



Tackling the Housing Deep Retrofit Challenge

CATAPULT
Connected Places



The Nature of the Challenge

Our homes currently consume about 30% of the UK's energy and produce 20% of greenhouse gas emissions. 80% of that energy is used for space and hot water heating, mostly using gas. As well as emitting carbon dioxide, burning gas produces nitrogen oxides that are a major contributor to poor air quality in urban areas.

To meet the 2050 targets in the Climate Change Act, we must make domestic heating zero-carbon.

New standards are being prepared for new homes, but the UK has an old housing stock in poor condition, and the replacement rate is low. 80% of the homes we will be using in 2050 have already been built.

We cannot just decarbonise the electricity grid or build our way out of trouble. We must retrofit 27 million existing homes; reducing heating demand as much as possible and decarbonising what is left.

Incremental improvements will not take us to zero carbon. Partial solutions will lock in technologies that will have to be expensively replaced on the journey to zero carbon. We need an integrated 'whole house' approach that fixes fabric and utilities at the same time. Deep retrofit that takes existing buildings all the way to zero carbon in one smooth set of interventions.

Pilot projects have shown that this is possible for a wide range of building types, but solutions are not being deployed at scale.

A national programme will need collaboration between government, industry, housing providers and civil society, bringing many benefits. It will cut carbon emissions and reduce fuel bills. It will reduce fuel poverty, reduce winter deaths from cold and poor-quality housing, and relieve pressure on the NHS. It will support the Clean Growth Strategy and provide export opportunities for UK business.



The Workshop

On 26th February 2019 over 120 people attended an event titled “Homes fit for the future – accelerating the deep retrofit market” at the Urban Innovation Centre in Clerkenwell to debate how we can upgrade our housing stock to tackle the challenge of climate change and meet the future needs of our citizens.

Homes fit for the future - accelerating the deep retrofit market was a joint event organised by the Future Cities Catapult, Innovate UK and The Institution of Engineering and Technology (the IET). It took as its starting point a report published in November 2018 by the IET and Nottingham Trent University – “Scaling Up Retrofit 2050”.

Scaling up Retrofit 2050 made four key recommendations:

- Develop a national retrofit programme; initially focused on social housing.
- Reduce costs and build supply chain capacity through pilot projects and demonstrators.
- Make the benefits of deep retrofit clearer to housing providers and householders.
- Encourage investment through innovative finance.

Exploring Barriers and Opportunities for Different Stakeholders

After some scene setting, the participants **divided into groups to look at the problem from the perspective of seven different types of stakeholder:**

- Private Homeowners
- Social Tenants
- Social Landlords
- Builders
- Retrofit Specialists
- Financiers
- Government

All the groups considered the same set of questions:

- What are the challenges?
- Are there new risks and opportunities?
- What changes might help?
- What actions would help?
- How would we know we were successful?

Each group looked at the potential journey from now to 2050 for at least one of their ideas, and selected an initial action.



Key Messages from the Workshop

There was a high level of agreement between the groups, even if the issues were seen from different perspectives.

A strong theme was the need to make deep retrofitting attractive, desirable and aspirational to householders, and to reduce their fear of cost, disruption and 'cowboys builders'. Ideas included showcasing and TV programmes. Where are the popular TV programmes focusing on low carbon living?

Government was seen to have a key role to play in providing both sticks and carrots; mandating change through regulation and providing incentives through subsidy and taxes. A popular idea was to adjust stamp duty to encourage energy-efficient homes. Government should more actively enforce the building standards and regulations already in place.

Government should also work closely with industry and the supply chain to develop new solutions, reduce costs and increase confidence. This could be through standardised solutions for typical building typologies, **creating a joint roadmap**, understanding what comfort means for consumers, **providing evidence of performance in use** and providing standard approved performance measurements. We need to encourage experimentation through the creation of safe spaces for developers.

Finally, the industry could act to make it easier for householders and landlords to invest in a deep retrofit; one-stop shops, insurance and warranty schemes, directories of demonstrated solutions and competent suppliers.

There was relatively little evidence that there is a lack of technical solutions to the challenges. Instead, costs should be reduced, confidence increased, and a holistic approach developed to retrofit.

Specific issues for each stakeholder group included:

- **Private Homeowners:** are put off by the perceived risks and costs of deep retrofit. We need to educate them on the benefits and feasibility of deep retrofit, support them through the project and (at least initially) provide financial incentives. Communication is critical, both before, during and after the retrofit. People need to feel and see the value of improvements.
- **Social Tenants:** feel powerless. They need to become champions for deep retrofit, requiring excellent communications and education. They are often unaware, apprehensive, reluctant to change and lack personal control. These stakeholders have the most to gain as a group with a reduction in fuel poverty, increased health and wellbeing, and a greater sense of ownership.
- **Social Landlords:** see the greatest value in deep retrofit, but struggle to know how to make it happen. They understand the benefits over a 30-year horizon, but do not yet have a mechanism to make the up-front investment. They are also concerned that contractors and suppliers may not be around for that 30-year horizon and wonder whether performance bonds and insurance will really have any value. What they desperately need is for prices to come down, and to find a way to package multiple projects to reach a scale that will attract investment.
- **Builders:** see a lack of consistent Government policy as a barrier. They also worry about a lack of demand, which impacts profitability. Lack of skills in general, and deep retrofit skills in particular, is a big problem. If Government demands action from them, they want to see a clear plan and a commitment that goes beyond a single parliament.
- **Retrofit Specialists:** see a problem of mainstreaming what we already know how to do. Subsidy regimes distort the market, we need to get to the point where deep retrofit is self-financing, and that means driving down costs by scaling up. Demand needs to be increased, and Government can help that by targeted interventions on both demand and supply side. Government also needs to enforce existing rules and close loopholes to improve the stock quality. Skills gaps mean that they could not deliver cost-effectively, at speed and in volume.
- **Financiers:** see retrofit as a risky and fragmented market. Projects are too small, and the investments are illiquid. Energy efficiency is not properly incorporated into building valuations. Projects need to be much bigger to be attractive against other low-carbon infrastructure investments. Finance sources need confidence; given by much greater transparency on costs and benefits, performance guarantees and tradeability of investments.
- **Government:** Understands the importance of deep retrofit but is hampered by lack of public demand and an industry it believes is low on innovation and capacity to deliver. There are opportunities to both increase compliance with regulation and standards and to strengthen them. Adjustment of the sticks and carrots in the taxation and regulation system could 'nudge' behaviour of all the other stakeholders. A national retrofit strategy would deliver benefits in other areas such as health and wellbeing, supporting an ageing population, and improving economic performance. Government is uniquely placed to understand and value these spillover benefits.

Next steps

There are several strong themes running through the output from this workshop that align with other studies and reports. However, there are no simple or easily implemented solutions to get us to net-zero carbon for the existing housing stock. It will require a unique collaboration of Government, developers, the supply chain, the financial markets, the knowledge base, and critically the public, to find a way to upgrade the housing stock.

Connected Places Catapult Housing Deep Retrofit project will seek to work together with other stakeholder groups to develop an industry plan, and seek Government support to make it happen. A recommended first step is to create an industry-wide roadmap to zero-carbon, to understand the costs, the benefits, and the technical, financial and legal barriers that must be overcome.

To continue to be part of this conversation, please email
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