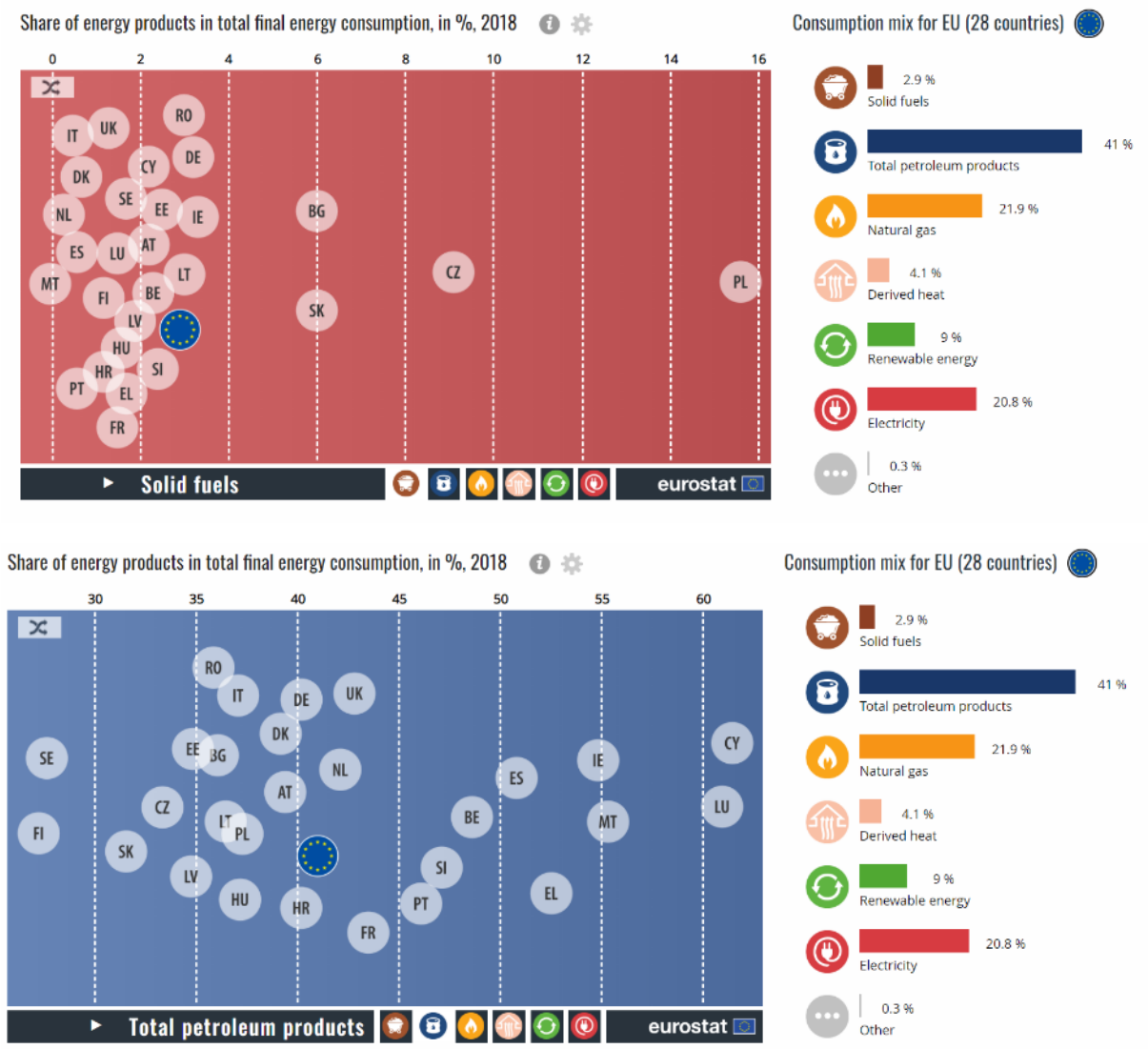
In rural areas, there is a greater role for LPG as a gaseous fuel for gas-powered heating combined with solar thermal systems, for fuel cells, combined heat and power (CHP) and hybrid systems (an electrically driven heat pump with an LPG boiler). For example, hybrid solutions when combined with an LPG boiler would be the most efficient in remote areas characterised by severe climatic conditions. With LPG as an additional energy source, hot water can be produced efficiently even with low temperatures outside, and also during peak electricity demand time.

The hybridisation of heating systems can lead to a sharp drop in the share of diesel and solid fuels, an increase in the share of renewables, and an improvement in the overall energy efficiency. By the same token, hybrid systems have a negligible impact on air quality compared to conventional fuels and biomass.

Achieving climate neutrality by rural businesses

An analysis of the final end-use of energy in the EU-28 in 2017 by Eurostat shows that industry is the third dominant category[35]. However, the structure of industrial energy use varies from country to country.

[35] Energy statistics - an overview (2020) Eurostat



Source: Shedding light on energy in the EU (2020) Eurostat

To achieve climate neutrality, Member States should maintain the possibility to choose a cost-effective route to deep emission reductions for industrial users whose processes require an essential source of heat, not easily replaceable with electricity.

The European Commission's data shows that to understand what industries to support, and how to best provide policies and measures to mitigate the negative effects of energy costs, it is useful to explore in detail the nature of costs for business, including multiple energy-intensive industries. For example, today the lower taxes and levies are applied to large energy industrial consumers compared to medium energy industrial consumers[36]. For industries situated off the gas grid, Member States should be allowed to apply significantly reduced rates on lower-emission solutions like LPG. A change in minimum rates without the possibility of derogation would only have a negative effect on the ability of rural businesses to decarbonise and stay competitive.

[36] Energy prices and costs in Europe (2019) European Commission

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Liquid Gas Europe's membership is composed by national LPG associations, the main European LPG suppliers, distributors and equipment manufacturers. With the support of its working groups of industry experts, Liquid Gas Europe is actively involved in concrete initiatives and programs to ensure the sustainable, safe and efficient development of LPG in Europe.

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