

# Empty Homes: how they can help us reach Net Zero

Climate Crisis Insights from REHAPs



# Summary

In June 2022, AEH began a one-year feasibility study to test and evaluate the viability of three-year local community-led Retrofit Empty Homes Action Partnerships (REHAP). The purpose of REHAPs will be to retrofit empty homes, deliver green skills training and build local supply chain markets, which together will help drive action on climate change at the local level.

The study is now complete and you can read the final report [here](#).

In this document we explain the insights gained from the one year study in relation to the climate crisis. We explain the role that retrofitting empty homes can play in the climate crisis, and why empty homes are an untapped resource that could be supporting the UK's goal toward net zero.



# Insight 1

## Retrofitting empty homes helps to mitigate a substantial amount of the construction sector's carbon emissions

20% of all greenhouse gas emissions in the UK are 'operational' carbon emissions from residential housing. 'Operational' carbon emissions are those associated with household energy consumption, including the energy that is exhausted in keeping a home warm during the winter. This means that 20% of the UK's total greenhouse gas emissions can be traced back to household energy consumption.

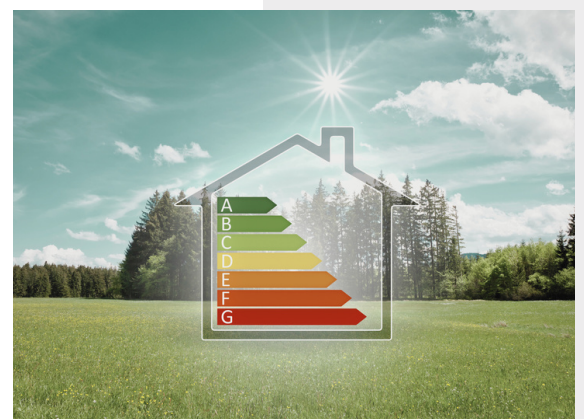
The UK has some of the oldest and least energy efficient housing in Europe. Much of our old, leaky housing stock struggles to retain warmth, meaning that we are using far more energy than we should to keep warm in our homes. This of course places pressure on our budgets – especially given the severe cost-of-living crisis and skyrocketing gas prices – but it also means that we are pumping excess carbon emissions into the earth's atmosphere as we attempt to keep our draughty homes cosy and warm.

Creating energy efficient homes and promoting sustainable fuel production are essential to reduce the climate impact of housing. Retrofitting is a process of making changes to existing homes so that energy consumption and emissions are reduced. It involves creating an integrated system which brings together low-carbon energy generation, efficient energy use, internal climate control, and sustainably sourced building materials.

Energy efficiency improvements can help to mitigate our reliance on costly and unsustainable fossil fuel-based energy generation. Technologies like solar panels, air-source heat pumps and heat recovery ventilation systems can improve the energy performance of our homes and reduce the amount of fossil fuel required to generate energy for residential housing.

Simultaneously, embodied carbon emissions often make up 20-50% of the whole life carbon emissions of new buildings. 'Embodied' carbon emissions are those associated with the extraction and processing of raw materials, the transportation of building materials, and the construction, building maintenance and demolition of buildings.

These emissions often make up 20-50% of the whole life carbon emissions of a new building. Therefore, we are pushing for a circular economy for housing. Retrofitting existing empty homes reduces the need for unnecessary new builds by helping to bring existing housing stock back into use.



## Insight 2

### Retrofitting addresses the intersection of inequality and the climate crisis

Low-income families are by far the most likely to be living in energy-inefficient housing. As a result, they bear the brunt of climate change, escalating energy costs, and the cost-of-living crisis most acutely. Fortunately, as cities move towards net-zero carbon emissions, opportunities are opening up to make this transition a catalyst for addressing today's inequalities.

Data from the [Chartered Institute of Housing](#) suggests that 2.2 million social housing tenants are both living in poverty and also living in energy inefficient accommodations. Likewise, 6.8 million people in private homes are experiencing poverty and living in energy inefficient housing. These households will be extremely vulnerable as climate change drives increasing fuel prices and contributes to increasingly severe winter weather.

If left unaddressed, this vicious cycle will only be exacerbated as the climate crisis worsens and more energy is needed to heat the UK's housing stock. As climate change brings about increasingly extreme temperatures in the summer and winter months, staying warm will be costlier and will further increase the carbon emissions of the UK's housing. Therefore, those on low wages living in energy inefficient dwellings will be hit harder and harder by both the financial costs and health repercussions of climate change.

Increasing the energy efficiency of England's homes is both a way of mitigating the cost-of-living crisis and addressing climate change. The lack of planning to ensure that low-income households have access to both affordable fuel and energy-efficient housing will exacerbate cycles of social injustice as the climate crisis intensifies.

Some mistakenly believe that we cannot address both the cost-of-living crisis and the climate crisis simultaneously. However, if rolled out with deliberation at the community level, the spill-over effects of retrofitting – including the development of local green supply chains and green skilled labour – will significantly outweigh the upfront costs. Moreover, seeing the prerogatives of fighting climate change and addressing the cost-of-living crisis as mutually exclusive neglects the crucial ways in which these crises intersect: improved residential energy efficiency at scale means a reduction in both fuel poverty and fossil-fuel reliance.



## Insight 3

### We don't need dedicated retrofit professionals. We need professionals with green skills in their toolkit.

One of the major obstacles to driving retrofitting at scale and at speed is the shrinking construction sector. An ageing labour force, Brexit repercussions, and issues surrounding the sector's public image – among other factors – have contributed to creating a gap between the skills of the available workforce and the skills typically required on worksites.

Fortunately, the notion that the construction sector must be reworked from scratch in order to accommodate retrofitting at scale is largely misguided. To expedite retrofitting and unlock the UK's empty housing stock, we don't need to create thousands of dedicated retrofit tradespeople. The reality is, delivering retrofit onsite doesn't typically require specialised knowledge and expertise. Many of the green skills needed for retrofitting can in large part be added to the toolkits of existing construction professionals.

For example, most skilled plasterers with experience applying standard gypsum plasters will not struggle to adapt to more sustainable lime-based plasters. Nor will insulation installers experienced in using typical insulations like mineral wool, or polystyrene or polyurethane boards, struggle to adapt to using sustainable alternatives such as wood fibre or hemp boards.

Scaling-up retrofit doesn't necessarily require that skills training institutions re-imagine their approach. In reality, the majority of the skills needed to complete a quality retrofit can be acquired by professionals quite easily. Integrating retrofit training into college-based classroom learning, combined with the onsite training which community-based empty home retrofitting programmes make available, are one viable way to mitigate the skills gap within the construction sector.

On-site training through community-based programmes can also help existing tradespeople to learn about the green skills and sustainable construction techniques necessary for current and future low-carbon building and retrofitting projects.

Given that existing tradespeople can add green skills to their toolkits, there isn't a dire need in the construction sector to completely redesign skills training. In fact, the only stages in retrofit projects which require tailored retrofit expertise are the initial assessment, when a dwelling's unique properties and environment are measured in order to scope and outline the retrofit, and the assessment phase following the completion of retrofit works, when the quality and performance of the retrofitted dwelling are measured.



# Insight 4

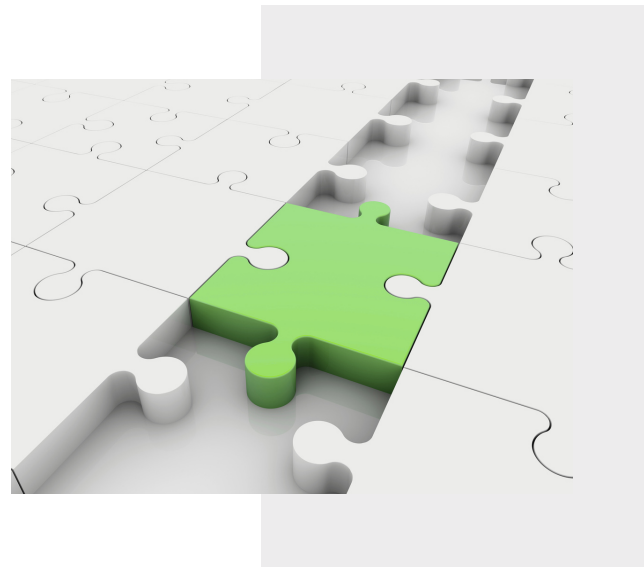
## The raw materials for retrofit can be found right here in the UK...if the logistics for green supply chain are in place.

Whether its hemp, wood fibre, or lime-based plaster, the construction materials needed for sustainable retrofitting at scale can be sourced, produced, and distributed right here in the UK. Locally producing sustainable retrofit materials could expand local green economies and create green jobs, decrease the carbon emissions involved in shipping materials to worksites in the UK, and make retrofitting projects more feasible by decreasing logistical complications involved in sourcing materials.

However, as it stands retrofit coordinators are being forced to import their materials from elsewhere in Europe – and even from as far as Canada – due to underdeveloped local green supply chains and unpredictable demand for retrofit materials in the UK. These lengthy journeys contribute greatly to the embodied carbon emissions of the construction sector.

Coordinating the supply of local materials with local appetite for retrofit will enable the industry to scale up all together, ensuring that fuel is not wasted from unnecessary transport and local green businesses are allowed to flourish here in the UK. On the one hand, it will take consistent government funding for retrofit to build a strong enough appetite for sustainable building materials. Once the funding is widely available and the case for retrofitting has been made sufficiently clear to the general public, two important pieces will be in place to support growth in the UK's manufacture of sustainable building material.

The UK also has strongly developed recycling infrastructure with the ability to turn rubble and waste into building material. Using repurposed, re-used, and recycled materials in our buildings will prove to be an essential step in reducing carbon emissions in the built environment.



# Insight 5

## For empty home retrofitting to happen at scale and at speed, communities must work together

We believe that community organisations are best placed to take action on retrofitting empty homes. On one hand, this is because without an occupant, vacant properties are otherwise unlikely to be taken up into existing retrofit schemes. These homes are an important piece of the solution to local housing crises; we cannot afford to leave them vacant and in disrepair.

However, community leadership is likewise important because local groups are most able to ensure that the benefits of retrofitting – including green job creation, regional supply chain development, local energy generation, and the creation of low-carbon affordable housing – will be returned to the community. Moreover, for retrofitting to progress at scale and at speed, community partnerships will be needed to spur action.

Fortunately, there is already community-led climate action underway in many local authority areas across England. Existing support for community energy generation, environmental preservation, net-zero transition, and other forms of community based social enterprise can serve as a starting point for driving local community-led retrofit programming.

The local authorities we have engaged with over the course of our REHAP feasibility study understand the importance of supporting social enterprises as a means of progressing towards green and net-zero objectives. We see social enterprise, therefore, as a powerful mechanism through which communities can take action on retrofitting empty homes.

The findings from our Retrofit Empty Homes Action Partnerships (REHAPs) Report are clear: the time for retrofitting is now, and communities must be at the helm.

Our REHAP framework provides a model for community action, drawing out the key processes and stages of community-based retrofitting and integrating insights from our case study partners across England.



The 1 year REHAP feasibility study was

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