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PRO-CONSUMER, PRO-CLIMATE A NEW EU AGENDA FOR NATURAL GAS

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Europe needs a new agenda on natural gas. Over the last 15 years, the EU has introduced successive waves of gas-focused regulation, aimed at strengthening gas-on-gas competition and increasing gas security. However, the energy sector is transforming rapidly. The rise of digitalisation, electrification, sector integration and active demand management means that gas can no longer be treated in isolation.

Meanwhile, all sectors need to reach net zero carbon emissions over the next three decades in order to meet Paris Agreement climate goals. This means the climate impacts of natural gas can no longer be ignored.

The incoming European Commission has the opportunity to develop a new approach to gas that is both **pro-consumer** and **pro-climate**. The steps to achieve this include:

1. Set clear objectives for decarbonisation – including gas
2. Strengthen competition between gas and carbon-free alternatives
3. Remove fossil fuel subsidies and distortions
4. Manage the social dimension of decarbonisation
5. Update Europe's energy infrastructure priorities
6. Make gas network regulation fit for the transition
7. Develop renewable hydrogen for hard-to-electrify processes
8. Address methane emissions, both downstream and upstream
9. Reorient energy diplomacy to reflect the changing geopolitics.



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1. Set clear objectives for decarbonisation – including gas

The European Commission has recognised the need to achieve net zero emissions by 2050, to safeguard EU competitiveness and reach climate goals.

This transition means big changes for the gas sector. Natural gas is currently responsible for 25% of the EU's energy-related CO₂ emissions.¹ By 2050, energy demand presently met by gas will need to be replaced by clean alternatives - efficiency, clean electricity, renewable or decarbonised gas, or carbon capture and storage (CCS).

To protect consumers during this transition, a clear and predictable decarbonisation pathway is needed. Both gas and electricity infrastructure has a long lead time to develop, and once built can last for decades. Investors and developers need clear political and market signals, or there is a strong risk of under-developing clean energy infrastructure or overdeveloping infrastructure not fit for a zero carbon system.

As part of the Paris Agreement, the EU will publish a long-term climate strategy by 2020. This should set out both a clear commitment to net zero emissions by 2050 and a target date to phase out unabated fossil fuels. Just as an increasing number of countries have set a phase out date for coal power (and Denmark has set an objective for phasing out all fossil fuels by 2050), EU and national objectives for phasing out unabated fossil fuel consumption can help to enable an orderly transition. A disorderly transition would entail significant economic damage, stranded assets and ultimately higher costs for consumers.

These decarbonisation objectives can then be incorporated into energy infrastructure planning priorities and used as a basis to evaluate proposed EU budget spending and European Investment Bank lending.

2. Strengthen competition between gas consumption and carbon free alternatives

Much of EU policy on natural gas in recent years has focused on promoting competition. This has included liberalising gas markets (e.g. the Third Energy Package) and seeking to diversify gas suppliers and import routes (e.g. the Connecting Europe Facility, the LNG Strategy and the Trans-European Networks for Energy regulation).

However, this narrow focus on gas-on-gas competition misses opportunities for consumer benefit. Consumer demand is not for gas as such, but rather for energy services. Developing energy efficiency, demand response, waste heat recovery, district heating or renewable heat and power as competitive alternatives to natural gas consumption can have significant benefits for consumers and climate. Circular economy approaches to industrial production reduce demand for both materials and

¹ IEA (2017) CO₂ Emissions from Fuel Combustion



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energy. Digitalisation and new consumer-focused business models (e.g. smart home heating systems) create even larger opportunities.

The European Commission has indicated that it will introduce a gas market regulatory package in 2020. This package should avoid taking a narrow view of gas market competition that ignores demand-side measures and the potential of active consumers. Instead it should seek to increase competition of carbon-free alternatives to unabated natural gas for energy services provision, including efficiency, demand flexibility, electrification and renewable gases.

3. Remove fossil fuel subsidies and distortions

Clean energy technologies are becoming cheaper and more widespread across a range of uses – from renewable power generation to electric heat production. However these clean energy sources are often forced to compete against fossil fuels that benefit from a variety of implicit subsidies and distortions.

Despite the significant climate impacts of unabated natural gas, much of current natural gas supplied in Europe avoids paying any carbon price for its climate impacts. While large gas power plants and industrial installations are covered by the EU Emissions Trading Scheme, consumption in residential and commercial buildings, transport and small power and industrial installations are not.

As a result, up to 40% of current natural gas consumption is outside of the EU ETS and not subject to a carbon price – but its emissions still have a climate impact. This creates an uneven playing field against carbon-free alternatives. This is a particular barrier to electrification, as the ETS carbon price plays a role in electricity price formation even where the majority of generation comes from carbon-free sources. The absence of a carbon price on gas also serves as a barrier to developing renewable and decarbonised gas.

Natural gas also benefits from other explicit or implicit subsidies across the value chain, ranging from reduced VAT to production tax breaks and subsidy for gas infrastructure. This creates – in effect – a ‘negative carbon price’ or carbon subsidy that unfairly incentivises gas consumption. In the UK, for example, gas use in residential buildings benefits from an effective carbon subsidy of €43/tCO₂.²

By contrast, electricity bears a disproportionate proportionate burden of taxation, including social and environmental levies on electricity bills. This distorts energy choices and risks inducing an inefficient decarbonisation pathway.

The European Commission recently proposed to reform energy taxation, beginning with a move towards qualified majority voting on energy taxation issues. This creates an opportunity to level the playing field and ensure unabated natural gas pays for its

² Energy Systems Catapult (2018) Current Economic Signals for Decarbonisation in the UK: Rethinking Decarbonisation Incentives



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climate damages. Reforms to the EU state aid regime can also support a faster transition to zero carbon options.

In pursuing these reforms, EU decision-makers must recognise that changes to energy taxation and prices will have different impacts on different consumers. Protection of vulnerable consumers must be at the centre of these plans. European citizens living in fuel poverty can be most effectively and fairly supported through targeted support for energy efficiency and social programmes, rather than subsidies and other distortions to keep the price of natural gas low across the whole market.

4. Manage the social dimension of the transition

All transitions have social and economic consequences. The move to a net zero economy is an opportunity to create quality new jobs and improve the health and wellbeing of Europeans. But in the course of pursuing these benefits, the welfare of vulnerable consumers and groups disadvantaged by the zero carbon transition must be protected.

For the transition away from unabated natural gas, this has two important dimensions. First, far too many European citizens are unable to afford to adequately heat their homes. The EU and member states should set an objective to eliminate fuel poverty, backed by a targeted investment programme to insulate cold, draughty homes. This would both reduce emissions from natural gas and improve the health and well-being of Europeans.

Secondly, while overall employment is expected to increase as a result of the shift to net zero emissions, support is needed for workers affected by the transition – from offshore rig workers to boiler installers – to help them succeed in the new economy. There are many examples of successful transitions, including regions formerly dependent on offshore oil and gas now creating employment through offshore wind, and reskilling plumbers and gas engineers in low carbon heating installation and energy efficiency retrofits. The EU can help support regions to develop successful local economic strategies through providing technical capacity for planning and managing the transition, and investing in clean infrastructure, innovation and research to attract new private investment and new industries for clean reindustrialisation.

5. Update Europe's energy infrastructure priorities

Over the past decade, gas market competition and security of gas supplies have been core priorities for EU energy infrastructure policy. Oil and gas make up 5 out of 9 'priority corridors' for infrastructure in the 2013 Trans-European Networks for Energy (TEN-E) regulation, which sets out the rules for selecting Projects of Common Interest, eligible for public funding and special planning treatment. Gas infrastructure has



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received €1.47 billion of EU funding since 2014 through the EU's Connecting Europe Facility - 48% of the funding disbursed so far.³

The energy infrastructure priorities set out in the TEN-E regulation 2013 are now out of date, in three important respects:

- > First, Europe's gas networks have already achieved a high level of security and interconnection. As the European Commission's 'State of the Energy Union report' notes, "Europe should achieve a well-interconnected and fully shock-resilient gas grid by 2020 or shortly thereafter."⁴ The continued promotion of 'priority corridors' for natural gas has become superfluous.
- > Second, Europe's energy system is changing rapidly, and the previous priority corridors are no longer fit for purpose. Digitalisation and smart demand-side flexibility, sector coupling, heat decarbonisation, deep efficiency retrofits, electrification of transport and industry and the rise of cheap renewable power radically change Europe's energy infrastructure needs, and require a new assessment of priorities. Within the gas sector, the TEN-E regulation was devised before renewable and decarbonised gases were expected to play a meaningful role in the EU's power system. As a result, there is no specific focus on developing the relevant infrastructure for renewable gases or converting natural gas infrastructure to hydrogen – or how these new sources of gas will change the use of current gas networks.
- > Third, the EU's infrastructure priority corridors were based on analysis that pre-dates both the EU's 2030 climate and energy targets and the objective of reaching net zero GHG emissions by 2050. This creates a risk that EU energy infrastructure will be mis-aligned with the EU's decarbonisation pathway, leading to higher costs or slower progress.

The European Commission has proposed to spend €8.7 billion on energy infrastructure from 2021 to 2027 through the Connecting Europe Facility in the EU budget. Yet the 2013 TEN-E regulation sets out eligibility for what projects can be funded. Unless EU energy infrastructure priorities are updated via a revision of the TEN-E regulation, there is a major risk that this EU spending will prioritise out-of-date investments.

The EU has committed to reviewing its energy infrastructure priorities by the end of 2020. This is an opportunity to bring EU infrastructure spending in line with EU climate ambition and to keep pace with technological progress. The new infrastructure priorities should be based explicitly on the 'energy efficiency first' principle and recognise the potential of infrastructure solutions that go beyond pipes and wires. This includes deploying demand response and demand reduction measures as alternatives to new hard infrastructure.

³ European Commission (2019) Fourth Report on the State of the Energy Union - COM (2019) 175

⁴ European Commission (2019) Fourth Report on the State of the Energy Union - COM (2019) 175



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The review is also an opportunity to look again at decision-making procedures for identifying Projects of Common Interest to ensure the full range of new energy economy actors (and not just Transmission System Operators) can participate.

6. Make gas network regulation fit for the transition

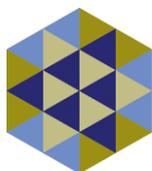
This climate transition is changing the way that gas networks operate. It will be critical to ensure consumer interests are protected as these changes accelerate. The three main shifts facing gas networks are:

- > **Flexible operation:** The rise of variable renewable electricity already means that gas networks are being operated more flexibly, as they supply fast-ramping gas power plant to balance renewable production. This is important for system integration of renewable power, but will increasingly face competition from other sources of flexibility, including demand-side response, interconnection and storage.
- > **Different sources and flows:** The development of ‘renewable gas’ will mean changes to how gas networks operate. In contrast to a current system based on gas flows from Russia and Norway, the production of biogas is highly decentralised in agricultural areas and predominantly connected to distribution grids. The production of renewable hydrogen will be based in areas with surplus renewable electricity. The result of these different flows is that some current infrastructure will become surplus to requirements, while in other cases adaptations may be needed (e.g. local storage, injection from distribution to transmission networks, conversion of gas pipelines to hydrogen).
- > **Lower utilisation:** The rise of energy efficiency, electrification and distributed energy may mean a lower utilisation of both gas transmission and distribution networks. This may make parts of the networks uneconomic to sustain. As more customers electrify their energy use, many will prefer to disconnect from the gas grid entirely. This means that the cost of maintaining the network will be borne by a smaller subset of consumers, and network costs will represent a higher proportion of the cost of gas supply. In turn, this may encourage further defections away from the gas grid.

In response to these shifts, a new assessment is needed about how gas networks are remunerated and operated, and how to protect consumer interests as networks change. It would not be appropriate to artificially prop up uneconomic assets by subsidising or socialising their costs. Instead, the specific services provided by gas networks need to be identified and valued. If these needs can be met more cost effectively by other approaches – e.g. demand side flexibility or energy efficiency – then they should be, rather than preserving the network for its own sake.

7. Develop clean hydrogen for hard-to-electrify processes

There has been considerable recent attention for renewable and decarbonised gas, including renewable hydrogen, hydrogen produced from natural gas with CCS, and



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biogas. These options are not replacements for accelerating energy efficiency, electrification or circular economy approaches, and there are considerable uncertainties on volumes, costs and viability. Nevertheless, renewable gases and in particular green hydrogen could be a useful option for hard-to-electrify processes, including heavy industry.

If green hydrogen is to become a viable option, infrastructure development (including conversion of existing natural gas infrastructure) will need to start at an early stage. However the current regulatory framework is not designed for large scale use of hydrogen as an energy carrier, and would need to be reformed. Several policy steps are needed:

- > **Regulatory coverage:** Hydrogen is not currently included under the EU's landmark Third Energy Package, which governs energy market operation and trading. As it stands, hydrogen would be treated differently from other energy networks. It will be important for consumer protection and competition rules to apply to hydrogen as well as to other fuels.
- > **Network development:** At this stage it is unclear who would be responsible for developing hydrogen network transmission and distribution infrastructure, how they would be remunerated and how they would be regulated. There are several complications:
 - First, hydrogen faces a 'chicken-and-egg' problem: existing hydrogen demand is not high enough to justify construction of new hydrogen networks or converting existing gas networks, but demand will not materialise unless hydrogen can be supplied. Anticipatory investment may be needed to break through the deadlock.
 - Second, repurposing natural gas pipelines to use hydrogen requires all end use appliances on the network to be hydrogen-compatible. This is a major coordination challenge and creates conflicting interests. Clear rules on planning and sequencing network conversion will be needed.
 - Third, hydrogen is frequently a competitor to natural gas. However existing natural gas suppliers have an interest in protecting the value of their existing assets. If current gas transmission and distribution system operators are to be tasked with developing hydrogen networks, careful consideration is needed on how to avoid a conflict of interest.
- > **Incentives:** Consideration is also needed for the incentives needed to scale up the market for clean hydrogen in the EU. Renewable hydrogen is currently more expensive than unabated natural gas, and the majority of hydrogen currently consumed in the EU comes from fossil sources without CCS. While feed in tariffs and carbon pricing could be used as a 'push' factor for hydrogen provision, a market 'pull' is also needed. With this in mind, EU policy-makers should also consider public procurement rules to create market demand for zero-carbon steel and other industrial products produced with zero-carbon hydrogen.



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- > **Sustainability standards:** While hydrogen produced through renewable electricity is largely emissions-free, not all sources of hydrogen are zero- or low-carbon in their production. Lifecycle emissions from hydrogen production range from near-zero to higher than those of natural gas. Most hydrogen currently consumed in Europe comes from high carbon sources. If Europe is to increase its use of hydrogen, it will need to develop a typology for different sources of gases, and implement sustainability standards to ensure genuinely low carbon hydrogen is prioritised.

8. Address methane emissions, both downstream and upstream

The climate impacts of natural gas goes beyond its combustion emissions alone. Fugitive methane emissions from natural gas production and transmission and other production-related emissions add considerably to the climate impact. Indirect emissions are responsible for 25% of the full lifecycle emissions of natural gas. Extraction, processing and transportation of oil and gas is responsible for nearly 15% of global energy sector GHG emissions. Methane is a particular concern given its short-term climate impacts, estimated as the equivalent of 34 times that of CO₂.⁵ These emissions come on top of considerable direct emissions from natural gas.

Not all gas production is the same, however. There is huge variation in methane leakage and process emissions from natural gas, depending on source – with methane impacts ranging from 1 to 58 g CO₂ eq. per MJ.⁶

These emissions are currently largely invisible to EU policy. As the EU imports two thirds of its gas, the majority of methane and process emissions from EU gas consumption take place outside of the EU, and not accounted for in EU emissions statistics. As a result, producers often have little incentive to reduce methane leakage rates or process emissions, and the full climate impact of EU natural gas consumption is not addressed.

The recent Energy Union Governance Regulation requires the European Commission to develop a methane strategy to address these emissions.⁷ This strategy should address both direct and indirect methane emissions, so that international emissions are not ignored.

To fully address methane and process emissions from natural gas, the new EU institutions should agree emissions standards for both imported and domestic gas, to stop the most negligent and polluting sources being used. The Fuel Quality Directive sets a precedent for lifecycle greenhouse gas emissions being incorporated into fuel

⁵ Global Warming Potential of 34x CO₂ measured over a 100 year timeframe, and 84 measured over 20 years. IPCC (2013) **Climate change 2013: the physical science basis**.

⁶ IEA (2017) **World Energy Outlook**

⁷ The Governance Regulation specifies that the methane strategy should be a part of the EU Long-Term Climate Strategy – so its production is already overdue.



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standards. A system for addressing full lifecycle emissions for the natural gas sector is needed as well.

Ultimately, as Europe moves towards net zero emissions economy, it needs to shift to energy sources with near zero greenhouse gas emissions in both upstream and downstream phases. As a result, the new EU methane strategy should address not only cleaner natural gas production but also zero emissions alternatives to natural gas consumption – from energy efficiency to renewable hydrogen.

9. Reorient energy diplomacy to reflect the changing geopolitics

Security of natural gas supplies has been the main priority of external EU energy diplomacy in recent years. Significant diplomatic capital has been invested in relations with gas exporting countries, as a way of diversifying gas supplies to Europe away from Russia, and in negotiations with Russia to ensure continued gas flows via Ukraine. This strategy is supported by Member States' own energy diplomacy, which is still largely focused on supporting new exploration and production of natural gas fields around the world.

The first priority of the most recent EU Energy Diplomacy Strategy is “diversification of sources, suppliers and routes”, focusing on natural gas. Diplomatic support is to be focused on “the Southern Gas Corridor, the Southern Caucasus and Central Asia; the strategic potential of the Eastern-Mediterranean region; the Euro-Mediterranean energy cooperation in the Southern Neighbourhood; the wider Middle East region; new energy sources in the Americas, Africa and Australia, including the potential of Liquefied Natural Gas (LNG)” – as well as Russia, Ukraine, Turkey and Iran. At Member State level, the support of the German Government to the Nord Stream II pipeline and new LNG terminals and the Italy-China agreement on new natural gas exploration and transport pipelines are a few examples of the central role that natural gas deals play in Member States' energy foreign policy.

This approach sits uneasily alongside Europe's climate diplomacy efforts, and risks sending mixed messages to producer countries and other partners about the future of fossil fuels.

Meanwhile, the global geopolitics of energy are changing fast as a result of the global energy transition, creating new opportunities for Europe but also new challenges that need to be managed. As the International Renewable Energy Agency's Global Commission on the Geopolitics of the Energy Transformation finds, access to fossil fuels becomes less important for geopolitics as demand reduction and renewable energy form credible alternatives. However access to new technologies and ensuring an orderly transition for fossil-producing countries are emerging as critical new issues.

The core diplomatic priority for the EU should be to limit global warming to 1.5°C, in order to reduce climate risk and responsibly address concerns of global and



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intergenerational equity. The EU should reconsider its energy relationships and strategic interests in light of this new reality.

As a result, the new EU institutions should agree a new EU Energy Diplomacy Strategy as part of an updated EU Global Strategy. This could include a focus on:

- > Aligning both EU and Member States' energy priorities with the EU climate domestic and global goals. The EU can no longer treat new natural gas deals as a political asset for managing difficult geopolitical relations. Instead, the EU needs a strategy to make the new clean energy priorities an instrument to drive a new geopolitical order anchored in the mutual interest and international cooperation efforts to implement the Paris Agreement.
- > Industrial strategy, trade and innovation for clean energy technologies, to support technology leadership by European countries and companies.
- > Ensuring a 'just transition' for developing countries dependent on fossil revenues, and a 'stable transition' for vulnerable fossil-dependent regimes. This should include a leap-frogging strategy from fossil fuels to clean energy - especially for coal-dependant regions - in order to avoid the risks of carbon lock-in and stranded assets from overinvesting in gas infrastructure.
- > Diplomatic support to help oil and gas majors to move more quickly away from business models that maximise revenues from fossil fuels exploration and production.
- > Addressing energy access through providing access, technical assistance and finance to zero-carbon sources and technology, especially in the African continent.
- > Integrating the "energy efficiency first" principle in all external relations of both EU and Member States, and in particular in external infrastructure and investment policy. Scaling up the global uptake of energy efficiency should become the number one priority of EU energy diplomacy.
- > Developing and advocating for the adoption of investment criteria in the lending policies of Multilateral Development Banks in line with goals of the Paris Agreement. For natural gas investment, this means testing projects against clean energy and energy efficiency alternatives.
- > Developing electricity interconnections with near neighbours and supporting development of large-scale renewable energy and storage resources in Europe's neighbourhood.
- > Improving sustainable supply chains for critical raw materials for the energy transition, including cobalt, lithium, graphite, and nickel.
- > Conducting a strategic reassessment of Europe's energy relationship with Russia and other key suppliers such as Algeria, to explore the future of the energy relationship in a decarbonising Europe.



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TOWARDS A CLIMATE-NEUTRAL EU BY 2050
AN E3G SERIES

This original E3G series identifies key areas for achieving Europe's carbon neutrality objective. The series explores various sectoral analyses and policy avenues for the next European Commission's agenda to implement decarbonisation.

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