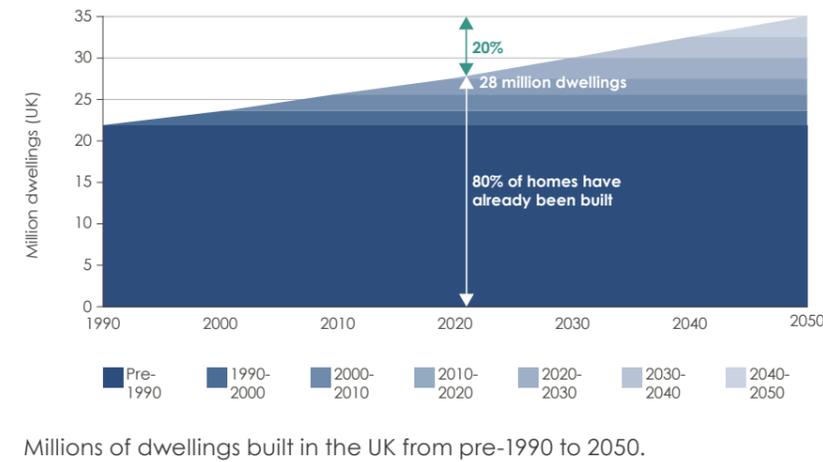
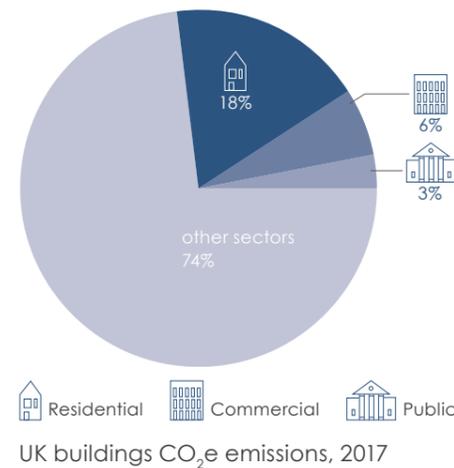


A blueprint for retrofitting the UK's homes to meet the climate challenge

A policymaker's summary of the LETI Climate Emergency Retrofit Guide

The challenge

There is currently a climate emergency caused by greenhouse gases being released into the atmosphere. We emit huge amounts of carbon dioxide by lighting, appliances, space and water heating in our homes. Of all the emissions that come from UK buildings, 69% come from the domestic stock, which alone is responsible for 18% of our annual national emissions. 80% of the domestic stock that will exist in 2050 already exists today.



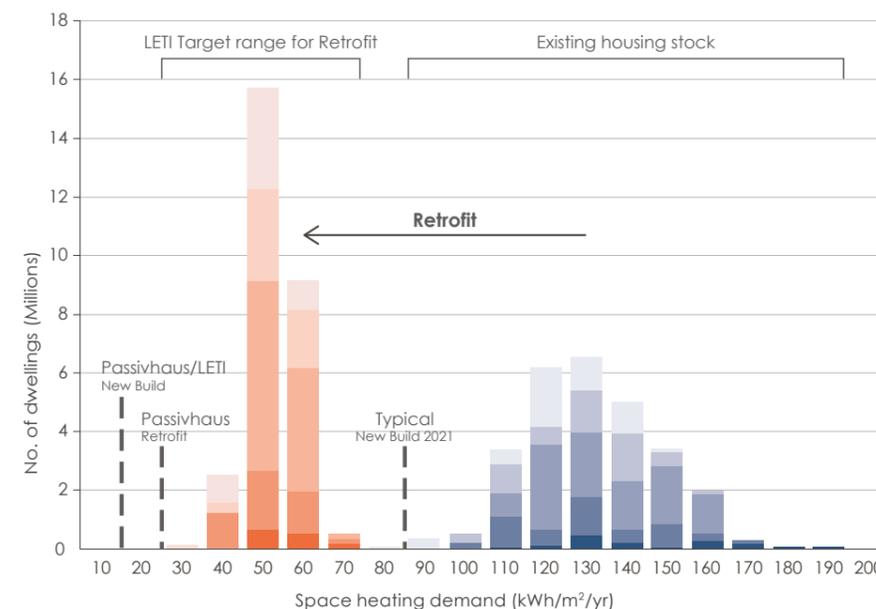
LETI's response

The [Climate Emergency Retrofit Guide](#) marks a consensus on how to retrofit our existing housing stock to support the UK's Net Zero targets. It defines energy performance targets for existing homes and provides practical guidance on how to achieve them.

This guide has been written by a group of over 100 construction industry professionals representing leading architecture and engineering firms, academia and NGOs.

In addition to making homes much less energy hungry, an increase in the number and quality of retrofit projects will:

- Insulate against volatile gas prices
- Improve security of energy supply
- Provide healthier and warmer homes
- Facilitate the move to a green electricity grid
- Upskill and develop a UK industry in building retrofit
- Mitigate embodied energy and carbon from demolishing and rebuilding housing stock



LETI's recommendations

For A Net Zero Compliant Retrofit:

- Follow a whole building Retrofit Plan.
- Follow the LETI Retrofit hierarchy:
 1. Reduce the space heating demand and energy use intensity as far as is practicable for the building/situation.
 2. Remove fossil fuel heat sources and replace with low carbon alternatives. LETI believes that the main option for this over at least the next decade will be heat pumps.
 3. Generate renewable energy on site wherever feasible – but do not pursue this at the detriment of items 1 or 2 above.
- Meet the LETI Energy Use Intensity (EUI) targets which will often result in a 60-80% reduction in total energy consumption.

Key takeaways

- Current retrofit policies will not prepare industry to meet climate change targets.
- Retrofit is complex. The industry acknowledges the challenge in developing policy, and LETI can work with Government on policies, technical solutions, support to homeowners and skills development.
- Delivering fabric upgrades, moving to electric heating including heat pumps and more reliance on renewables will only be successful if there is significant education and local area support available.
- Always start with a whole building retrofit plan, even when making ad-hoc or individual changes to improve, extend or maintain a home.

The following key organisations contributed to the guide:



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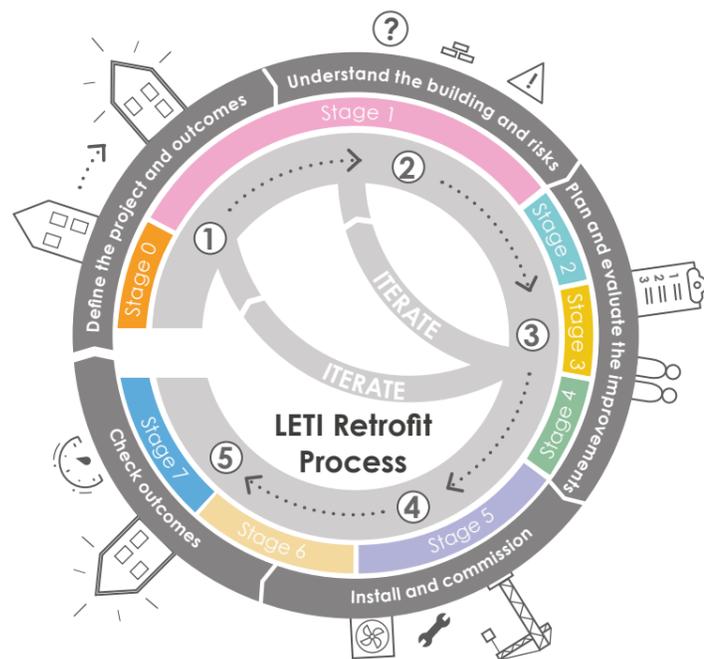
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LETI's six principles for good retrofit

Follow these principles to maximise the multiple benefits of retrofit and minimise the risks. For example: reducing energy consumption is key to reducing carbon emissions, tackling fuel poverty and improving national energy security.

- 1: Reduce energy consumption
- 2: Prioritise occupant and building health
- 3: Have a whole building Retrofit Plan
- 4: Measure the performance
- 5: Think big!
- 6: Consider impact on embodied carbon

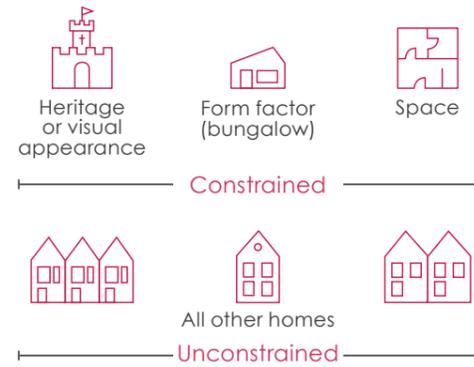
LETI's recommended retrofit process



LETI's recommended energy performance targets

The current industry measurement of energy performance is an EPC. However a good EPC score does not necessarily indicate a building with high levels of energy efficiency.

LETI has defined what good retrofit looks like through best practice and exemplar energy targets for constrained and unconstrained buildings.



LETI's whole house Retrofit Plan

LETI recommends a whole house approach to retrofit rather than retrofitting individual elements in isolation. A whole house Retrofit Plan should:

- Set out the key building information, constraints, risks and opportunities.
- Define the key works proposed along with related strategies and details.
- Define the sequence of work.
- Be appropriate in its level of detail and intervention for the building size, context, use, owner and occupants, scope of work and heritage value.
- Include a plan for monitoring and reporting energy consumption.
- Keep your retrofit plan with the building for future occupants.

This is similar to PAS 2035's risk-based paths; avoiding abortive work and minimising risk.

New build vs retrofit

It is generally preferable to retrofit than demolish and build new, because of the much greater embodied carbon in new build than in retrofit.

For retrofits that include a new build element, or any new builds, we recommend you look at LETI's [Climate Emergency Design Guide](#) and the [Embodied Carbon Primer](#).

For new buildings, there is consensus that a huge shift is needed in policy to produce net zero carbon compliant buildings - please see LETI's response to the Future Homes and the [Future Buildings Standard](#).

LETI best practice retrofit

LETI exemplar retrofit

Fossil fuel free	Fossil fuel free home	Fossil fuel free home
Energy Use Intensity	50 kWh/m ² /yr +10 kWh/m ² /yr Additional allowance for constrained retrofit	40 kWh/m ² /yr
Space heating demand	50 kWh/m ² /yr +10 kWh/m ² /yr Additional allowance for constrained retrofit	25 kWh/m ² /yr
Hot water demand	20 kWh/m ² /yr +5 kWh/m ² /yr Additional allowance for homes <75m ²	20 kWh/m ² /yr +5 kWh/m ² /yr Additional allowance for homes <75m ²
Renewable energy	40% of roof area covered in PV panels Maximise renewables where conditions are suitable	40% of roof area covered in PV panels Maximise renewables where conditions are suitable

The following key organisations contributed to the guide:

