Labour's low-carbon 'warm homes for all' could revolutionise social housing—experts

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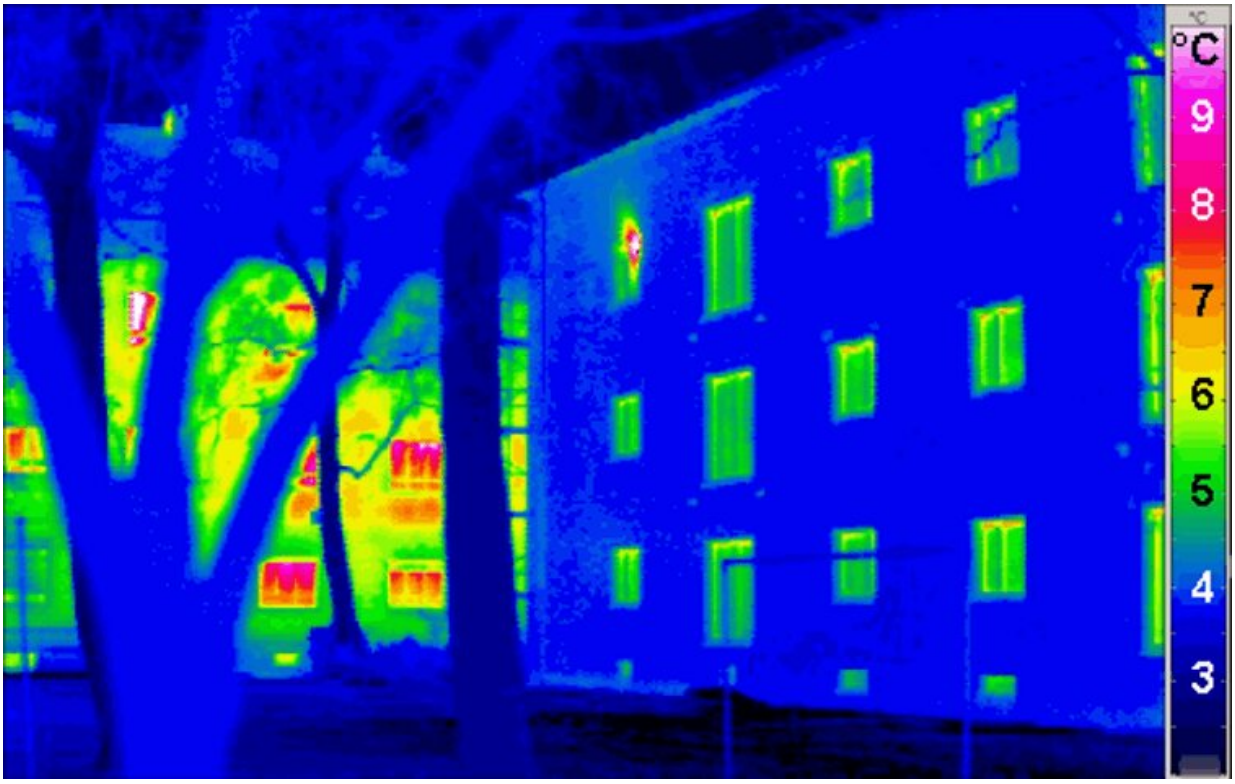

A Passivhaus home (right) leaks less heat than a traditional building (left). Credit: Passivhaus Institut/Wikipedia, CC BY-SA

All homes built from 2022 onwards would be carbon neutral under a Labour government, according to a recent election pledge by the party. Labour has also promised to guarantee "warm homes for all", by

retrofitting the UK's 27m houses with insulation, double-glazed windows, heat pumps and solar panels, to help them save and produce at least as much energy as they use, effectively neutralising their contribution to the climate crisis.

At the moment, that contribution is surprisingly large—heating and energy use in homes accounts for 18% of the UK's total carbon emissions. Decarbonising housing is an urgent task and will require a herculean effort—are Labour's plans up to the job?

There's at least no shortage of potential providers for new, zero-energy homes. Councils could choose to build the houses themselves or work in partnership with private developers and housing associations—non-profit organisations which rent affordable accommodation to people on low incomes or with particular needs. In order to make all new homes carbon neutral by 2022, all builders and developers would need to play their part.

Retrofitting all existing houses is estimated to cost about £250 billion, of which Labour pledges £60 billion in public subsidy. This would mean government investment would only cover 24% of the estimated cost, with the rest expected to come from "energy savings" down the line.

Meanwhile, councils and housing associations are already under strain to deliver enough affordable housing. In recent years, the amount of investment that the Conservative government has been willing to commit to building houses, through grants to housing associations and councils, has dwindled.

If they want to build new homes, housing associations are expected to build properties for private sale or rent and invest their profits into building social housing—that is, homes that are let for below-market rents.

But this policy of cross-subsidy hasn't delivered the number of affordable homes that are needed. A public commitment to fund the delivery of environmental standards in existing and new-build homes will be necessary to ensure Labour's plans don't fall short. But what could a future of zero-energy social housing look like?

Street that could change Britain

In July 2019, a council housing scheme in Norwich called Goldsmith Street won the prestigious Stirling Prize for architecture for its eco-friendly design and for providing 100% social housing. Residents report lower energy bills – as low as £150 a year in some cases—and plenty of green space.

The houses have much thicker insulation than normal, triple glazing and mechanical ventilation which can recover and circulate waste heat. Similar grand designs have offered glimpses of how homes might be greener, but Goldsmith Street's commitment to social housing could help meet the drastic need for more affordable homes. So how could this tantalising vision become the norm?

The answer might seem obvious: make it the law. But the UK construction sector is highly fragmented—and different subcontractors are often responsible for the walls, roof and electricity in a single house. This makes quality control difficult. There's also a skills shortage, especially when it comes to the detailed knowledge required to build a zero-energy house. And if energy-consuming extras such as underfloor heating or electrically driven windows are added, the energy savings from design may be lost.

One solution might be to mandate the use of Passivhaus Certification, as architects did on Goldsmith Street. Under this scheme, contractors must have the right qualifications and the energy modelling—which

determines if a home will truly produce as much energy as it consumes—must be completed in a highly prescribed manner. A guarantee that the correct insulation and other features have been delivered and fitted must be rigorously reported to a third party.

While there are costs involved with this, certified Passivhaus homes typically have heating bills that are one-tenth of the UK average, meaning that residents of a three-bedroom semi-detached house could expect heating bills of around £50 per annum.

Most people would pay more for a car that came with free petrol for life, which is close to what a zero-energy home is. But people will need to believe this is what they will get. More than 40,000 such buildings have been delivered across Europe, and Passivhaus was the route to low-energy construction that Belgium chose.

But Passivhaus only works if the right design decisions are made from day one. If an architect starts by drawing a large window for example, then the energy loss from it might well be so great that any amount of insulation elsewhere can't offset it. Architects don't often welcome this intrusion of physics into the world of art. In other industries—high-performance car design for example—the need to work with physics to reduce drag also affords an attractive, low and sleek look.

Architects and building engineers aren't often taught together in the UK, and engineering is rarely included in architecture degrees. Our team at the University of Bath is working on simple energy modelling tools that could help architects incorporate these principles in their designs.

To take Labour's plans from their blueprints and on to streets in the UK, an incoming government will need funding to roll out new homes and retrofit old ones. It will need to introduce regulation to ensure all homes are brought up to standard and drive a revolution in what architects

currently consider acceptable for how houses should look and feel. That's a tall order—but decarbonising each component of society will take nothing short of a revolution.

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