



Building a Paris Agreement Compatible (PAC) energy scenario

CAN Europe/EEB technical summary of key elements

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2.2 Phasing out fossil gas

Key assumptions

The continued use of fossil gas puts the EU's climate and energy goals at risk. In addition to the decreasing demand for electricity generation and in buildings, an active fossil gas phase-out by 2035 needs to be pursued.¹

- A further increase of fossil gas supply for electricity generation to replace coal power plants is not foreseen given the availability of cheaper renewable electricity supply. Full load hours slump by 2030.²
- The PAC scenario assumes that fossil gas supplied for heating buildings in the residential and tertiary sector will be strongly reduced by 2035 because of the high rate and depth of renovation that trigger the replacement of fossil gas boilers. Any uptake of fossil gas supply in transport is not realistic.
- The impact of methane leakage from fossil gas infrastructure on global warming increases pressure to rapidly cut fossil gas supply.³ The introduction of CCS is not considered realistic.

Evolution of energy supply

Together with fossil oil products, fossil gas in 2015 was the most important source of primary energy supply of the EU. In industry, fossil gas dominates with 1,077 TWh supplied in 2015 (34% of industry's final energy demand). As a consequence of reduced material demand, increased energy efficiency, electrification and introduction of non-fossil gases (renewable hydrogen, synthetic methane), supply goes down to 203 TWh in 2035 (8% of final demand) and will be entirely phased out by 2040.

While 41% of the residential sector's and 36% of the tertiary sector's final energy demand in 2015 was covered by fossil gas, the share drops to 9% in 2035. The remaining 136 TWh in the residential sector and 84 TWh in the tertiary sector will eventually disappear from the mix by 2040 because of the high rate and depth of renovation that trigger the replacement of fossil gas boilers for individual heating. Cooking will be largely electrified or switched to biomethane.

The share of fossil gas in electricity generation falls from 22% (616 TWh) in 2015 to 2% (96 TWh) in 2035. Remaining capacities however will not always immediately be mothballed. They might still be used to burn non-fossil gases (renewable hydrogen, synthetic methane) to offset variable renewable electricity generation during very few hours of peak demand.

Integration of members' and experts' feedback

During the collective PAC scenario building process, members and experts highlighted the need for proactive fossil gas phase-out policies of Member States in order to achieve the ambitious trajectory. Instruments such as a ban on gas boilers and financial incentives for transitioning cities to fossil-free heating are a prerequisite.⁴

¹ E3G: Pathway to a climate neutral 2050: Financial risks for gas investments in Europe, February 2020; E3G: Deep decarbonisation and the future of gas in the EU, March 2019; Global Witness: Overexposed: How the IPCC's 1.5°C report demonstrates the risks of overinvestment in oil and gas, April 2019; FoEE: Can the climate afford Europe's gas addiction? November 2017.

² This was confirmed by Öko-Institut's electricity market modelling with PAC scenario assumptions and a carbon price of €84/t.

³ Energy Watch Group: Natural gas makes no contribution to climate protection, September 2019.

⁴ CAN Europe/EEB: Summaries of PAC scenario workshops and General Assemblies workshops.

Sensitivities and limitations

Uncertainties remain with regards to the pace of fossil gas phase-out. The oversupply of cheap fossil gas streaming to Europe makes a quick shift to its alternatives challenging in the residential and tertiary sectors. Households’ investment decisions tend to favour continued use of the heating technology that they already are familiar with, in particular if Member States subsidise installing new gas boilers in households. Existing fossil gas infrastructure exerts inertia, meaning that established operators and gas suppliers successfully keep their consumers tied to incumbent distribution chains. Alternatives such as new and efficient district heating networks often would need to be anticipated and facilitated first in lengthy spatial planning processes. Against this backdrop, policies and measures are a decisive element for the role of fossil gas.

Key results

- Electricity generation from fossil gas decreases by 84% from 2015 to 2035. Fossil gas is not needed as a “bridge fuel”. Immediate leap-frogging from coal to renewable electricity generation is possible.
- Renovation pushes fossil gas out of buildings’ energy supply. Final energy demand for fossil gas in the residential sector drops by 90% from 2015 to 2035 (-86% in tertiary). Electrification and non-fossil gases fully substitute fossil gas in industry between 2035 and 2040.
- High carbon prices and EU and Member States’ commitment to phasing out fossil gas is crucial for the trajectories shown in the PAC scenario.

