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MEDIA FACT SHEET: **DEEP DECARBONISATION AND THE FUTURE OF GAS IN THE EU**

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Headline messages

> Demand for fossil gas in Europe will decline steeply over the next two decades if the EU sticks to its policies to avoid dangerous climate change and transition to a clean energy system.
> New forms of gaseous energy carriers (hydrogen, biomethane) have a role to play but are far from a silver bullet: they will likely be expensive and scarce for at least another two decades while decisions over gas infrastructure need to be taken now.
> Cleaner and cheaper alternatives, like batteries and storage technologies, are already undercutting demand for fossil gas in the power sector.
> New investments in gas infrastructure in Europe are at risk of not recovering their value before the end of their economic lifetime.
> Europe needs to start planning its transition out of fossil gas now to protect consumers and choose the most efficient pathway to a climate neutral society.

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Background

1. Demand for natural gas will decline over the next two decades

Incompatibility with climate targets

> **Fossil gas** accounted for 22% of energy-related emissions in Europe in 2015 (**IEA 2017**, p. 88/9).

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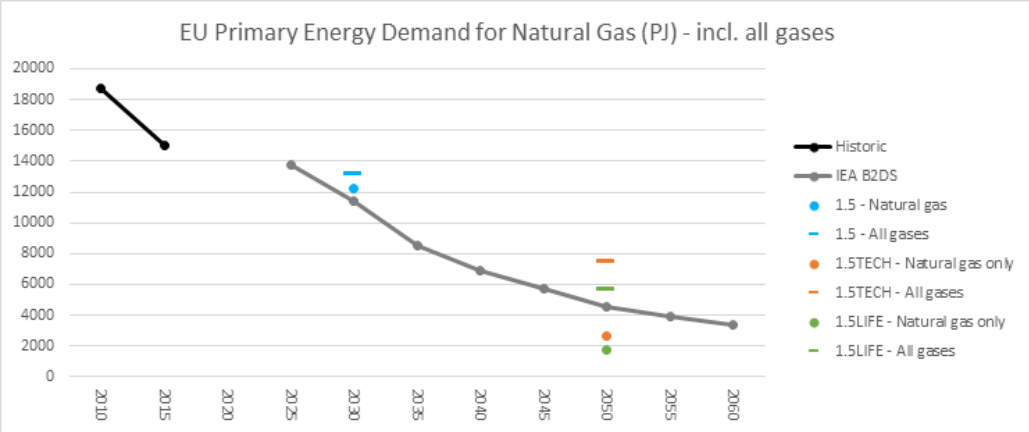
> New gas-fired power plants are already **above the emissions intensity of average electricity generation** in Europe – a combined cycle gas turbine at around **345 g CO2e/kwh** and the EU's average emissions intensity for electricity **at 296 gCO2/kwh** (2016).

> Natural gas not only emits CO2, but also leads to methane leaks during exploration, production and transmission. Methane is one of the most potent greenhouse gases with strong short-term effects. A relatively small leakage rate of 3% across the whole of the supply chain can make natural gas **as damaging as coal** in terms of climate. While the industry reports indicative values below that it admits that currently there is **significant uncertainty** over methane emission of gas consumed in Europe. Reducing methane emissions is theoretically possible at low cost. Practically, with many sources outside Europe and **several hundred thousand of pipeline kilometres**, implementation, monitoring and enforcement will be difficult.

> According to the modelling underpinning the EU Commission's proposal for "**A Clean Planet for all - A European strategic long-term vision for a prosperous, modern, competitive and climate neutral economy**" (non-binding), gas consumption **will stall or significantly reduce** across *all* pathways modelled. In those scenarios that are aligned with the Paris Agreement, the share of natural gas in energy consumption would decrease slightly to 2030 and to a fraction (3-4%) of today's consumption in 2050.



Source: E3G using Commission data from "A Clean Planet for All (2018)" and IEA data from IEA ETP (2017).

2. New forms of gaseous energy carriers (biogas, hydrogen) are not a silver bullet.

> New forms of gaseous energy carriers are technically available, including hydrogen from electrolysis using electricity (grid or dedicated renewable electricity) and water, through conversion from natural gas, or biomethane from renewable or non-renewable organic sources.

> Not all options are **compatible with deep decarbonisation.** Some are based on fossil gas meaning they would require investments in methane abatement and carbon capture, others could, if badly managed, lead to rising demand for unsustainably produced organic products.

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- The potential for domestic supply is very limited, with a maximum a quarter of today's consumption (**ICCT**, **Gas4Climate**). Foreign supply would also need to be developed and import into the EU would require a global guarantees of origin system alongside a steep acceleration of renewables deployment.
- The use of new forms of gas would require the retrofitting of existing gas infrastructure, in order for old pipelines to be able to handle hydrogen, and to adapt to the more decentralised nature of demand and supply (**E3G**). UK estimates have shown that unless the existing work force is expanded substantially, a hydrogen conversion of household appliances could take **up to 16 years**.
- Economics and timing: Currently all these solutions are more expensive than natural gas and will be so for the foreseeable future. They will need to come down in **cost rapidly** in order to replace natural gas any time soon or to provide cost competitive alternatives to electricity or demand side response investments. Careful use is needed given scarcity and costs, priority should be high-value applications where it does not compete with efficiency and electrification.

3. Cleaner and cheaper alternatives are becoming available

- *Power generation (*Current share ca 30% of all gas consumption in Europe – Eurostat 2018): **IRENA** estimates that all renewable technologies will be cheaper than the cost range for fossil fuel generation before the end of this decade. Both **GE** and **Siemens** have already seen falls in demand for their gas turbines as customers look elsewhere for electricity generation. In addition, **batteries**, energy efficiency, interconnection and demand side response are available alternatives. **Battery** costs are set to drastically fall in costs and a **growing European smart meter market** could bring down the cost of managing demand. Estimates suggest that a combination of these measures could remove **50% of gas need** in the electricity sector by 2030 compared to 2015. Even national plans to phase-out coal often mean little additional need for gas (for Germany, see **Agora Energiewende**). The main challenge remains seasonal demand fluctuation.
- *Transport*: Current share negligible, with **Italy** by far the most significant market for CNG and LPG.
  - Regarding passenger transport, electric vehicles are likely to be the **cleaner but also the cheaper option**. The business case for fossil gas in transport depends almost entirely on (fuel) tax breaks, subsidies and public support for infrastructure.
  - Some car manufacturers, e.g. **Mercedes**, see a declining role of gas in passenger transport and a limited role for commercial vehicles.
  - Regarding heavy duty transport, such as maritime and aviation, the benefits of switching to natural gas in climate terms are **questioned**. Meanwhile, regulation is slowly driving the efficiency of ships and electrification alternatives being **developed**.
- *Residential heat* (Current share ca 26% of all gas consumption, Eurostat). Energy efficiency investments, large-scale district heat pumps or residential heat pumps are some of the alternatives likely to come forward **sooner** than the large-scale production of clean and the rollout of hydrogen compatible end use appliances.

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> *Industry* (Current share 29% of all gas consumption (Eurostat)). Demand-side opportunities alone could reduce more than half of the European emissions in industry. With about **half of the industrial energy use** for low grade heat, electrification should be possible. The European **energy-intensive** industry sees significant potential in reducing raw material use through electrification, circular economy and efficiency. In addition, the provision of electrolysis hydrogen and ammonia could support decarbonisation.

4. New investments in gas infrastructure in Europe are at risk of not recovering their value before the end of their economic lifetime.

> New gas infrastructure could lose its economic and possibly even its financial value ahead of time ("stranded asset") as lifetimes are often **over 60 years** and a sharp decline in demand is expected over the next 10-20 years. The emergence of new gaseous energy carriers is unlikely to change this as volumes are likely to be lower and shape and requirements of the network differently (see above).

> The Commission is clear that current network constraints will be **taken care of in the early 2020s**. This has been corroborated by a recent report by **Trinomics, which** concludes recent investments in gas import infrastructure adequately secure a diverse supply for member states. Ambitious renewables, efficiency and interconnection/market integration efforts mean **energy security is no problem** in most of Europe under many supply-side shock scenarios.

> A coal phase-out by 2030 by the EU's major coal users can be absorbed **without building more gas network infrastructure** and limited additional plant capacity, provided adequate measures are put in place to deploy renewables and demand-side response to provide baseload generation and flexibility.

5. Europe needs to plan its gas transition now to avoid negative impacts on consumers and taxpayers. This needs both sectoral policies and a clear plan for how to deal with network infrastructure

> The changing nature of the gas networks bears two risks for costs to consumers:

  > Electrification of households essentially means defection from the gas distribution grid. Few consumers could end up carrying the bill for an oversized network.

  > Studies show that smart, energy efficient build out of the European energy system could lead to **higher disposable income** for households than pathways investing in decarbonising large parts of the gas network.

> Putting into place incentives for non-fossil gaseous energy carriers at this stage might encourage unsustainable amounts of biomass to come forward (see **legal case** against current sustainability criteria) or gases that are not truly zero carbon.

> The EU thus needs to

(1) develop a detailed taxonomy that reflects the climate and infrastructure impacts of each of those gaseous energy carriers and specifically includes sustainability criteria for biogas

(2) guarantee the full transition towards zero emissions gas network e.g. through a carbon price that reflects the pathway away from fossil gas or a trajectory towards a zero-emissions heating sector.

(3) remove public subsidies that encourage further building out of gas infrastructure or put alternatives at a disadvantage:

> The EU and its public banks alone spent around **€4bn/year** (€3.5bn by EU public banks and €0.5bn through the EU budget) on fossil fuel production and consumption between 2014 -16 most of which is gas -related. While the clean economy financing gap is estimated at **€170bn/year**. The EU's flagship investment vehicle for energy infrastructure, the Connecting Europe Facility, has so far allocated more than €1.3bn to gas pipelines and terminals, outstripping the funding for electricity.

> In **France**, during the 2012-2016 regulatory period residential gas consumption did not face any taxation at all. In the UK, gas networks face **lower** business rates than heat networks. In **Italy,** the growth of import gas networks were incentivized through a significant additional return (3%).

Key quotes

"We have no room to build anything that emits CO2 emissions." Fatih Birol, executive director of the IEA

"We believe that the gas industry must now explain its decarbonisation strategy and show how it is consistent with EU emissions reduction targets" Andrew McDowell, Vice-President of the European Investment Bank

"**That's why we must be very clever when managing investment in [gas] infrastructure that they don't become stranded assets**" Miguel Arias Cañete, European Commissioner for Climate Action and Energy