

The future of heating in UK buildings



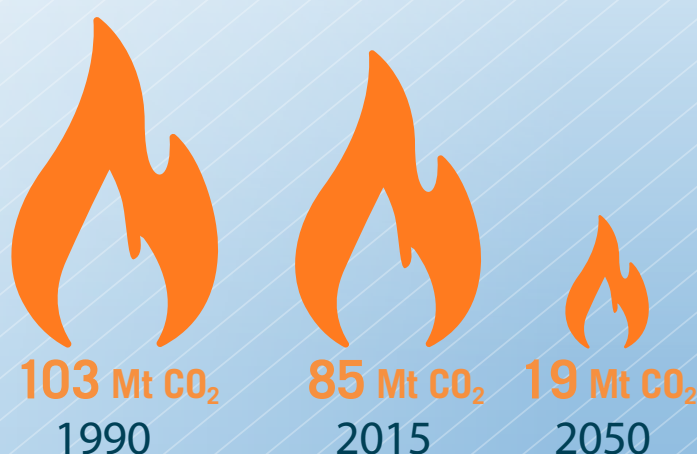
Heating and hot water for UK buildings **make up 40%** of our energy consumption...

...and **one fifth** of our greenhouse gas emissions



CO₂ emissions from heating

Meeting the UK's 2050 climate obligations will require the near complete decarbonisation of heat. This is achievable if action is taken now.

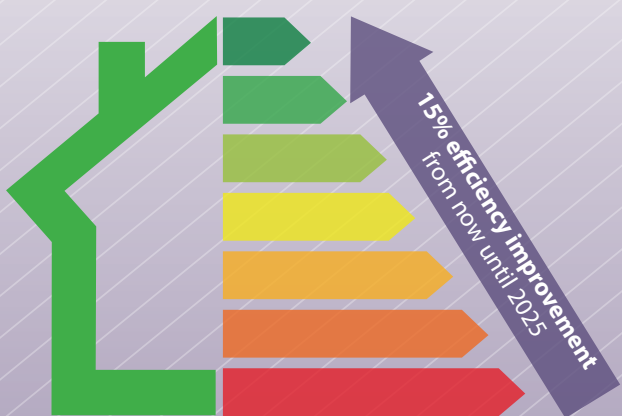


Key options for low-carbon heat

A mix of solutions should be deployed and investigated including...

Efficiency

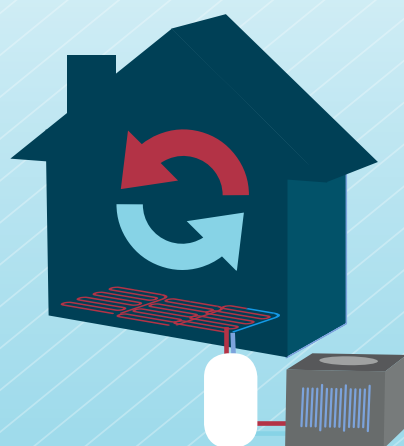
Through insulation and other measures, energy demand for heating could be cut by 15% by 2025 making UK buildings cheaper to heat.



Building carbon efficient homes and offices now saves energy and prevents costly retrofit later.

Heat pumps

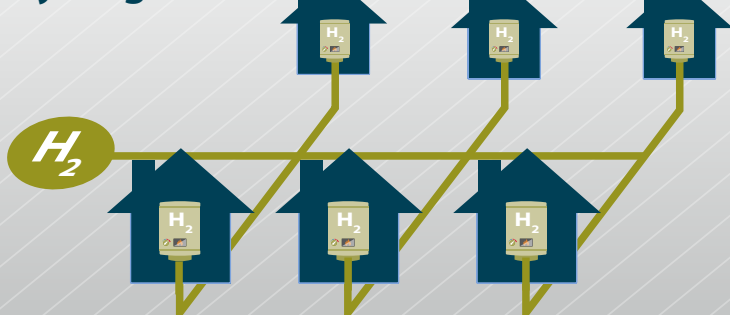
- ✓ Can be fitted in many buildings.
- ✓ Can provide heating and cooling.
- ✓ France and Sweden each have around **1,000,000** fitted...



⚠ ...but there has been low take-up in the UK with **only 20,000** fitted per year.

⚠ Large uptake may require reinforcement of electricity network.

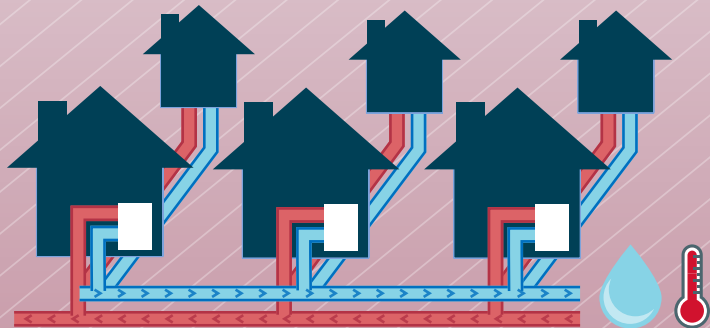
Hydrogen



- ✓ Hydrogen could replace natural gas in the existing gas grid.
- ✓ Would be used in the same way as natural gas, making transition easier for consumers.
- ⚠ Requires Carbon Capture and Storage (CCS).
- ⚠ Feasibility and public acceptability needs to be proven.

Low-carbon heat networks

- ✓ Also known as 'central heating for cities' or 'district heating'.
- ✓ Could provide **20%** of UK heating by 2050. In Denmark, **60%** of heating in homes is from low-carbon heat networks.
- ✓ Can use a range of low-carbon heat sources.
- ⚠ Requires coordinated take-up and enough local heat demand.



The pathway to low-carbon heat in the UK

Action now

In the 2020s

2050

- Easy win** Improve **efficiency** to reduce heating bills.
- Roll out** heat pumps, heat networks and biomethane.
- Easy win** Build new homes to high standards to **avoid costly retrofitting**.
- Invest in **Carbon Capture and Storage (CCS)** and **Hydrogen**.

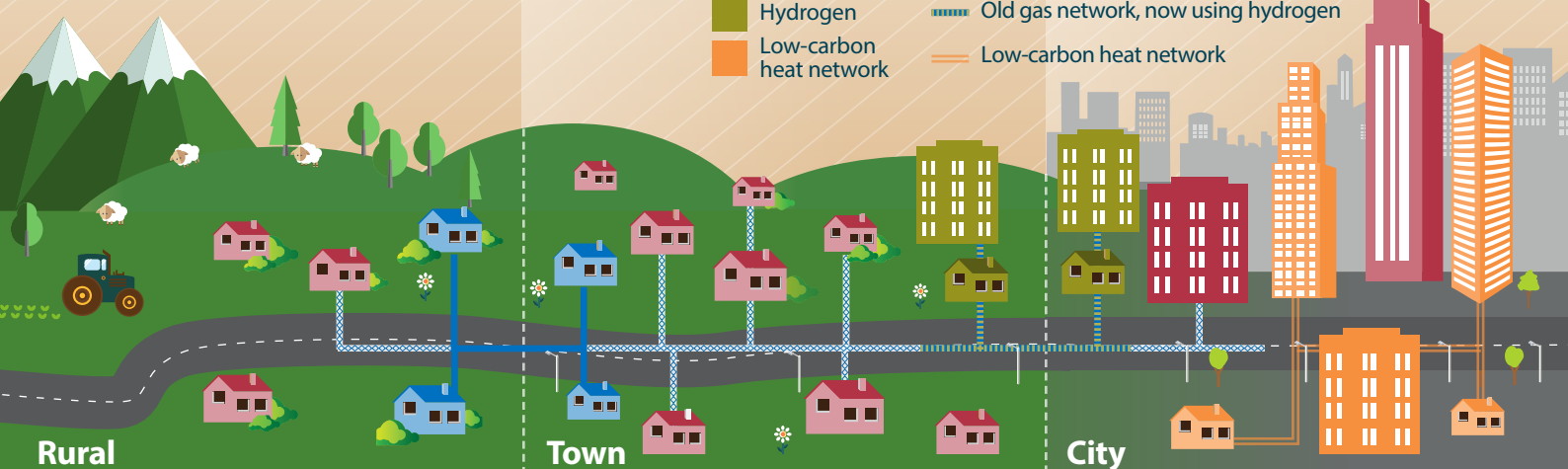
Government decisions on gas network

- Biomethane and low-carbon heat networks could be part of the mix.
- Heat pumps could be fitted in many buildings.
- Hydrogen could replace methane in the gas grid.

How UK heating could look in 2050

An illustration of possible heat supply

- Gas
- Heat pump
- Hydrogen
- Low-carbon heat network
- Gas network
- ⋯ Old gas network, now unused
- ⋯ Old gas network, now using hydrogen
- Low-carbon heat network



Rural
Buildings not connected to the gas network could switch to heat pumps (or biomass).

Town
Buildings connected to the gas network could switch to hydrogen or heat pumps, while some could continue to use gas/biomethane. Low-carbon heat networks could be built and extended.