



Sharing what we know... Sheet 8: Eco Retrofit



Reducing energy use within a building is of course the main focus of a retrofit project. However, there are also energy and pollution impacts during the extraction and processing of materials, and at their eventual disposal. Natural fibre materials have a lower impact in manufacture than synthetic ones and are easier to recycle. Using natural building materials therefore makes sense as part of a really low impact eco retrofit.

Natural Materials

Materials made from natural fibres also offer the important additional benefit of 'carbon sequestration'. This is because the growing plants absorbed carbon from the atmosphere, and this carbon then stays locked up for decades.

Another benefit of natural materials is their breathability, which affects how they deal with moisture. It's particularly important in older buildings, because they were designed to be open to absorbing and releasing moisture. Sealing an old house up with cement render and non-breathable insulation tends to cause damp problems. Using natural materials therefore helps to protect buildings from damage as well as leading to a low environmental impact.

Why a Whole House Retrofit?

You may cause problems if you take energy efficiency measures one by one without attention to how they'll interact. For example, adding better glazing and draught-proofing can increase damp problems if you haven't provided suitable ventilation.

The 'whole house retrofit' approach is intended to avoid these pitfalls. Someone looks carefully at all aspects of insulation, draught-proofing, ventilation and heating to create a structured plan. Such a retrofit is a big job, and you can treat it like a new build. This may mean engaging a specialist architect or retrofit expert to oversee the project and tailor the plan to your home. The details will be different for each house. However, looking at houses in rows or blocks together makes measures like external insulation easier and more cost-effective.

At the moment, the cost of a whole house retrofit can look daunting.

Can I retrofit my home in stages?

If you can't do a retrofit in one go, do still plan it with the whole house in mind. Consider carefully how insulation, draught-proofing, ventilation and heating will interact with each other and with the building fabric. Take time first to understand the possible

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risks and how to avoid these or monitor them. This will help you choose materials, plan how one stage will lead to the next, and set priorities.

It's useful to get a really good survey first to give you a good understanding of what you're starting with. This will help you to allocate your budget to where it will have most benefit and to set targets. You could make use of tools such as a thermal imaging camera and a door blower test.

Having a good plan is important for being able to clearly communicate with contractors and suppliers. Make your targets clear so that they know exactly what you want to achieve and how you'll measure it.

What are the key retrofit measures?

When allocating your retrofit budget concentrate first on the building fabric, which means improving insulation, airtightness, and ventilation. This includes addressing the risks from cold bridging and thermal bypass and how to prevent summer overheating.

If you don't get insulation detailing right you can still have high heat loss from 'cold bridges' or 'thermal bypass'. This is likely to lead to condensation which over time will cause damp problems. See our other pages and related questions for more on insulation techniques and materials.

Airtightness is key and it's not just about doors and windows, but all edges and corners where materials join. There are many areas to address: where joists penetrate a wall, holes for pipes & cables, and so on. People sometimes associate airtightness with being stuffy. But the key is that airtightness must work together with suitable ventilation. In a home with excellent airtightness you're able to control ventilation properly and get fresh air to where you need it. People in very airtight homes (such as a Passivhaus) have found that their air quality actually improves.

You can 'futureproof' by planning for later stages, such as changing your heating system. When improving the building fabric think about the plumbing needed to prepare for a **heat pump**, **biomass boiler**, or **solar water heating**. For example, the size & shape of radiators, and space for an appropriate type of hot water cylinder.

Generating your own electricity, such as with **solar PV**, may not be integral to a retrofit. However, if retrofit measures entail re-roofing then they may be an opportunity for integrating PV if you have the budget.

Where can I find retrofit professionals?

The AECB promotes sustainable building and retrofit and their **member listings** can be filtered for graduates from their Carbonlite retrofit training. Or see the **Passivhaus Trust** (with EnerPHit for retrofits). Another listing site for green builders is the **Green Register**.

The Government's **TrustMark** scheme now covers professionals that carry out energy efficiency work including retrofits. It's being linked to a new standard – PAS 2035: *Specification for the Energy Retrofit of Domestic Buildings*. There's more about this standard on the **Retrofit Academy** site.

A retrofit survey will be a bit more expensive than a standard EPC survey. A decent retrofit survey might cost a couple of hundred pounds. You may pay more for an airtightness test or thermal imaging survey for a more detailed assessment. A full retrofit plan, used to guide contractors on the work to be carried out, could then cost a few hundred more.

The **Sustainable Traditional Buildings Alliance** brings together not for profit organisations, promoting sustainable refurbishment & protection of traditional buildings.

Examples and Funding

In England, funding for insulation, glazing and related measures was briefly available through the Green Homes Grant. However, the part of the scheme that gave vouchers to householders has been scrapped. We are waiting to see if a new form of support will take its place. North of the border, **Home Energy Scotland** provide **interest-free loans** to all homeowners for energy efficiency and renewable energy.

To find out more about other funding that you may be able to claim for refurbishment work, see the Government's **Simple Energy Advice** website. At the moment, support is usually for households claiming certain government benefits.

Six trial retrofit programmes had **Government funding** to evaluate different retrofit approaches. Resources available through these schemes could still be of use if you live elsewhere.

- **People Powered Retrofit** (Greater Manchester)
- **Futureproof** (the area around Bristol & Bath)
- **Ecofurb London**
- **Cosy Homes Oxfordshire**
- **Warmer Sussex**
- **Homeworks** (Cornwall)

The Mayor of London has a **Retrofit Accelerator** programme for the capital's boroughs and housing associations. In Scotland, see **Retrofit Scotland** for advice and examples.

Energiesprong uses an industrialised model to minimise costs. Buildings are measured and bespoke insulating panels for walls & roof are manufactured offsite. They're concentrating on houses with simple shapes, in blocks or terraces, generally through housing associations and local authorities.