

CEN briefing note: heat pumps

- **Heat pumps are a proven, scalable, low-carbon heat technology that are important for energy security and net zero.** Home heating accounts for **38% of UK gas usage** and **13-14%** of total UK greenhouse gas emissions. Electrification of home heating, through technologies such as heat pumps, will reduce emissions and costs for households as renewable electricity generated domestically is **cleaner** and **cheaper** than imported gas. The cost of our reliance on gas was exposed by Putin's invasion of Ukraine, when the Government paid around **half of every household's energy bills**.
- **Heat pumps work in cold temperatures.** Norway is much colder than the UK, yet has the highest number of heat pumps in the world - **30,000 compared to the UK's 560 per 100,000 people**. **Studies** have shown that heat pumps in British households perform well even on the coldest days of the year, up to -5.8°C. Heat pumps will become less efficient as the temperature outside decreases, but this change is minimal: in cold snaps they still supply 2.4 times as much heat as electricity they use up. For comparison, new gas boiler efficiency **peaks** at 0.9 with older models at 0.7.
- **Heat pumps cut emissions.** They are net zero-ready, meaning they will deliver 100% clean heat as soon as we have a fully decarbonised power sector, which is aimed for by 2035. Even before the grid is fully decarbonised, they have at least **20% lower emissions** than a gas boiler because they use less energy to power. Emissions reduction can be as large as 80% in countries with cleaner electricity grids.
- **The Climate Change Committee recommends heat pumps should be the dominant heating technology by the 2030s.** They state that heat pump manufacturing **should scale up in the 2020s**. A market-based mechanism, such as the Clean Heat Market Mechanism (CHMM), has the advantage of shifting costs from taxpayers to industry, and gives the heat pump sector the confidence to invest in building heat pump factories and training installers. Since 2022, there has been a **166% increase** in the number of qualified heat pump installers.
- **Heat pump costs are currently comparable with gas boilers, but will become a lot cheaper.** Buying and installing an air-source heat pump can cost anywhere from £8,000-15,000. But when the government's grant scheme is taken into account, they are roughly equivalent to gas boilers, which cost £1,500-3000. While running costs of heat pumps and gas boilers are currently similar, the government plans to rebalance environmental and social levies away from electricity bills, which will make heat pumps cheaper to run and

encourage more households to switch to cleaner heating. Heat pumps can also shield billpayers from international gas price fluctuations.

- **Heat pumps are significantly more energy efficient than gas boilers.** The average heat pump is [300% efficient, compared to 83% for gas boilers](#), meaning significantly less energy is required to heat the average household. However, electricity is more expensive per unit than gas, in part due to the vast majority of the environmental and social levies being applied to electricity. This means that despite lower energy consumption by heat pumps, unless the levies are rebalanced, households may not see a reduction in energy bills.
- **Gas boilers will not be ripped out of people's homes.** The [2035](#) target is to phase out the installation of new gas boilers, not a deadline for getting rid of existing ones that have already been installed. If people still have a gas boiler in 2035, they will not need to replace it immediately - and when it reaches the end of its life, they will be able to use a low-carbon alternative such as a heat pump instead.
- **Energy Performance Certificates (EPCs) need to be updated to maximise the benefits of heat pumps.** The current rating system (A-G) is based on how much it costs to heat a property, rather than how efficient it is. In some cases, installing a heat pump will lead to a lower rating, as the current EPC system [overestimates](#) the cost of using them to heat homes.
- **Heat pumps work best in energy-efficient houses (EPC C and above), but they can be installed in almost [any property](#).** All types of housing (old, new, flats, detached, mid-terrace, end-terrace, etc.) are suitable for heat pumps. Inability to install them is generally due to planning, rather than technical, reasons. However, the Government consulted earlier in 2024 on removing the rule that heat pumps cannot be installed within 1 metre of the edge of a property without planning permission.
- **The Government is supporting household uptake of heat pumps through other policies.** The Boiler Upgrade Scheme, which runs in addition to the CHMM, supports households who want to make the switch from fossil fuel boilers to heat pumps. The grant scheme has recently increased to £7,500, making the cost of air source heat pumps comparable to conventional boilers and has seen a [93% surge in interest](#) since this announcement. The scheme received [an additional £1.5 billion](#) of funding for the next parliament, on top of its original £450 million budget, due to high uptake. Heat pumps have 0% VAT until 2027.