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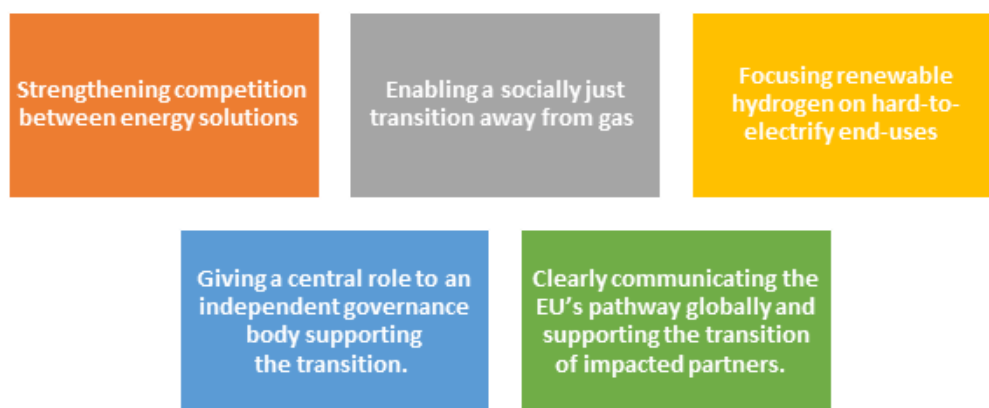
PHASING DOWN GAS USE IN EUROPE BENCHMARKS FOR GAS IN FIT FOR 55

RAPHAEL HANOTEUX, LISA FISCHER

Fossil gas is the next frontier for energy systems decarbonisation, already responsible for a quarter of the CO₂ emissions in the EU.¹ Experts are clear: to keep in line with the Paris Agreement objectives, global fossil gas consumption must fall by around a third by 2030, and almost entirely by 2050,² meaning that policy choices taken in the coming months will need to create the conditions of a rapid phase-down of this energy source. This briefing provides five benchmarks for a successful transition away from fossil gas in the EU legislation.

The EU is publishing its flagship proposals to implement the Green Deal, the “Fit for 55 package” in July and December of this year. This opens a once in a decade opportunity to set the framework for transforming our economy and energy system to transition away from fossil gas and create the conditions for a sustainable development of alternative energy solutions, including zero-emission gases.

Figure 1. Five benchmarks for a successful transition away from fossil gas in the EU



¹ IEA (2021). <https://www.iea.org/data-and-statistics/data-product/co2-emissions-from-fuel-combustion>

² between 32% and 36% by 2030 and 96% by 2050 on 2015 levels – IEA (2021). **Net Zero by 2050 – Analysis - IEA**



Context

On July 14, the European Commission released more than a dozen legislative proposals enhancing flagship European climate, clean energy, and mobility policies; this package will be followed in December by another set of proposals focused notably on decarbonising the EU's gas use and on making buildings more energy performant. More broadly, the Commission is also updating private and public finance policy, industry, competition, and trade policy to support the European green transition.

With these two packages, the EU will be able to demonstrate whether it is taking up its role of trailblazer toward net zero emissions and defining a blueprint for a major economic and socially just transformation. After trying to create a consensus around coal phase-out, the EU needs to show its readiness to tackle another very polluting energy source: natural gas. This energy source, composed of fossil methane, constitutes around 95% of today's gaseous fuels consumed in the EU³ and around 26% of the EU's CO₂ emissions,⁴ has a much higher warming potential than carbon dioxide and leaks all along the fossil gas value chain, making the climate impact of gas worse than coal for leakage rates as low as 3%.⁵

In terms of ambition, the IEA Net Zero report is a clear indication of the efforts needed to decarbonise the global economy.⁶ In addition to peaking by 2025, no new oil and gas fields should be approved for development, and advanced economies should reach overall net-zero emissions electricity systems by 2035. To reach net-zero by 2050, no new fossil fuel boilers can be installed after 2025, and all new buildings must be net-zero compatible by 2030. Industrial emissions must fall 95% by 2050, through circular economy, industrial efficiency, electrification, hydrogen, and carbon capture, utilisation and storage. These milestones draw an ambitious decarbonisation pathway in which the EU is expected to be a frontrunner, thanks to its capacity to invest in the energy transformation and because of the added value in being a pacemaker in the development of clean energy technologies and markets.

Background on gas in the “Fit for 55” package

The “Fit for 55” package should put in place the conditions for the implementation of the European Green Deal and inform market players and stakeholders about the EU's decarbonisation choices. It should help anticipate the decrease in fossil gas consumption, its effect on the European energy mix, and on the profitability of the energy infrastructure and facilities. This clarity over the decarbonisation efforts ahead is also crucial to protect citizens while giving investors clear market signals and political certainty.

³ European Commission (2021). [Hydrogen and decarbonised gas market package | Energy \(europa.eu\)](#)

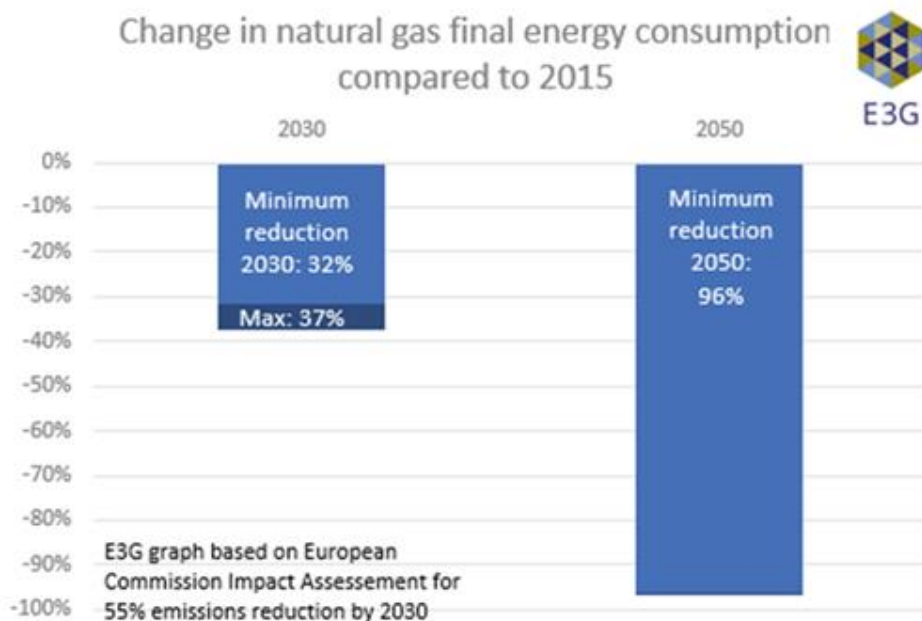
⁴ IEA (2021). [Greenhouse Gas Emissions from Energy - Data product - IEA](#)

⁵ Climate Bonds Initiative (2021). [eu-gas-briefing-220221.pdf \(climatebonds.net\)](#)

⁶ Energy Monitor (2021). [Gas under pressure as IEA launches net-zero pathway - Energy Monitor](#)

As the Commission explained in its Fit for 55 impact assessment, fossil gas consumption should decrease by a range of 32% to 37% by 2030 and by 96% in 2050 compared to 2015 levels. The impact of the interplay between the increased renewable energy targets, the energy efficiency targets, the decrease of gas consumption and the price of the Emissions Trading System (ETS) needs to be assessed and reflected in the policy proposals to draw a clear and predictable decarbonisation pathway.

Figure 2. Change in natural gas final energy consumption, compared to 2015



Source: E3G, based on European Commission Fit for 55 Impact Assessment

Concretely, out of the legislative proposals unveiled on 14 July, **the main relevant elements for gas in the Fit for 55% July package reside in 6 pieces of legislation** (Table 1).

The “hydrogen and gas markets decarbonisation” package, expected in December, will reorganise markets and services around decarbonised gas and set rules for hydrogen related infrastructure (Table 2).

Other pieces of legislation **outside of the Fit for 55 package** also relate to gas, such as the TEN-E regulation or the upcoming International Energy Strategy (Table 3).



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Table 1. Main elements for gas in the July 'fit for 55' package.

Main gas relevant provisions in the July package	
Amendment to the Renewable Energy Directive	<ul style="list-style-type: none"> • Introduces a new 40% target in final energy consumption - instrumental to drive gas out of power production. • Establishes indicative sub-targets for renewable energy in the industry, and one for heating and cooling. • Introduces a 2030 target for renewable fuels of non-biological origin (RFNBOs) in the industry. • Lays down the bases for increasing green hydrogen production and differentiates between power use for RFNBOs and for decarbonising the electricity sector.⁷
Amendment to the Energy Efficiency Directive	<ul style="list-style-type: none"> • Increases the target of annual final energy savings and sets various provisions prioritising energy efficiency in transmission networks, public buildings, and district heating. • Strengthens consumer rights and measures addressing energy poverty. • Aims at increasing the share of RES in heating and cooling. • Introduces various exemptions for fossil gas in the heating and cooling sector.
Revision of the Energy Taxation Directive	<ul style="list-style-type: none"> • Removes options for exempting fossil fuels by setting minimum tax rates based on energy content (rather than volume). • Supports clean energy sources on the demand side (especially heating). • Sets exemption-like measure for low-carbon fuels (blue hydrogen).
EU Emission Trading System (EU-ETS 1.0)	<ul style="list-style-type: none"> • Has the potential to phase-out gas in heat and power production through setting a price signal incentivizing the decarbonisation of these installations. • The Modernisation Fund will exclude energy generation facilities that use fossil fuels. • The Innovation fund will support some breakthrough technologies (fuel switching project, hydrogen projects, renewable projects) indirectly reducing gas use. The fund also explicitly supports low-carbon fuels for transport and buildings.
Emission Trading System (EU-ETS 2.0)	<ul style="list-style-type: none"> • Sets an ETS price for all heating fuels. • Gas suppliers become new regulated entities within the scope of ETS. • Carbon capture and storage and hydrogen exempted.
TheFuelEU Maritime directive	<ul style="list-style-type: none"> • Introduces a greenhouse gas intensity target for ship owners and makes it mandatory to install Liquefied Natural Gas (LNG) refueling infrastructure in key European ports

⁷ Conditions of green hydrogen labelling and production should be tackled in associated delegated acts expected in December.



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Table 2. Expected elements relevant for gas in the December “gas and hydrogen” package and beyond

Expected gas relevant elements in the December package	
Revision of the Third Energy Package for gas to regulate competitive decarbonised gas markets.	<ul style="list-style-type: none"> • Will update market rules on gas markets, decarbonised and low-carbon gas, hydrogen • Will regulate infrastructure planning for decarbonised gases • Will complete the gas decarbonisation framework revision started with the July package
Reducing methane emissions in the energy sector	<ul style="list-style-type: none"> • Should set binding rules at company-level on monitoring, reporting, verification for all energy-related methane emissions • Possible rules on the improvement of detection and repair (LDAR) of leaks on all fossil gas infrastructure, as well as any other production, transport or use of fossil gas. • Possible methane emission standards, targets or other incentives to tackle methane emissions in relation to fossil energy imported to the EU
Revision of the Energy Performance of Buildings Directive (EPBD)	<ul style="list-style-type: none"> • Crucial to strengthen the framework for phasing out gas in heating, especially in private buildings, and should set long-term renovation strategies aiming at decarbonising the building stock by 2050.
Additional gas relevant legislation	
Revision of the TEN-E Regulation	<ul style="list-style-type: none"> • Sets rules for providing financial and policy support for EU projects of common interest (PCIs) in cross-border energy infrastructure. • Updates the infrastructure categories eligible for support through the TEN-E policy; possible ending of EU financial support for oil and natural gas infrastructure. • Revised governance framework to enhance the infrastructure planning process and ensure it is aligned with EU climate goals and energy system integration principles.
EU International Energy Strategy	<ul style="list-style-type: none"> • Should set priorities and action for supporting clean electricity, phasing out coal and tackling methane emissions globally. • Aims at enhancing the EU’s clean energy cooperation with other countries and regions



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Five gas benchmarks for setting a clear and ambitious framework and objectives for a managed transition away from fossil gas.

1. Strengthening competition between energy solutions

To enable a swift decrease of unabated fossil gas consumption and set the EU on a path to a fair and sustainable transition, gas markets and regulations need to take account of new sources of competition at multiple levels: energy markets should promote competition between gas and emissions-free alternatives, the planning of networks should look across energy solutions and acknowledge the increasing role of distribution networks, and distorting fossil fuels subsidies be removed.

The Fit for 55 legislation has the potential to create a new organization of markets that would enable the competition of zero-emission services against gas products and drive decarbonisation in a cost-effective way. Current gas market policy focuses on gas-on-gas competition. However, energy system integration and a market centered around energy services rather than energy carriers offers opportunities for more competition and can deliver better value to the consumer. Sticking with the gas-on-gas approach therefore decreases the available options for the consumer and the possibilities of switching to net-zero energy solutions and services. Incentivizing the development of competitive alternatives to natural gas such as energy efficiency, demand response, waste heat recovery, zero-emissions district heating or renewable heat and power would maximise competition in integrated energy system and ensure high-value renewable gases are allocated to where they add most value. Similarly, circular economy approaches and digitalization can also create opportunities to reduce the demand for fossil gas products.

The functioning of markets, routes and networks will change with the further integration across the energy system and the development of “renewable gases.” In addition to strengthening competition from other energy carriers, the proposals should anticipate this change in the way networks operate and propose ways to integrate these fuels into the European energy mix. While the current system is based on largely unidirectional flows from a small number of producer countries to the EU, renewable gases are expected to be produced in a decentralized manner, based on surplus renewable electricity or on agricultural byproducts. Any gas market reform should also pay particular attention to the expected diminution of the size of gas networks and its implications for the energy systems.

Third, energy taxation and carbon pricing in Europe need a thorough revision to support consumers in choosing a product with a net zero emissions footprint while ensuring they are safeguarded from the worst impacts of pricing. Fossil fuel subsidies, in the form of implicit or explicit tax benefits have persisted over the last decade (~€40bn in 2016, equivalent to the value of the Just Transition Fund).⁸ The proposed revision of the

⁸ European Commission (2021). [qmv_factsheet_on_taxes.pdf \(europa.eu\)](#)

Energy Tax Directive should therefore remove every fossil fuel tax exemption. Additionally, provisions to allow exemptions for renewable electricity, and renewable hydrogen instead can help shift incentives in the right direction for renewable gas development.

Recommendations for the upcoming negotiations and proposals:

- **The December hydrogen and gas markets decarbonisation package** should reorganise markets and services around decarbonised gas to enable the competition of zero-emission services against gas products and drive decarbonisation in a cost-effective way, while the July package should incentivize the development of alternatives to natural gas such as the development of energy efficiency, demand response, waste heat recovery, zero-emissions district heating or renewable heat.
- The **redesign of the Energy Taxation Directive** should end exemptions for fossil fuels-based services and not leave any loophole for fossil gas or any methane-based “low-carbon fuel”.

2. Enabling a socially just transition away from gas

The proposal to extend the ETS to buildings and transport has raised significant concerns among European governments and stakeholders for fear of rising costs on European citizens.⁹ To avoid negative impacts, policies should be designed to enable vulnerable consumers to switch to zero-emission solutions and, if this is not possible, compensation should be offered. In addition to reducing energy bills, rapidly reducing emissions from buildings by reducing energy demand and decarbonising heat supply will also provide other benefits such as improved health and job opportunities.¹⁰

With carbon pricing options on the table for buildings and transport sector as part of the new ETS proposal, the need for carefully crafted mechanisms to monitor and counterbalance negative social impacts will become even more important to help support consumers, especially the more vulnerable, to switch to cleaner alternatives. Ensuring fast, targeted action on energy efficiency as part of Energy Efficiency and Energy Performance of Buildings Directives in the next five years will be critical to mitigate negative impacts by limiting overall energy demand. Further steps may still be needed at national level to rebalance gas and electricity price differences, as Europeans at present pay on average 3.3 times more for electricity than gas.¹¹

The changes introduced by the European Green Deal will also have an impact on the wider job structure of the EU; employment in the fossil fuels industry will decrease and

⁹ Euractiv (2021). [EU's Timmermans defends new ETS in front of sceptical lawmakers](#)

¹⁰ RAP (2021). [Fit for 55: Aligning European policy for decarbonised heat in buildings](#)

¹¹ European Commission (2020). [Energy prices and costs in Europe](#)

should be accompanied by a broadening of just transition measures to anticipate and proactively manage social impacts. These measures should come from bottom-up transition strategies focused on creating employment opportunities or retirement schemes for workers who lose their jobs in the high-carbon industry. Upskilling, reskilling, and lifelong learning programmes ensuring high-quality green jobs are crucial, as studies show that the development of renewables, electrification and building renovation can create between 2.5-3.5 times more jobs per millions invested than the gas industry does.¹² These opportunities need to be clearly communicated so that citizens can better understand what more ambitious climate action will mean for them, their homes and their lives.

Recommendations for the upcoming negotiations and proposals:

- **Fairness and distributive justice should also be at the heart of the newly proposed social compensation mechanism** to address energy and transport poverty brought on by the extension of carbon pricing to buildings and transport. Transparent and targeted distribution tailored to national, regional, and local contexts paired with attention to public participation processes will be essential in ensuring that the fund achieves its main objectives.

3. Focusing renewable hydrogen on hard-to-electrify end-uses

The debate on energy infrastructure has so far centered around the need for hydrogen networks and the opportunity to blend hydrogen with methane in existing gas pipelines. However, evidence shows that hydrogen will be a high-value resource used in end-use sectors where no other efficient solution exists and where it has the biggest decarbonisation impact.

The EU Hydrogen Strategy foresees the installation of 40 GW of electrolyzers to 2030 which would be able to produce around 333 TWh of renewable hydrogen per year. If fulfilled, this number would be barely enough to decarbonise existing industrial hydrogen use, where an estimated 300 TWh of hydrogen are required to eliminate emissions. Hydrogen should therefore be prioritised in sectors where other climate neutral solutions such as direct electrification and energy or material efficiency are not available.

Moreover, the European Commission estimates that between 80 and 120 GW of solar and wind energy production capacity will be needed to reach the objectives of its hydrogen strategy.¹³ In order to make the right choices around hydrogen infrastructure investments and avoid barriers in the deployment of green hydrogen, clear and realistic upscaling targets for renewable energy production are necessary. The framework

¹² BloombergNEF (2020). [Scale-up of Solar and Wind Puts Existing Coal, Gas at Risk](#)

¹³ European Commission (2020). [A hydrogen strategy for a climate-neutral Europe](#)

around renewable gas should also be completed by clear definitions of renewable gases to avoid increased emissions from lack of coherence in the EU legislative framework.

Finally, blending hydrogen into the gas grid goes against a strategic and targeted use of this resource and decreases the volume available for sectors where no alternatives currently exist. Moreover, hydrogen blending is likely to drive up prices for today's natural gas consumers because of its lower energy density. It will also complicate network gas quality management as it risks hampering the liquidity of the internal gas market, while offering very limited advantages from a climate perspective.¹⁴

Recommendations for the upcoming negotiations and proposals:

- The negotiations on the **Renewable Energy Directive** proposals should focus on safeguarding provisions ensuring production of green hydrogen, the buildup of additional needed renewable capacity and its focus on hard to electrify sectors (heavy industry, aviation and shipping).
- The **December package** should clearly state that blending is neither an efficient nor a climate-friendly solution. Conditions of green hydrogen labelling and production should be clarified in associated delegated acts.

4. Giving a central role to an independent governance body supporting the transition.

Current processes governing infrastructure choices and investment needs are not fit for delivering a truly integrated energy system. They are identified and managed by market actors – the transmission system operators (ENTSOs) – which focus on expanding each of their highly centralised networks (gas or electricity).

The ongoing revision of the TEN-E regulation, which sets rules for cross-border energy infrastructure, aims at fixing existing bottlenecks. However, the Commission's proposal fell short of successfully addressing the infrastructure governance changes.¹⁵ For instance, the proposed role of the European Network of Transmission System Operators for Gas (ENTSOG) in the planning of the hydrogen network would put at risk a cost-efficient and timely allocation of public resources because of ENTSOG's interest in keeping the gas network in use. This might shift the financial burden for converting and building hydrogen infrastructure on all current gas consumers due to their connection to the current grid. For these reasons, it is key to ensure that political decisions are based on scientific evidence and are fully aligned with the latest climate objectives.

¹⁴ E3G (2021). [E3G Hydrogen Factsheet: Blending](#)

¹⁵ E3G (2020). [What to make of the revised EU Energy Infrastructure Policy?](#)



The recent establishment of the European Scientific Advisory Board in the context of the EU Climate Law is an important step towards an independent and science-based expert group steering EU policies.¹⁶ The Board has a clear mandate to provide scientific advice and issuing reports on policy consistency across EU legislation with the Union's international climate commitments. The Board mandate covers all policy decisions, from setting or updating targets/deadlines to identifying investment priorities.

This Board, if involved early enough in the process, could provide clear guidance and oversight to foster an integrated 'whole system' approach to delivering decarbonisation, by bringing coherence across sectors, along the value chain and between Member States. This governance body would also ensure that scenario building and planning for the upcoming decades relies on the latest scientific evidence to identify the best views on technology costs and implementation potentials and ensure the cost-efficient allocation of resources, for example in the TEN-E process as well as in the discussions around the future of renewable gases.

Recommendations for the upcoming negotiations and proposals:

- Involve the **European Scientific Advisory Board** and rely on science-based expertise to improve the consistency and the reliability of projections and policy decisions related to the Fit for 55 package. Especially for infrastructure-related decisions, the board should provide reliable forecasts that enable increased policy coherence across different policies and legislative proposals.

5. Clearly communicating the EU's pathway globally and supporting the transition of impacted partners.

The Fit for 55 legislation is an opportunity for the EU to reinvent its engagement towards the world. This new framework opens possibilities for the EU to strengthen its energy diplomacy with its southern and eastern neighbourhood, with which it has traditionally engaged according to security of gas supply considerations. The EU's own objectives and the efforts needed to reach carbon neutrality mean that these countries will need to swiftly diversify their economic model and stop exporting fossil fuels. This is an opportunity for the EU to be transparent on the evolution of its demand for fossil fuels while supporting these countries' phase-out and creating the conditions of a balanced and sustainable partnership.

A new energy diplomacy is not only needed for the neighborhood, but also for the EU's engagement on the global scene. As the IEA showed in its net-zero report, fossil fuels producing and exporting countries will need urgent structural reforms to phase-out and

¹⁶ European Union (2021). [Regulation establishing the framework for achieving climate neutrality and amending Regulations \(EC\) No 401/2009 and \(EU\) 2018/1999 \('European Climate Law'\)](#)

move to new sources of revenue.¹⁷ The EU, as one of the main gas buyers, has a key role in helping these countries manage the risks and opportunities arising from this challenge, such as the decrease in European demand or the access to new technologies. The EU's upcoming international energy strategy could drive these priorities forward, provided other partnership instruments such as the neighbourhood policy, development and trade partnerships are also aligned with these priorities.

In that respect, clear assumptions on the decrease in EU's fossil gas demand should be at the heart of the EU's engagement with neighbouring producer countries. The EU should reassess its strategy towards ENP countries and push for clean energy partnerships, develop support packages for these key fossil dependent partners and concerted action with key importers to tackle methane leakage issues.

Recommendations for the upcoming negotiations and proposals:

- Use the upcoming **international energy strategy** to bring clarity to EU's external partners about the EU's decarbonisation pathway, its expected decrease in fossil fuels consumption and the possibilities for creating sustainable partnerships.
- Propose a positive agenda around energy efficiency, system efficiency, advancing clean energy in third countries, deploying renewables and improving power grid connectivity.

¹⁷ Energy Monitor (2021). [Gas under pressure as IEA launches net-zero pathway](#)



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About E3G

E3G is an independent climate change think tank operating to accelerate the global transition to a low carbon economy. E3G builds cross-sectoral coalitions to achieve carefully defined outcomes, chosen for their capacity to leverage change. E3G works closely with like-minded partners in government, politics, business, civil society, science, the media, public interest foundations and elsewhere.

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