

FEELING THE HEAT

Landlords and builders are energised about creating ultra-efficient homes

It's the time of year when the chill of winter is simply overcome by turning up the thermostat. But new rules mean we could soon be forced to abandon this bad habit, and ditch our inefficient heating systems.

The government recently announced a target for zero net carbon emissions by 2050, which will mean radical changes in the way householders consume energy.

The problem is domestic properties are responsible for just over a quarter of the UK's total carbon emissions, but only a third of them meet modern energy standards. It means hundreds of millions of pounds needs to be spent upgrading these draughty houses.

"It's a significant challenge for the residential sector," says Amanda Stubbs, partner at law firm Trowers & Hamlin, Birmingham. "The widespread deployment of energy efficiency measures across the UK's housing stock is critical to hitting that target, but we know that will be difficult."

The good news is upgrading existing homes to a high standard, with insulation and renewable energy technology – retrofitting – has additional benefits, such as lifting many people out of fuel poverty.

According to a report by Nottingham Trent University, a major government policy change would be needed, focused on replacing old, inefficient energy systems.

"A national programme for a one-off, deep retrofit of all residential property is needed," says Marjan Sarshar, professor of sustainability and the built environment at Nottingham Trent. "Costs will come down as we build up the supply chain capacity."

The report suggests starting with social housing, which makes up about 4.5 million homes, and says that by working on one location at a time, the costs can be

brought down and retrofit schemes carried out more efficiently.

It estimates the cost of retrofitting a standard house to be about £17,000, but the benefits go beyond emissions savings, with lower energy bills, warmer homes and a much-decreased burden on the NHS, which currently spends about £1.4bn a year treating conditions that arise from poor housing.

Domestic maintenance costs, amounting to £5.2bn a year for social housing alone, would also be drastically cut or eliminated. Social housing tenants spend £4.2bn a year on energy which would also be much reduced if their homes were insulated and fitted with renewables such as solar panels.

"Deep retrofit of the existing housing stock represents a social and market opportunity."

Nathan Bradberry
Bevan Brittan

The report, by the university's Institution of Engineering and Technology Insulation, recommends instead of the traditional piecemeal approach to insulation – replacing windows and doors, and small-scale renewable energy such as solar panels or district heating systems – each dwelling should receive a one-off refurbishment covering all improvements needed to make homes fit for the next 30 years.

The technology, materials and skills are all available, it says, but the UK has failed to put them into practice.



Retrofitting

The buzzword in the social housing sector is 'retrofit', a term that covers a wide variety of energy improvements ranging from solar panels and air or ground source heating to the removal of gas to create an electricity-only property and new, thermally-efficient wall 'wrappers' created with prefabricated panels manufactured off site.

Comprehensive retrofitting to 2050 standards will be costly, and large programmes which would reduce overall costs, are still at the planning stage.

"For local authorities and RPs (registered providers), deep retrofit of the existing housing stock represents a social and market opportunity," says Nathan Bradberry, a partner at law firm Bevan Brittan.

"New technology and better construction systems are now offering long-term solutions to meet the 2050 obligations, overhaul sometimes poor quality housing stock and to help regenerate communities and 'places'."

Coalville-based EMH Homes has 20,000 units across the East Midlands. It is currently focused on the 2,000 or so homes where the main source of warmth is highly inefficient storage heaters. It's replacing them with air or ground source heat pumps, which create heat from the friction caused by putting air under pressure or extracting latent heat from deep in the earth. But it's a huge task, which will take time to complete.



you don't turn up the thermostat and ending up sweating so much you have to open a window. These systems are about creating a consistent background temperature. This can be quite a challenge for some tenants."

Retrofitting on a grand scale may be laudable, but the amount of investment needed is difficult to justify, says Boris Worrall, chief executive of Evesham-based Rooftop Housing Group, which has 6,500 homes in south Worcestershire and north Gloucestershire.

Rooftop wants all its properties to have an EPC (energy performance certificate) rating of C by 2030. Many of them are currently F or below.

"It's not going to be cheap – between £12m and £15m. That represents a lot of new homes," says Warrall, who is also West Midlands committee chair of the National Housing Federation.

"Retrofitting is a far bigger challenge than new build. We already build all new homes to EPC band A. But we have properties in band F or G that might require £40,000 or £50,000 of investment to get them to band C. That could be a third or even half the value of the house.

"Creating more energy efficient homes sounds positive, but spending lots of money upgrading old stock is less attractive to people than spending lots of money building new homes."

New efficient living

Banning gas boilers in new homes from 2025 also means builders having to radically change the way they design and create residential schemes. The traditional thermostat-controlled, radiator-based system is set to be phased out, with heat pumps and solar panels taking their place.

One of the main concerns is that a bigger reliance on electricity, which is needed to power heat pumps, could cause supply problems. One way of getting around this is localised generation and storage, says Stubbs, of Trowers & Hamlins.

Heat networks, where heat is generated and distributed more efficiently, are also easier to create in new build schemes than existing houses, she adds.

The Trent Basin development in Nottingham embraces these principles and is seen as a national and international flagship for alternative energy use. The project applies various energy systems,

In 2018, the group installed ground source pumps at 51 homes and air source pumps at 36 dwellings. It also replaced old boilers at 402 properties where air or ground pumps were impractical.

"Over the past two years we've been dipping our toe in the market, but things are now moving on," says property services director Adrian Cheetham. "We're working with our supplier Mitsubishi to increase the knowledge and training of our staff in this area."

However, it's not just workers who need to be re-educated, he says. "People have to accept this is not traditional heating,

"Over the past two years we've been dipping our toe in the market, but things are now moving on."

Adrian Cheetham
EMH Homes



Leicester mayor Sir Peter Soulsby and Chan Kataria, EMH CEO, at the Passivhaus scheme, Leicester

Climate change

PROPERTY

including solar power and localised energy storage, combined with carbon neutral housing technology, to create what its backers say is the first robust and “smart” business model of its kind.

Its origins lie in a “living lab” built at the University of Nottingham by a team led by Prof Mark Gillott, chair of sustainable building design, using smart technology to monitor and record energy shared usage.

The model was transferred into Trent Basin, next to the River Trent, where 42 homes are already inhabited and plugged in to the system, with 500 homes in total planned.

Trent Basin is the first new-build residential site to generate, store and use this electrical power for community benefit. Since May 2018 when the system went online, the project has saved 110 tonnes of CO₂, generated more than 310,000 kW/hours



Residents at the Passivhaus scheme in Leicester

Annual heating costs at the Passivhaus scheme in Saffron Acres, Leicester, is just £13 per home, in sharp contrast to an average of £735 for new homes in the UK.

The scheme, completed by EMH in partnership with Leicester City Council in 2018 and made up of 68 houses and apartments, uses the design concept of Passivhaus, which literally translates as

of renewable energy, offset energy costs by 25 per cent and has created a new company and business model that is attracting interest from more developers.

“The system had to be smart, easy and hassle-free for consumers, so the benefits are clear to other developers and the system will get more traction,” says Gillott.

The benefits of another eco-friendly residential development just down the M1 in Leicester are particularly clear and attractive.

“passive house”. It’s a German approach to home design that uses a combination of high-performance glazing, insulation and an airtight building to regulate internal temperature without relying on artificial heating or cooling. Saffron Acres is the UK’s largest Passivhaus residential development.

“The scheme ticks so many boxes,” says Leicester mayor Sir Peter Soulsby. “It’s good for homes, good for the environment, and good for the community.” ■

Bevan Brittan



Providing award-winning property, commercial, corporate, regulatory, employment and litigation legal advice for businesses, funders and developers across the West Midlands.

0370 194 1000 | www.bevanbrittan.com

