

DOMESTIC HEAT

Fabric improvements before innovation in low carbon heat

Whichever technologies are brought forward to supply low carbon heat to UK homes, the first priority remains to improve the energy performance of the fabric of the buildings. And this is ultimately a public policy and user behaviour issue, as Jennifer Johnson reports.

Four out of every five homes that British people will occupy in 2050 have already been built – and the vast majority of them aren't nearly energy efficient enough to align with the country's decarbonisation targets. It's no secret that the UK has some of the least energy efficient housing stock in all of Europe. But now it also has some of the bloc's most ambitious carbon reduction goals, which means comprehensive home upgrades need to begin rapidly.

However, progress in energy efficiency is currently being hamstrung by a lack of policy incentives and homeowner uptake. It's a deadlock that must be resolved if the UK hopes to meet its stated aim of emitting net zero CO₂ by 2050.

Today, in-home energy demand accounts for some 20% of the country's greenhouse gas emissions, with over three-quarters of this demand coming from space and water heating. Replacing ubiquitous gas boilers with low-carbon alternatives is an obvious priority, though the government itself admits that this is likely to be easier said than done.

In a report on heating published late last year, the Department for Business, Energy and Industrial Strategy (BEIS) acknowledged that a range of technologies have the potential to deliver low carbon heating – heat pumps and solar thermal among them. But in the same breath, the department warned that there's presently 'no consensus on which technologies will be able to achieve this most economically and effectively at the scale required.'

In its landmark report on the net zero target, the Committee on Climate Change (CCC) similarly highlighted that more than a decade after the Climate Change Act was passed, there is still 'no serious plan' for decarbonising UK



heating systems. Meanwhile, some 70% of the country's housing stock still fails to reach Energy Performance Certificate (EPC) Grade C.

According to Gavin Killip, a Senior Researcher at Oxford University's Environmental Change Institute, it makes sense to tackle energy efficiency issues before rolling out zero-carbon heating infrastructure. There's little point in generating and distributing an expensive resource, such as hydrogen, to homes that aren't properly equipped to retain heat to begin with.

'If you don't do the energy efficiency before hydrogen gets to the buildings, then we're burning twice as much of this expensive energy vector as we would otherwise need,' he explains. 'The cost would be astronomical. We already have lots of different, very mature technologies which can improve the energy performance of buildings, but we don't deploy them.'

Incentives for improvement

The last piece of government policy designed to drive homeowners to invest in energy efficiency was the Green Deal, which was launched

in 2012 and scrapped in 2015. Under the scheme, loans were made available to homeowners who wanted to finance energy efficiency improvements in their properties. Typical enhancements included solid wall insulation, loft insulation, draught proofing and double glazing.

The government ultimately closed the Green Deal scheme due to low take up. In 2016, the National Audit Office found that the 'complex' application process meant that many householders simply didn't finish arranging a finance plan. However, it's also likely that uptake was poor because the public simply isn't interested in the concept of energy efficiency. Killip believes that efficiency improvements should be marketed as upgrades to someone's standard of living, rather than an energy saving measure.

'People who have done energy efficiency find that the homes they inhabit are more comfortable, they're cheaper to run and they're just nicer,' he says. 'In the past, I think what's happened is that the government has tried to persuade people that they want energy efficiency. People don't know about energy efficiency. But they do recognise comfort and wellbeing.'

In late August, the government's Science and Technology Committee published a report on clean growth that highlighted the lack of policies in place to deliver the net zero target by 2050. In a chapter on heat decarbonisation, the Committee recommended that by the time of the Spring Statement 2020, the government should adjust stamp duty so that it varies according to the energy performance of a home, as well as the price paid for it.

Subsequently, the report says, buyers could be allowed to make energy efficiency improvements within a defined time after purchasing a home and claim back corresponding reductions in the

stamp duty paid retrospectively. However, a different approach will be needed for council-owned and privately rented homes.

'The government should recognise energy efficiency and low carbon heat as an infrastructure investment priority, with a national programme to improve the UK's building stock,' suggests Richard Twinn, Senior Policy Advisor at the UK Green Building Council. 'This would include funding for low income households, low cost loan options for those able to pay and incentives such as variable stamp duty and minimum energy efficiency standards to drive consumer demand.'

Roughly 20% of all homes in the UK are privately rented. In this sector, government must incentivise landlords to upgrade the energy efficiency of their homes – which could prove difficult in markets with high housing demand.

The government has recently passed legislation that forbids landlords from granting new tenancies to new or existing tenants in properties with EPC ratings below Band E. From April 2020, landlords will not be able to continue letting a property that is already let if it falls below these standards. But for the sake of

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emissions targets, greater ambition is likely to be required.

'We just need to say, you can't rent this property out unless you've achieved EPC rates of A, B or C,' Killip says. 'The thing that landlords want to avoid, pretty much at all costs, are long voids. Policy design must be careful and clever so that as and when one tenancy ends, properties are invested in before they're rented out again.'

Initial steps

Owner-occupiers and private landlords don't have to wait for the rollout of innovative low carbon heating systems to make their properties more environmentally friendly. Energy efficiency measures are well-known – it's merely a matter of investing in them.

'Homeowners and landlords can start to take action by ensuring simple measures such as cavity wall insulation, loft insulation and draught proofing are installed to reduce demand,' Twinn says. 'Options are already available for low carbon heat through heat pumps and solar thermal technologies, but where these aren't yet appropriate for a property, an efficient condensing gas boiler is a good interim step.'

If and when policymakers

design fresh incentives for energy efficiency investment, it's important that expert installers are on hand to help homeowners to make the right choices. This, Killip argues, is the role of the construction industry. If the UK is going to decarbonise heat, it must ensure that construction workers have the skills and knowledge to implement changes across the building stock – from heat pump installations to loft insulation.

'We're trying to influence conversations over peoples' kitchen tables – that's the reality of where these decisions get made,' Killip says. 'They aren't made by government or in high-level discussions at industry conferences. And who is the person sitting across the table from the householder? It's the heating engineer, or the builder, or the architect.'

The fact is, every home in the UK must be transformed to align with decarbonisation targets. System-wide change requires full societal engagement. Policymakers, the construction industry and householders themselves must all cooperate to make the change. ●

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