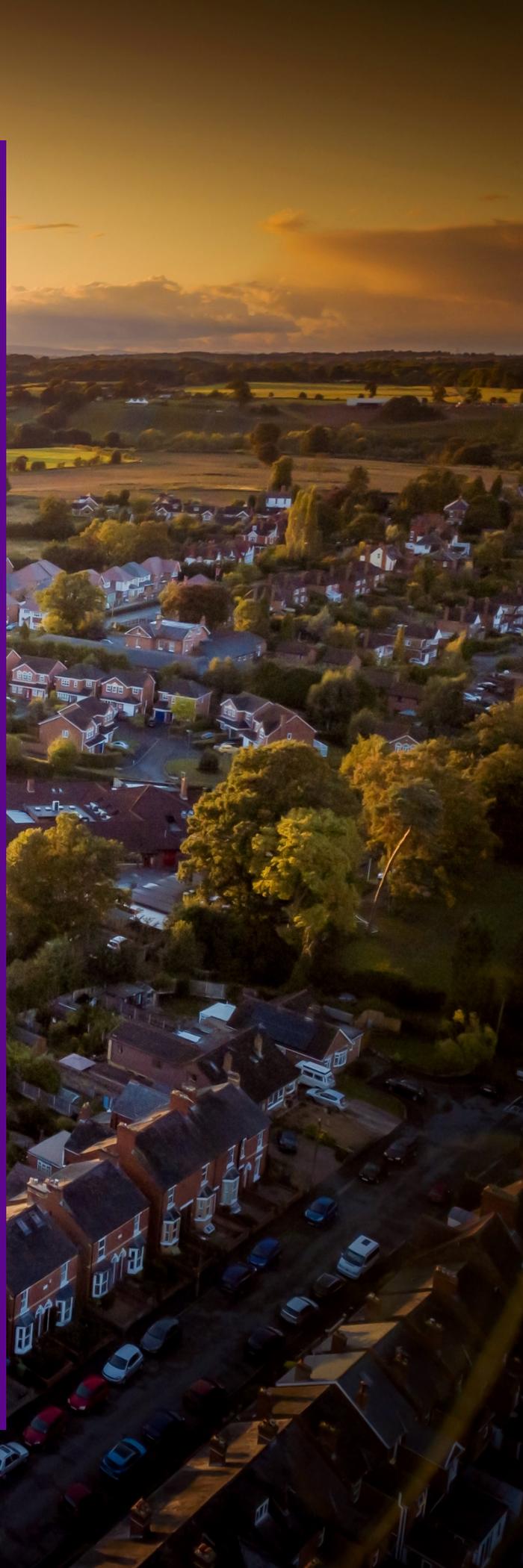


The Retrofit Playbook

Driving retrofit of existing homes –
a resource for local
and combined
authorities

VERSION 2.1

February 2021





City Partners:



Partners:



Supporters:

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Introduction



The Retrofit Playbook

Introduction

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I. How to use the Playbook

This is a journey. The intention is for this resource to be a live document. We intend this to feel co-owned by users and are actively seeking ongoing feedback and engagement. The Playbook is a guide; and the intention is that local authorities can ‘dip into’ those sections that are relevant and useful to them, depending on their capacity/progress etc.

Requested actions for local authorities

- Consider how and when the recommended actions can be incorporated into policy and activity, and give us your feedback
- Add to this resource pack by providing links to policies, documents, case studies and evidence
- Open up or maintain dialogue with UKGBC on the status of your current policy, and plans going forwards

Requested actions for industry

- Consider the implications of the recommendations for your projects and business model
- Positively engage with the Accelerator Cities programme to develop further iterations of proposals
- Provide additional case studies

II. The current scope of the Retrofit Playbook

Having run workshops across the UK as part of the Accelerator Cities Pathfinder (see below), it became clear that because the retrofit policy contexts in the devolved nations are all very different, it is difficult to produce guidance which meets the needs of all local authorities across the whole country.

Therefore this Playbook currently focuses on information relevant to English local authorities. This could be reviewed in due course.

The Playbook currently covers issues relating to carbon mitigation and energy efficiency only. We are hoping to expand the scope over time to a broader range of retrofit-related issues including climate resilience and biodiversity.

III. Background

Reducing carbon emissions from existing homes represents one of the biggest challenges facing the UK in the transition to net zero. There has been a systemic failure in tackling this challenge, compounded by piecemeal national policy, difficulties in engaging householders to stimulate demand and a lack of sustainable business models.

From July to December 2019, UKGBC led an EIT Climate-KIC Pathfinder project, 'Accelerator Cities', focusing on the role of cities in catalysing a step-change in home retrofit. A key insight that emerged from that work was the clear need for a coordinated programme of work that would:

- Enable individual cities to develop their own city-led home retrofit programmes, in the most efficient way possible, based on leading examples from peers
- Unlock system change through coordinated action to address the barriers to retrofit across and between cities, and build the capacity and capability of city actors to respond
- Share best practice, data, lessons learned, evidence, case studies, resources, approaches etc. between cities
- Enable a coordinated approach in respect of links to financial institutions and funding opportunities
- Coordinate engagement with central government in respect of, for example, barriers to finance or regulatory powers

The Accelerator Cities Pathfinder ran nine workshops with local authorities across the country, including in Cardiff and Edinburgh. From these workshops, research and accompanying engagement with key stakeholders, the Pathfinder identified the key barriers to retrofit in the UK.

Barriers to retrofit



Figure 1: Key barriers to home retrofit in the UK

City-led retrofit programme blueprint

A high-level blueprint was subsequently created for how an individual city-led home retrofit programme could address these barriers:

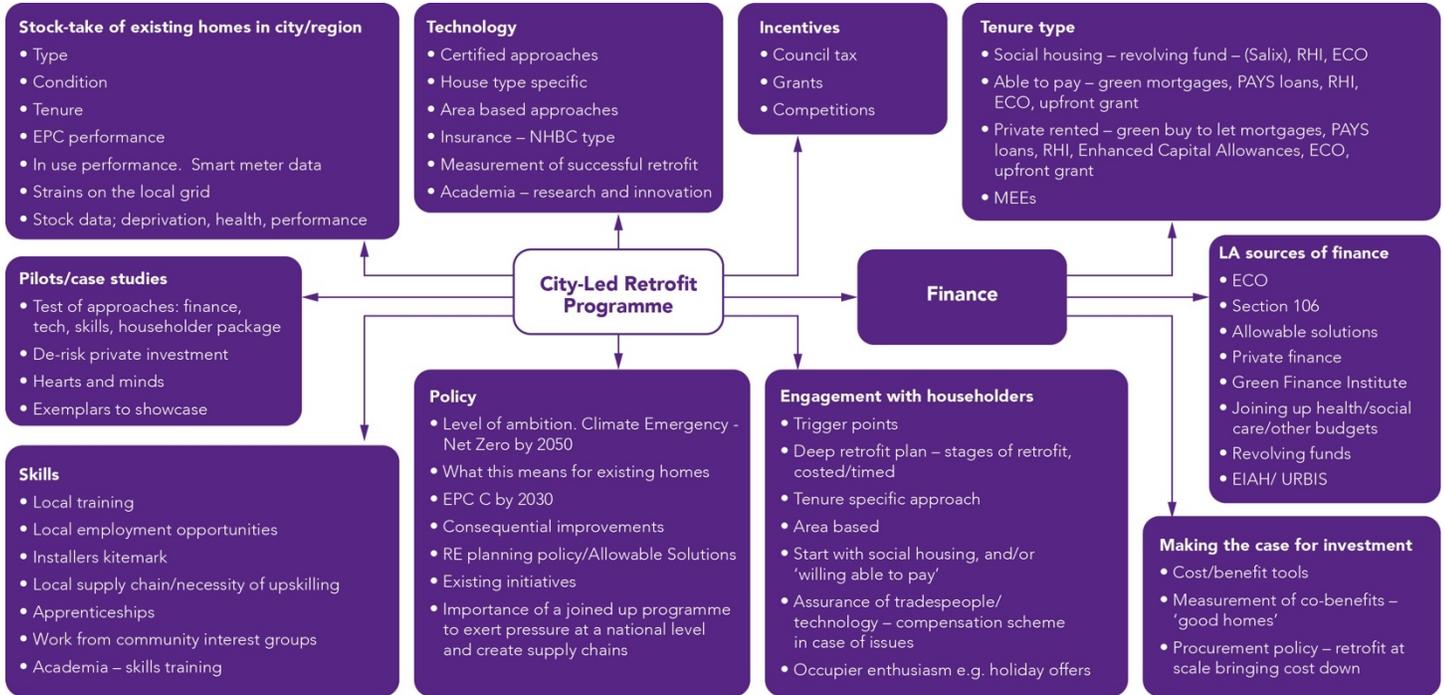


Figure 2: Key components of a city-led retrofit programme, Pathfinder output, Dec 2019

Rationale - why a city-led approach?

As outlined above, radically reducing carbon emissions associated with the energy used in the existing housing stock is one of the single biggest challenges facing the nation in terms of making the transition to a net zero carbon economy. It is our strong belief that central government is not going to be able to 'solve' home retrofit alone, by delivering it through a wholly top down approach.

Our starting assumptions are that:

- There has been a systemic failure in recent years to drive the low carbon retrofit of homes on the scale required. Relying on the scale and ambition of current central Government policy alone, the UK would fail to meet our carbon targets – both national and local.
- City/combined authority leadership will be essential to deliver carbon reductions in existing homes. However central government is still key to unlocking certain barriers
- Cities can achieve more through collective action & better joining up of respective efforts on home retrofit – but there is a gap to be filled here.

The complexity and technical nature of delivery, the need for a 'trusted' partner to give householders reassurance and the need for high levels of co-ordination across multiple actors means that local/combined authority leadership will be essential to deliver action on home retrofit.

Overcoming the barriers to home retrofit requires a holistic, city/local authority-wide strategy to achieve momentum in all areas. We believe that it is only by taking a holistic approach to address all of the key barriers concurrently that significant progress can be made.

IV. UK policy context

Carbon policy

In June 2019, the Government announced that the UK will ‘eradicate its net contribution to climate change by 2050’ by legislating for net zero emissions – the first G7 country to do so. To play its part, and given its potential for cost-effective carbon reductions, all buildings need to be net zero carbon by 2050.

The UK is on track to deliver on the third budget (2018 to 2022) but is set to miss the fourth (2023 to 2027) by 5.6 % and fifth (2028 to 2032) by 9.6%.¹ Crucially, these budgets were set against the previous target of an 80% reduction in emissions by 2050. The new Net-Zero target – a near 100% reduction by 2050 - means that progress will need to accelerate.

According to the Committee on Climate Change, in order to reach net zero, the UK must reduce its emissions from 430 MtCO₂e, to around 29 MtCO₂e in 2050.² This will require a reduction in the direct emissions from buildings from around 85 MtCO₂e in 2017, to around 4 MtCO₂e in 2050.³ To achieve this, the Committee has made clear that this will require “a new approach that will lead to full decarbonisation of buildings by 2050”, using a mixture of energy efficiency and low-carbon heating measures.⁴

Addressing the energy efficiency of the UK’s housing stock in particular will be a vital to achieving the most cost-effective pathway to net zero, with homes accounting for approximately 77% of buildings’ heating emissions footprint.⁵ With 80-85% of today’s homes likely still standing in 2050 – and the UK’s housing current stock still one of the most inefficient in Europe – greater policy and financial action to drive energy efficiency is essential.⁶

¹ Business, Energy and Industrial Strategy Committee, “Energy efficiency: building towards net zero - Twenty-First Report of Session 2017–19”, <https://publications.parliament.uk/pa/cm201719/cmselect/cmbeis/1730/1730.pdf> p.6

² CCC, “Net Zero - The UK’s contribution to stopping global warming”, <https://www.theccc.org.uk/wp-content/uploads/2019/05/Net-Zero-The-UKs-contribution-to-stopping-global-warming.pdf> p.146.

³ CCC, “Net Zero Technical report”, <https://www.theccc.org.uk/wp-content/uploads/2019/05/Net-Zero-Technical-report-CCC.pdf> p.91

⁴ CCC, “Net Zero The UK’s contribution to stopping global warming”, <https://www.theccc.org.uk/wp-content/uploads/2019/05/Net-Zero-The-UKs-contribution-to-stopping-global-warming.pdf> p. 273 ; CCC, “Net Zero Technical report”, <https://www.theccc.org.uk/wp-content/uploads/2019/05/Net-Zero-Technical-report-CCC.pdf> p.67

⁵ Business, Energy and Industrial Strategy Committee, “Energy efficiency: building towards net zero - Twenty-First Report of Session 2017–19”, <https://publications.parliament.uk/pa/cm201719/cmselect/cmbeis/1730/1730.pdf> p.5.;

⁶ Business, Energy and Industrial Strategy Committee, “Energy efficiency: building towards net zero - Twenty-First Report of Session 2017–19”, P.5.

After a period of declining support for energy efficiency—with decisions to withdraw funding for the Green Deal, discontinue Warm Front and reduce funding for the Energy Company Obligation (ECO)—the Government published its Clean Growth Strategy in October 2017. This included an ambition to upgrade all homes to Energy Performance Certificate (EPC) Band C by 2035, where “cost effective, affordable and practical”, with an earlier goal for rented homes of 2030. This is in addition to the Government’s statutory target to improve the homes of fuel poor households, “as far as reasonably practicable”, to EPC Band C by 2030.

The Clean Growth Strategy also specifically highlighted the role of local leadership:

“Moving to a productive low carbon economy cannot be achieved by central government alone; it is a shared responsibility across the country. Local areas are best placed to drive emission reductions through their unique position of managing policy on land, buildings, water, waste and transport. They can embed low carbon measures in strategic plans across areas such as health and social care, transport, and housing.” (Clean Growth Strategy, p118.).

In its 2019 manifesto, the Conservative Party pledged to spend £9.2 Billion on upgrading the energy efficiency of homes, schools and hospitals. This included a Social Housing Decarbonisation Fund Homes of £3.8 billion over a ten-year period; Home Upgrade Grants worth £2.5 billion over a five-year period and a Public Sector Decarbonisation Scheme of £2.9 billion over a five-year period.⁷

On the 8 July 2020, Chancellor Rishi Sunak announced a £2 billion Green Homes Grant, with vouchers of up to £5,000 to help homeowners upgrade their homes, and up to £10,000 available to some of the UK’s poorest families. On 8 July 2020, Chancellor Rishi Sunak announced a £2 billion Green Homes Grant, with vouchers of up to £5,000 to help homeowners upgrade their homes, and up to £10,000 available to some of the UK’s poorest families. This also included a £1 billion programme to make public buildings, including schools and hospitals, across the UK greener and £50 million to pilot innovative approaches to retrofitting social housing at scale.⁸

⁷The Conservative and Unionist Party, “Manifesto 2019 Costings Document”, https://assets-global.website-files.com/5da42e2cae7ebd3f8bde353c/5ddaa257967a3b50273283c4_Conservative%202019%20Costings.pdf

⁸ HM Treasury, “A Plan for Jobs”, <https://www.gov.uk/government/publications/a-plan-for-jobs-documents/a-plan-for-jobs-2020#fn:32>

The Green Homes Grant – in effect from September 2020 until the end of the financial year – represents an opportunity to catalyse action on home retrofit. However, there are also many potential pitfalls, not least the potential for serious damage to people’s homes through badly installed energy efficiency measures. UKGBC and its Accelerator Cities Partners co-produced a briefing for local authorities on the Green Homes Grant, before it officially began in September 2020. The briefing details how the scheme relates to local authorities, alongside a series of recommendations on how it could successfully support a longer-term strategy. The briefing is available [here](#).

Alongside the Green Homes Grant, the UK Government has an unprecedented set of opportunities in front of it to deliver greater progress on home retrofit. This includes the need to promote a resilient recovery from COVID-19, alongside demonstrating international climate leadership ahead of hosting the COP26 Climate Summit in Glasgow. With an array of legislation passing through the UK Parliament, alongside the expected National Spending Review which will shape spending plans until 2025, now is very much a time for action.

COVID-19, a green recovery and ‘levelling up’

Following the global COVID-19 outbreak, energy efficiency has been increasingly recognised as a vital component of achieving a ‘green economic recovery’. Numerous reports have highlighted the potential for energy efficiency to deliver substantial local growth and green jobs.⁹

Investment in home renovation for net zero could help level up infrastructure and opportunity across the UK, by supporting over 150,000 skilled and semi-skilled jobs to 2030. It would reduce household energy expenditure by £7.5 billion per year at today’s prices.¹⁰

Modelling of a program to provide whole house retrofit for 9 million homes has estimated this would provide 117,811 new direct jobs in year one, rising to a peak of 382,885, in year four. This would be an average of 294,527 new jobs between 2020-2023/24, a 22% increase in total construction employment and a 162% increase in the renovation,

⁹ See:

Donal Brown, Hanna Wheatley, Chaitanya Kumar, Joanne Marshall, “A Green Stimulus For Housing: The Macroeconomic Impacts of a UK Whole House Retrofit Programme”, https://neweconomics.org/uploads/files/Green-stimulus-for-housing_NEF.pdf

EEIG, “Energy efficiency’s offer for a net zero compatible stimulus and recovery”, https://www.theeeig.co.uk/media/1096/eeig_report_rebuilding_for_resilience_pages_01.pdf

¹⁰ EEIG, “Energy efficiency’s offer for a net zero compatible stimulus and recovery”, p.8

maintenance and improvement sector. This rises to an average of 515,157 when factoring in indirect jobs. These measures would increase economic activity with annual GDP 1.58% higher in 2023/24, compared with the level of economic activity otherwise expected.¹¹

A focus on both local and regional growth has been central to discussions of how to drive an inclusive, green economic recovery in the wake of the pandemic. The Government made ‘levelling up’ the regions a key priority in the wake of the 2019 election and has continued to reiterate the importance of delivering both local growth and regeneration.

A group of 24 mayors and local leaders, representing 24 million people across the country, have established a new ‘Resilient Recovery Taskforce’, calling on the Chancellor to commit to a ‘New Deal for Green Skills and Growth’, alongside a major push on infrastructure investment, public transport and retrofitting homes¹². The Local Government Association estimates that in England by 2050 there will be 1,182,197 direct jobs in the Low-Carbon economy – including those related to energy efficiency and low carbon heat. The report also provides a regional breakdown of the direct jobs for all English single tier and district councils.¹³

New research from UK100 indicates that nearly half a million builders, electricians and plumbers will be needed to help meet the Government’s objective of becoming Net Zero by 2050. It also shows that more than 3.1 million job posts affected by the shift to green jobs will need access to skills and training from government and industry.¹⁴

¹¹ Donal Brown, Hanna Wheatley, Chaitanya Kumar, Joanne Marshall, “A Green Stimulus For Housing: The Macroeconomic Impacts of a UK Whole House Retrofit Programme”, https://neweconomics.org/uploads/files/Green-stimulus-for-housing_NEF.pdf

¹² UK100, “Resilient Recovery Task force”, https://www.uk100.org/wp-content/uploads/2020/09/Taskforce_UK100_A4_FINAL.pdf

¹³ LGA Research, “Local green jobs - accelerating a sustainable economic recovery”, https://lginform.local.gov.uk/reports/view/lga-research/estimated-total-number-of-direct-jobs-in-low-carbon-and-renewable-energy-sector?mod-area=E09000006&mod-group=AllBoroughInRegion_London&mod-type=namedComparisonGroup

¹⁴ UK100, “Call for Green New Deal as 1 in 10 jobs (3.1 million) needs reskilling as part of green recovery”, <http://www.uk100.org/wp-content/uploads/2020/07/REVISED-FINAL-Resilient-Recovery-Taskforce-Launch-200702.pdf>

V. Purpose of the Retrofit Playbook

Following on from the barriers analysis, and based on the initial blueprint produced by the Accelerator Cities Pathfinder, the component parts of this resource pack are designed to help enable cities and local authorities to drive mass-scale retrofit of existing homes.

The launch of the Green Homes Grant offers a particular opportunity to galvanise action on home retrofit. Our GHG [briefing note](#) is intended to provide guidance to local authorities on the immediate steps they can take to help ensure that the GHG scheme is of benefit locally, avoids potential pitfalls and is used – as far as possible – as a helpful catalyst to a locally-led, comprehensive long term retrofit programme.

The Playbook highlights that retrofit at scale is neither a responsibility nor challenge that local authorities can or should be tackling alone. We recognise that different local and combined authorities will have different resource and capacity constraints, and political willingness to lead. Throughout the Playbook we offer a spectrum of activities that local authorities can engage with depending on their capacity, and outline a number of different roles that they can play. These include:

- **Facilitation** – local authorities can act as convenor to bring a ‘coalition’ of willing individuals and groups together to help develop and implement a retrofit strategy and programme. This might include community groups, registered providers, training providers, funders etc. - a supportive network of motivated local stakeholders. Bringing together a coalition of actors can be resource-light, but deliver lasting impacts.

Box 1: Case study of Otley Energy

Otley Energy is a Community Benefit Society created as part of the wider Otley2030 climate and sustainability community project. They are working with Otley Town Council, Leeds City Council, Leeds Climate Commission and many others, developing replicable business and finance models to support the transition to the declared net zero 2030 commitments made by the town and city.

This includes supporting the development of a city-wide retrofit strategy and a foundational role for a RetrofitWorks one-stop-shop business model for upgrading the city's housing stock. Key to this is facilitating a coalition of relevant stakeholders in the city. By pooling the resource and knowledge brought by different stakeholders, the city can begin to unpick the challenges and drastically increase the chances of a successful transition.

- **Marketing and communication** – a key, and relatively resource-light role for local authorities is to provide information for residents on the benefits of retrofit, the importance of whole house plans, and the importance of using only accredited installers and suppliers. LAs should also provide up to date information on the latest national schemes to help with retrofit e.g. the Green Homes Grant.
- **Coordination** – local authorities can act as the ‘lynchpin’ in terms of coordinating action on home retrofit. They can, as we explore later in the Playbook, set up or support ‘One Stop Shops’ to help residents to understand and be supported on their retrofit journey. They can liaise with finance providers, to look at piloting and supporting local retrofit financing mechanisms. They can also take a leading role in supporting the skills providers, to ensure that the local supply chain gears up to deliver.
- **Being a ‘trusted’ partner** – research shows that local authorities are consistently more ‘trusted’ than national government and other stakeholders.¹⁵ Supporting third party retrofit schemes can help increase their reach and impact.

“The solar together project via Harringay borough council has been illuminating. Local government and private sector combining to get environmental tech to everyday people. A brilliant initiative. I'm very happy with my panels and the installation was mostly seamless. Well done to all involved”

Tom, Solar Together London, Credit: GLA

- **Supporting the growth of local skills and supply chain - local** authorities can work with existing sector partners to engage with the supply chain to promote accreditation through Trustmark and MCS and capacity-building for whole house approaches.
- **Delivering deep retrofit on social housing** – developing ambitious targets for local authority-owned and social housing provides an opportunity to immediately stimulate the supply chain.

¹⁵LGA, “Perceptions: The fact and fiction of trust and satisfaction”, <https://www.local.gov.uk/our-support/guidance-and-resources/comms-hub-communications-support/futurecomms-building-local-2>

Retrofit Playbook



Playbook by topic

- Part 1. Setting targets and an overarching strategy
- Part 2. Developing a One Stop Shop
- Part 3. Engaging householder and landlords
- Part 4. Finance
- Part 5. Skills and supply chain
- Part 6. How local authorities can engage Registered Social Landlords on retrofit

The Retrofit Playbook

Part 1 - Setting targets and an overarching strategy

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- III. Key components of a retrofit strategy
- IV. Increasing resource to match ambition
- V. Collaboration
- VI. Setting targets for retrofit
 - a. Setting a target in context
 - b. Clarifying what a target is intended to do
 - c. Factors to inform how to develop a target
 - d. A roadmap to net zero for existing buildings
- VII. Whole house retrofits: in one go or a staged approach?
- VIII. Monitoring Impacts
- IX. Example city strategy approaches
 - a. Greater Manchester
 - b. Leeds City

I. Key actions for local and combined authorities

- Convene a coalition of willing partners in the area to take forward and help resource development of a retrofit strategy
- Baseline the Local Authority/Combined Authority current circumstances - for example political and stakeholder engagement, data and resources etc.
- Identify and deliver the most appropriate route to putting in place a strategy and targets for retrofit.
- Raise the profile of retrofit within local authority departments to leverage resources
- Work with UKGBC and other coordinating bodies to share knowledge and experience

II. Introduction

As outlined above, overcoming the barriers to home retrofit requires a holistic approach. Local/combined authorities need a comprehensive retrofit strategy to ensure that the necessary components are in place.

A cross-departmental strategy is needed to: ensure buy-in from across relevant teams within the local authority; elevate the importance of retrofit across teams; and, ensure that sufficient resource and funding are in place (we discuss the local authority resource gap below and in Part 4, Finance).

III. Key components of a retrofit strategy

A city or region wide strategy needs to contain the following elements, developed in parallel as each needs to support each other:

Policy: As discussed above, ambitious and stable national government policy must play an important role in achieving the scale of retrofit necessary. As there is no direct control over national policy, local strategies must be developed that can operate independently and be able to react in an agile way to both positive and negative developments from central government.

Collaboration: Stakeholder engagement is essential to ensure all interested parties participate in developing a successful strategy and as a way of generating resource, expertise and maximising the reach and influence of the programme.

Private & Social Sectors: Neighbourhood approach: Developing ambitious targets for local authority owned and social housing provides an opportunity to immediately stimulate the supply chain. Establishing these plans whilst supporting the launch of private sector business models will enable engagement with whole neighbourhoods, across all tenure types in a way that supports regeneration and community development objectives. It will also enable economies of scale and unlock group buying discounts.

Whole-House¹⁶ approach: Meeting carbon targets requires a whole-house, deep retrofit approach. These can be conducted either in one go or more likely they will be carried out in phases in accordance with available finance and life events. There is emerging consensus that a one-stop-shop model, supporting householders throughout the retrofit process, from understanding the benefits and elements of a whole house plan, identifying available funding, selecting interventions and liaising with contractors provides the best opportunity for successful whole house retrofit.

Engagement: Community-based marketing techniques can raise the profile of retrofit, instil trust in schemes and encourage local engagement to ensure designs and approaches are sympathetic to neighbourhoods. This approach maximises the opportunity for referral-based lead generation as ‘people like us’ start to invest. A best practice customer journey is essential to ensuring high conversion rates at each stage of the journey.

Finance: Blended funding models are required to place everyone in a position of being ‘willing and able to fund’ retrofit through a mix appropriate to each homeowners circumstances: utilising own funds; lending; grant funding; and, business models that unlock energy savings to support investment in retrofit. Incorporating this funding journey into the ‘point of sale’ will address one of the greatest barriers to retrofit.

Skills: To mobilise the supply chain in an appropriate way there needs to be a local/regional skills and quality assurance ecosystem in place - of businesses, trade

¹⁶ ‘Whole-house retrofit’ takes a holistic, comprehensive approach to decarbonising the property, aiming to improve the ‘building fabric’ (walls, windows, floors and roofs), the heating system, and to install renewable energy where possible (such as heat pumps and solar panels), although the exact approach will vary depending on the property. This approach is called ‘deep retrofit’ because it is a comprehensive intervention, aiming to achieve deeper levels of carbon savings per home than standard retrofit or piecemeal alterations. **For more information, see:**

<https://www.trustmark.org.uk/docs/default-source/retrofit/trustmark-whole-house-retrofit-l-a-business-guide-v4.pdf>

bodies, accreditation and education providers, all bought into the local/regional ambitions and motivated by the potential demand. A robust and compelling supplier journey will play a vital role in engaging, recruiting and training a skilled supply chain.

Box 2: CEREB Framework

The Centre for Efficient and Renewable Energy in Buildings (CEREB) Framework from London South Bank University is a programme theory which sets out five key pillars for successful retrofit market transformation. The Framework describes how programmes can allocate support and resources in order to build the local supply chain's capacity to deliver whole house retrofit at scale.



For further information please visit: <https://www.lsbu.ac.uk/stories/centre-efficient-renewable-energy-buildings>

IV. Increasing resource to match ambition

The climate emergency and associated net-zero commitments of local and combined authorities across the United Kingdom demonstrate precisely the leadership necessary to mobilise our communities to tackle climate change.

However, our ongoing work with these authorities highlights the ever-present gap between these ambitions and the resource available in cash and time-strapped authorities. They have neither the statutory responsibility, nor the funding for home retrofit beyond managing their existing housing portfolios.

On the basis that the ambition cannot be reduced, a significant emphasis needs to be placed on increasing the available resource for retrofit.

In Part 4 of the Playbook (Finance), we explore ways in which the resource gap could be addressed, these include:

- National government allocating the necessary funds to support a local authority leadership role in driving retrofit and wider net-zero ambitions
- Knowledge sharing through programmes like Accelerator Cities to develop replicable approaches and avoid reinventing the wheel
- City or area-wide coalitions of key stakeholders convened around the multiple positive benefits of retrofit sharing responsibility for delivery and resources. This can open up opportunities for generating funding and resources.
- Business case development within the authorities, recognising themselves as a potential beneficiary and therefore stakeholder across all aspects of the strategy to justify internal investment.
- Refocusing existing roles to increase their engagement on this issue. Across local authorities there will be teams and individuals working on related subjects – from economic development to skills and education, private sector housing to environmental health. Raising the profile of retrofit and integrating the subject into their area of work can help to deliver on multiple objectives within existing resources.

V. Collaboration

To identify the key stakeholders who should be convened to help develop a city-wide retrofit strategy, a good starting point is an understanding of the multiple positive impacts associated with home retrofit and therefore the potential beneficiaries.

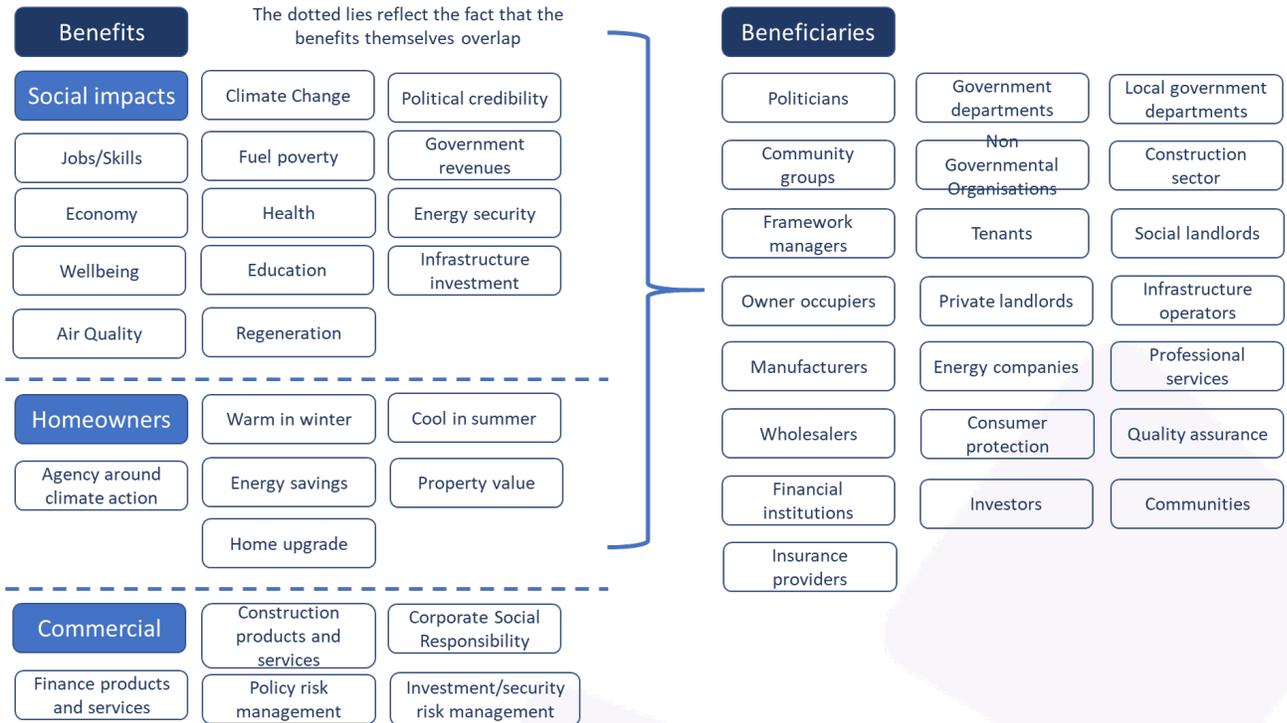


Figure 3: Potential benefits and beneficiaries of home retrofit

VI. Setting targets for retrofit

Setting a target in context

At a national level, there is a 2050 net zero target and almost three-quarters of local authorities have declared a climate emergency.¹⁷

There is an increasingly clear direction of travel in relation to the targets and focus at the regional and local level. However, turning these targets into delivered outcomes is challenging.

Clarifying what a target is intended to do

There are different ways to develop a retrofit target depending upon how local authorities want to use and communicate the value of it. Broadly speaking, a target can be used to:

- **Act as a rallying cry and signal a level of ambition:** the target is then used to draw others in to help deliver and is seen as a collective, collaborative approach. This works well if the target is the outcome of a consultative, bottom-up approach.¹⁸ It can allow for a greater level of ambition but requires honesty about the scale of change and the level of involvement if risks around not delivering are to be effectively managed.
- **Provide the direction for a set of actions underpinned by an evidence base:** in this approach the intention is to put in place, insofar as is possible, a robust set of actions which should deliver upon the target. This approach can still highlight areas of uncertainty or actions for other organisations, as well as future work which will be needed to provide more clarity.

These two approaches are not necessarily mutually exclusive, but the extent to which the focus is on one or other of the elements can help to shape the approach.

¹⁷ Tingey, M., and Webb, J. 2020. Net zero localities: ambition & value in UK local authority investment. Energy Revolution Research Centre, Strathclyde, UK. University of Strathclyde Publishing https://www.energyrev.org.uk/media/1440/energyrev_net-zero-localities_202009.pdf

¹⁸ See for example the outcomes of the Leeds Citizens Jury, commissioned by Leeds City Council, which delivered a recommendation that: “All existing housing must be made energy efficient”. <https://www.leedsclimate.org.uk/leeds-citizens-jury-recommendations-published>

Factors to inform how to develop a target

Being clear about the current context and resources within a local authority will be crucial to developing a workable approach.

- Resources - if a local authority has limited resources, whether in terms of funding to procure analysis and/or to develop and manage the work, this will obviously constrain possible approaches. More detail is available below on options to draw in funding or support
- Availability of data
- Political ambition and priorities
- Ways of working within the organisation
- Governance and scrutiny processes and culture
- Approach to engagement with residents and other stakeholders
- Nature of the carbon footprint within the local area
- Levels and levers of control over the carbon footprint
- Extent to which this is linked to other work

A roadmap to net zero for existing buildings

LETI's 2020 [Climate Emergency Design Guide](#) set out a roadmap, targets and principles for creating zero carbon new buildings. LETI's proposed guide (expected in early 2021) to retrofitting for a zero carbon future aims to do the same for the UK's existing buildings.

LETI are examining – through top down modelling - what will be needed in energy & carbon terms from our existing buildings by 2050. LETI are also assessing – through bottom up modelling and looking at exemplar retrofits – what is achievable across different building typologies, focusing first on housing.

The guide will set out a roadmap and targets for existing buildings alongside key principles and practical guidance for achieving successful retrofit. In so doing, it will seek to point out the multiple side-benefits of good retrofit, whilst informing readers about the potential risks and how to avoid them.

VII. Whole house retrofits: in one go or a staged approach?

The majority of homes are going to need a whole house retrofit to fulfil their carbon reduction potential and contribute to wider decarbonization goals. This is a reflection of the fact that about 80% of the homes which are due to be around in 2050 have already been built, many of them to much lower energy standards, and also that decarbonisation touches on most aspects of the building fabric.

To date, funding from government, either directly through taxpayer funded programmes such as the Green Homes Grant, or indirectly through energy supplier obligations, has not been sufficient to deliver a whole house retrofit in one go. Indeed, what funding there has been, tends to only cover much lighter, cheaper interventions – such as loft or cavity wall insulation, leaving many harder to treat measures still to do. These measures might be harder to do because they are more expensive, or because they are more technically complicated or disruptive.

There is not currently a national trajectory or pathway for decarbonisation of homes and the wider energy system. This can create uncertainty about the best approach to take at a home, building or area level. Recognition of this uncertainty does not prevent a city-strategy pursuing no-regrets approaches to retrofit.

In some situations, it may be possible and appropriate to complete a whole house retrofit in one go. This may be because funding has been secured. This might be because the building is in need of a significant amount of work anyway and any marginal cost is considered acceptable. There is also research from [RE:NEW](#) and [Sustainable Homes](#) which has identified that the business case for landlords to conduct retrofits can be positive when set against the ongoing maintenance costs.

However, there may be times when it is not possible to undertake a whole house retrofit in one go and it is therefore worth developing an approach to incremental improvements. Building renovation passports are considered to be a tool which can be used to chart a trajectory for an individual building. Over time the sequence of works can change but the passport helps to identify inter-relationships between different elements of the building.

Box 3: Building renovation passport**What are building renovation passports?**

- Provide an assessment of the home
- Develop a whole house renovation plan for the home
- Draw together energy and wider retrofit work
- Can also provide a logbook for the building to track changes over time

Benefits

- Links to partial retrofits and seeks to go with the grain of how people renovate their homes
- A way to provide information to the homeowner about things that can be done to their home – e.g. SWI – that they might not have found out about otherwise
- Protects the potential for retrofit later on down the line
- Should help the supply chain by flagging up other measures which could be integrated
- Provides better information for the financial sector and could provide a better mechanism for developing financial products than EPCs currently do
- Generates better quality data about homes and the potential interventions, impacts and costs

There are currently a range of passports around, and the Greater London Authority has put together a literature review which seeks to draw together the existing passports.¹⁹ Work is underway to develop a further passport by the Coalition of Energy Efficient Buildings.

In the absence of a single, agreed passport, the broader approach of the passports can be used to inform the development of a stepped approach to retrofit.²⁰

VIII. Monitoring Impacts

Capturing and monitoring data on the impacts of different retrofit interventions is crucial in order to be able to establish which approach is the most effective, and be able to adapt strategies, funding priorities and approaches accordingly.

UKGBC, in partnership with cities and other organisations across the UK and Europe, is currently developing a 'Renovation Framework', containing a suite of milestones and measurable progress indicators for city renovation strategies and projects. These include: emissions reductions, increased employment and improved health outcomes. The

¹⁹ Not publicly available, but may be provided on request

²⁰ **For More Information, see:** M. Fabbri, M. De Groote, and O. Rapf. "Building renovation passports. Customised roadmaps towards deep renovation and better homes", <https://www.bpie.eu/publication/renovation-passports/>

Framework is currently being piloted by Leeds City Council, and other cities will begin to pilot it next year. It will be available for adoption by other authorities in 2021.

IX. Example city strategy approaches

Greater Manchester

The following is an outline of the approach being taken by Greater Manchester Combined Authority (GMCA) to deliver a strategic framework to deliver retrofit for all forms and tenures. This was developed as part of the GMCA 5 Year Environment Plan by the Low Carbon Buildings Challenge Group. The working group included the GMCA, the University of Salford, ProcurePlus, UKGBC, Energy Systems Catapult, Red Coop, Carbon Coop, Skanska, Ecospheric, Great Places and Stockport Council.

What	How
Strategic framework for delivery	Part of the GM 5 Year Environment Strategy was delivered through the regions Mission Based approach, Low Carbon Buildings Challenge group linked across a range of other activities. This approach to meeting net zero has achieved a high level of political and wider GM buy-in.
	Recognise the need to establish a trusted offer, available finance, demand and delivery capability within GM at large scale.
	Developed by a multi-stakeholder group of public sector, private sector and Universities.
	Response to both zero-carbon by 2038 and clean growth opportunities.
	Building on 10 years of retrofit learning in GM
Establishing pipeline	Understanding the stock and having a strategic view of what retrofit work needs to be done – work currently being undertaken by Parity Projects to model all 1.2m homes and wider buildings
	Understanding the market for the private sector – what do different consumers want and how should we respond? – work currently being undertaken to understand the different demographic requirements
	Establishing decarbonisation pathways for the non-domestic stock and developing business case – work currently being undertaken
Skills and Supply Chain	Identify the skills base required for the delivery of retrofit – this will include an understanding of existing, new and transferable skills that are required to deliver at the identified scale.

	Review the current demand, supply and pipelines of skills for retrofit.
	Identify the linkages and support required to ensure that PAS2035 and Trust Mark are connected to the GM agenda.
	Working with skills providers to explore effective upskilling and innovative models – link programmes to major investments following social value model.
Technical Advisory	Assessment standards to be explored – what can be considered robust and supported?
	Best practice, products and methods assembled into accessible packages e.g. Retrofit Pattern Book.
	Process tools to support the delivery of retrofit
	Exploring models of performance guarantees, warranties and other models to align consumer and delivery partner interests.
Finance	Explore the available finance options and related finance and regulatory issues.
	Support engagement with providers and provide a trusted link for consumers and asset owners
	Exploration of energy market revenue models – currently being explored through the Innovate UK funded Local Energy Markets and ERDF funded Homes as Energy Systems projects
Data and Verification	Engage with appropriate stakeholders to consider a shared data model on energy consumption, built form and improvements
	Identify data to verify the performance of retrofits, such as emerging models using smart meter data.
	Customer satisfaction – consider a model where the delivery market is better understood and quality reflected in performance data.

Leeds City

The following is the outline document being developed by Otley Energy, Leeds City Council, Leeds Climate Commission and their regional and national network as part of this UKGBC Accelerator Cities programme. This process includes work with Arup as part of a BEIS funded City Decarbonisation project which established a systems-based approach to tackling the retrofit challenge.

The intention is to produce a city-wide home upgrade strategy built on:

- phased whole house plans with
- parallel one-stop-shop models for the private and social sectors that mobilise
- blended funding sources to support

- community and neighbourhood-based approaches to
 - assessing the housing stock,
 - engaging with the community,
 - designing flexible phased upgrade plans and
 - coordinating the supply chain for quality assured interventions for individuals and group buying schemes.

What	How
City-wide home upgrade strategy	Working with UK GBC Accelerator Cities partners
	Advocating for ambitious and stable national and local policy
	Developing a regional coalition of stakeholders organised into working groups who can develop the strategic, engagement, supply chain and finance aspects of the strategy.
	Establishing a clear net-zero ambition and framework
	Linking to a wider energy system strategy.
	Defining and maximising the positive social impacts.
Phased whole house plans	Creating a city-wide model of net-zero based on detailed housing stock data.
	Providing individual whole house plans and detailed archetype designs as the foundation for assessing, engaging and designing holistic approaches to home upgrades.
Parallel one-stop-shop models for the private and social sectors	Establish an appropriate governance structure based on sources of finance, contributing organisations and community involvement.
	Launching a one-stop-shop model for the private sector to work alongside development of the social sector.
	Working with retrofit schemes from across the UK to establish a best practice customer, supplier and funding journey.
Blended funding sources	Developing extended social impact funding sources.
	Building a funding roadmap with the Green Finance Institute's Coalition of Energy Efficient Buildings demonstrator projects that recognises the timescales and relationships between the different products for promotion as they are launched
	Creating a triage approach to understanding householder circumstances and an appropriate approach to funding.
	Aligning blended funding approaches across the private and social sectors as well as different tenures.
Community and neighbourhood-based approaches	Developing community based and digital communication strategies that include behavioural psychology and nudge techniques to understand motivations in the context of the climate emergency and aspirations for 'better homes'.

	Alongside targeting individual homeowners, engaging with whole neighbourhoods as part of a wider community development and regeneration approach.
- Assessing the housing stock	Analysing the housing stock data at a city, archetype, community, neighbourhood and household level.
	Establishing a methodology for taking the whole house plans as a foundation for more detailed assessments based on a combination of street by street and archetype-based analysis using thermal and/or air tightness approaches.
- Engaging with the community	Developing a Community Based Social Marketing (CBSM) strategy and other best practice models including promoting through existing and developed community networks.
	Opening a community-based presence to raise awareness of the role of better homes within better lives and the net-zero and sustainability agenda and development of the all-important sales and marketing techniques.
- Designing flexible phased upgrade plans	Working with a coalition of technical experts to develop phased approaches, recognising the element of uncertainty in future energy sources, that support packages of measures that can be carried out dependent on home-owners' circumstances and the availability of funding such as the Green Homes Grant.
Coordinating the supply chain for quality assured interventions and funding	Adopting a Trustmark & PAS2035 certified approach based on independent Retrofit Coordinators, developed through the national apprenticeship scheme, supporting homeowners through the design, procurement, and project management of the home upgrade journey.
	Working with national and regional skills providers to establish a knowledge and skills ecosystem at the scale required.
	Work with professional networks and local businesses adopting best practice models for engagement to mobilise the supply chains.

The Retrofit Playbook

Part 2 - Developing a One Stop Shop

Section Contents

- I. Key actions for local and combined authorities
- II. What is a one stop shop?
- III. The business model
- IV. The customer journey

I. Key actions for local and combined authorities

- Review the [INNOVATE guide](#) to gain a good understanding of the different models and the potential role of local authorities.
- Incorporate the establishment of a one stop shop as a key element of the city-strategy and engage coalition members as potential partners.
- Develop opportunities for the one stop shop model to work alongside social housing initiatives in a joined-up neighbourhood-based approach.

II. What is a one stop shop?

Implementing energy retrofit in residential buildings is complex, and involves a myriad of stakeholders, from surveyors, to installers to finance providers. The process can be overwhelming for individual householders and landlords alike, so much so that they are put off trying to do anything in the first place. They are unsure what they need to do, how they can do it, who they can trust to advise on and deliver upgrades, and how much it will all cost.

The ‘one stop shop’ approach is a way of trying to overcome this complexity from the perspective of the individual householder or landlord and deliver ‘hassle-free’ home upgrades. Under the one stop shop model, multiple services are bundled together to offer homeowners an end to end journey; from raising awareness of the need for an upgrade, undertaking assessments and designs, arranging contractors and helping to organise finance.

The one stop shop approach is endorsed by the European Parliament, which, in a recent report on maximising the energy efficiency potential of the EU building stock (April 2020) said:

“Energy efficient buildings benefit all citizens; especially those at risk of energy poverty. For this to succeed, best practices such as one-stop-shops for information, advice and financing, and as places to discuss specific community needs should be replicated in all Member States. Capacity building for municipalities, and the active involvement of local actors such as energy communities, housing cooperatives, local industries, and financial actors have also proven successful. To this end, the proposed platforms on renovations are certainly a useful tool to develop inclusive community based integrated

renovation programmes that can be replicated, scaled up elsewhere, and help create value chains at local and regional level.”²¹

A very helpful guide to setting up one stop shops for local authorities across Europe has recently been published by [INNOVATE](#) (July 2020). Created from live projects across Europe, including the UK, it includes case studies of different models, along with checklists and guides to choosing the right models and governance structures, as well as recommendations from real life experience.

III. The business model

The INNOVATE guide identifies 4 types of business models for one stop shops with increasing levels of responsibility for the results of the renovation works:

Business model	The ‘offer’
1 Facilitation model	Advice on how to renovate a house and list of suppliers.
2 Coordination model	Advice on how to renovate a house and pushes suppliers to comply with promises. Suppliers remain responsible for the final result.
3 All-inclusive model	One-stop-shop is a contractor that sells the whole service package and is the main contact point if things go wrong.
4 ESCO-type model	One-stop-shop sells the renovation package and guarantees the energy savings with costs covered by the energy savings achieved.

In this Playbook our references to ‘one stop shop’ imply level 3 and above. Services that ‘hand-hold’ people through the whole process, with independent advice from a trusted source, are likely to have the greatest chance of success.

Key to this whole-service approach is the role of a Retrofit Coordinator, as required in the PAS2035 standard (see P 65). The Retrofit Coordinator acts as liaison between the

²¹ Committee on Industry, Research and Energy, “Draft report on maximising the energy efficiency potential of the EU building stock (2020/2070(INI)”, https://www.europarl.europa.eu/doceo/document/ITRE-PR-648631_EN.pdf

homeowner and suppliers to ensure the right decisions are made and work is carried out to the necessary standards.

IV. The customer journey

The following is an illustration of a whole-service approach:

- **Marketing:** Community based marketing and promotion through local advocate organisations for lead generation
- **Initial assessment:** Desktop whole-house plan to qualify lead, consider any heritage implications, categorise household for funding purposes
- **Detailed assessment:** Home visit to confirm whole house plan incorporating behaviour change advice, initial quick wins, phased approach and blended funding model
- **Coordination:** Retrofit Coordinator project manages procurement of suppliers, the works themselves, quality control and funding
- **Monitoring:** Ongoing performance monitoring, including the role of behaviour change and updating of whole house plan based on emerging technology and approaches.

In common with the overall retrofit strategy, to unlock the various barriers to retrofit, the one stop shop model will benefit from the involvement and promotion of multiple stakeholders.

An example of this is the [Retrofit Works](#) model, a cooperative structure that involves trusted community based 'advocate' organisations promoting the Retrofit Works Retrofit Coordinator service, along with suppliers who themselves are members of the cooperative.

If not directly delivering the model, the local authority could be a powerful advocate for the one stop shop service and also work in partnership in a neighbourhood-based approach alongside existing social housing projects.

The Retrofit Playbook

Part 3 – Engaging householders and landlords

Section Contents

- I. Key actions for local and combined authorities
- II. Introduction
- III. Defining the audience: market segmentation and messaging
- IV. Psychological types and the ways to appeal to each type
- V. Different market segments – motivations and messaging
 - a. Other key messages for residents and landlords
- VI. The customer journey through the one stop shop model

I. Key actions for local and combined authorities

- Capitalise on the immediate opportunity offered by the Green Homes Grant (GHG) scheme by providing information on the programme parameters and eligibility criteria through community networks to ensure communities are aware of the programme and can link it to their existing referral pathways. Brief councillors about the GHG and encouraging them to publicise the scheme through their networks.
- Review details of any residents that have been through other energy efficiency programmes and, where permissible, contact them again to let them know about the GHG programme and how to apply.
- Communicate with residents about the benefits of retrofit, the importance of whole house plans, and the importance of using only accredited installers and suppliers. Taking into account differing motivations and types of audience as set out in this chapter.
- Working with sector partners, create a communications and engagement plan as part of a longer-term strategy taking into account differing tenure types, life changes and trigger points and psychologies

II. Introduction

Choosing to retrofit a home, or a tenants' home, is not a simple decision. Targeted information and encouragement from a local authority can help take the hassle and stress out of the decision making process.

When it comes to engaging householders and landlords to participate in home energy retrofit, local authorities have some unique strengths, including:

- **Trust and the role as a resident's first point of contact:** Local authorities are trusted by the public and are often the first point of contact for residents on any issue.²²
- **Existing communications channels:** Local authorities know their area and local community organisations. LAs can contact residents and landlords through many existing channels, such as council tax mailing lists, and via relationships with

²² LGA, "Perceptions: The fact and fiction of trust and satisfaction", <https://www.local.gov.uk/our-support/guidance-and-resources/comms-hub-communications-support/futurecomms-building-local-2>

community organisations and local businesses. They have many digital or postal lines of communication as well as community noticeboards and physical advice locations.

III. Defining the audience: market segmentation and messaging

The first step for successful householder engagement is to define the audience. Householders and landlords need tailored messages that resonate with them as individuals. There is learning that we can draw on from previous retrofit programmes to help with this.

Involving the local authority communications team at an early stage to work through this will harness their expertise, and enable them to more effectively deliver the identified messages through their communications channels.

When designing a communications and engagement plan, the first question is ‘Who are the audience and why would they care about or act on this?’, and ‘What are the key messages needed to reach them?’

There will be different motivations and barriers for each audience, and so the key messages will need to be tailored:

- **Tenure types** (social or private renters and homeowners - both high and low income)
- **Life stages or “trigger points”** (Moving home, spending more time at home e.g. with young children, working at home, retirement, or work being carried out at the home)
- **Psychological responses of differing character types** when there is an opportunity of a new “thing” such as home energy retrofit.

There are also common barriers, motivations and key messages for all residents:

- **Barriers common to all residents include;** the hassle factor of clearing space and getting work carried out, lack of knowledge about why bother with this at all, the cost vs perceived value, and lack of trust in tradespeople and quality of their work.
- **Motivations common to all residents include;** home improvement, comfort, cosier, better homes, a commitment to reducing their carbon footprint. Saving money on bills can be a motivating factor in the mix, but it is often not a reported benefit when residents are surveyed afterwards.

These all need to be taken into account in the messaging for householder engagement. It is also important to understand the differing psychology and motivations of residents.

IV. Psychological types and the ways to appeal to each type

There will be residents who are keen and those who are wary, or downright against the programme and its offer. There is an approach that considers how groups of people respond to innovations and new approaches in their lives. It is the work of Everett M. Rogers, and is called the 'Diffusion of Innovations' theory.²³ It is a well-known and well-used approach. It describes the following groups and their relative size within a whole population:

- **Innovators (~2.5%):** this group is the most willing to take risks to try new things. They tend to have good access to sources of information about new technologies or approaches. They are generally in a strong financial position so they can absorb the costs of trying things which do not work as well as hoped
- **Early Adopters (~13.5%):** this group is the most influential in shaping the opinion of other groups. They tend to be well connected and well educated and be in a good financial position. A key driver for this group is being seen to be 'cool' and ahead of the pack
- **Early Majority (34%):** there tends to be a 'chasm' between the early adopter group and this group in terms of the time taken to adopt new things. This group are more concerned with their peers' view of the new 'thing', and would be led much more by a group acceptance of the new 'thing'

Collectively these three groups are all minded to be in favour of the new 'thing'.

Other, more sceptical groups are:

- **Late Majority (~ 34%):** they will adopt an innovation later than the average group. This group tends to be more sceptical and risk averse, in part this may reflect and be informed by not being in a very strong financial position
- **Laggards (~16%):** this group is the last to adopt an innovation (and may often resist). They tend to be focused on tradition and are likely to be the oldest group,

²³ Everett M. Rogers, *Diffusion of Innovations*, (London: Free Press, 2003) 5th Edition.
https://books.google.co.uk/books?id=9U1K5LjUOwEC&source=gbs_navlinks_s

with the lowest financial status. They get information from the most limited range of sources – typically just their family and close friends

Both these groups are minded against the new ‘thing’.

One further element to the theory is that there is a ‘chasm’ between the early adopter group and the early majority. Using this lens suggests for any local improvement programme or activity, there will be those innovators who have already acted, keen early adopters who want to be ahead, be seen to be taking part, who will be relatively easy to involve, which could be ~15% of the locality. The chasm, and need to engage peers, suggests the need to return with fresh targeted engagement to progress beyond the first eighth of the population. Such a follow up would engage people after they have had time to process what is involved, and how it has worked for those they know in the first two categories.

This Diffusion of Innovation theory allows a strategic overview of the audiences and the reactions expected. The implications of this theory, for the development and delivery of any local improvement programme or activity, suggest that it is not worth targeting at everyone equally; despite a desire to try and be as inclusive as possible. Even if a totally free service were offered, there is still unlikely to be 100% take-up. This theory therefore helps focus efforts where it is most likely to be successful and can help build up demand over time.

How this theory can be used in communications and engagement with residents:

- **Different approaches are needed to reach the different groups:** a range of messengers and communication channels will be needed to maximise the reach of relevant marketing
- **Use messages that will resonate:** a long-standing focus of the energy efficiency sector has been on using messages about payback to try and generate uptake, however this theory highlights some of the challenges with this approach. The people most likely to move early tend to be in a financially secure position and payback does not tend to be a primary concern – they are more motivated by the novelty, innovation and specific benefits of the measure. Identifying a wide range of messages, areas of interest and advantages can help adapt and find an approach that is most likely to encourage action.
- **Target messaging at the specific group being aimed at:** this can help make messaging more succinct. It also suggests the benefits of developing a range of tailored materials to engage different audiences.

- **Using data and networks to help find those who are most likely to be interested:** any data or existing networks can help target marketing. Although this will be more time intensive initially, it can help to save resources over the course of the programme.
- **Reaching the laggards is likely to require regulation:** reaching this group is challenging and getting them to take action even more so. Rather than putting lots of time and energy into trying to engage them, it is better to focus on earlier groups and creating the right conditions for regulation to come forward, which will require or support them to take action.

V. Different market segments – motivations and messaging

Next, with the differing psychologies of all residents in mind, it is possible to map this approach on to the different market segments as part of successful delivery. These include:

A. Tenure types:

- I. **Registered social housing (RSLs) or local authority owned homes in the area** (see Part 6 for RSL specific advice)
- II. **Homeowners who are ‘able to pay’**
 - Motivations will include the availability of incentives with a limited time span, such as the Green Homes Grant
- III. **Homeowners who are less able to pay**
 - May need some quite tailored signposted and further support to help them get access funding such as the Green Homes Grant.
- IV. **Homeowners who are private landlords**
 - Motivations for this group will include the incentives available, but also regulations such as the 2018 ‘Minimum Level of Energy Efficiency’ standard (EPC band E) for Landlords.

B. Life stages or Trigger points:

There are certain points when people are more likely to undertake renovations to support a change in their personal circumstances. These include:

- **Spending more time in the home:** because of having a child, retiring or working from home.
- **Reshaping homes:** when their child moves out, or when aids and adaptations might be required
- **Moving or renting out home:** moving, buying or selling a home, or getting it ready to rent out are all times when people are likely to be spending some time and money improving their home
- **External triggers:** receiving an inheritance or having other works taking place – such as a smart meter install – can serve as a prompt to make changes
- **Emergency purchases and repairs:** when something breaks, or there are substantial issues such as damp, this can act as a trigger to both repair the original item and potentially also to address some wider issues
- **Retirement:** having the time and potentially the funds to address home upgrades

Each of these trigger points will help to identify communication channels which are more likely to reach people who are already investigating getting works done to their homes. As such, they will already be accepting some disruption and hassle and therefore might be more open to integrating further measures into their home upgrade. Communications channels could therefore include disseminating information through local estate agents, the building trades, or health professionals.

Other key messages for residents and landlords

The role of phased, whole house retrofit plans: Whilst not as yet built into the Green Homes Grant (GHG) scheme, the importance of phased whole house retrofit plans has emerged as a foundation for achieving local authority net-zero ambitions and ensuring residents receive the best advice through an understanding of energy efficient home upgrades as a holistic journey.

Quality assurance: The emphasis on quality assurance and role of Trustmark and MCS in the announcements around the GHGs are welcome. The sector is at an early stage in growing the skills base necessary to promote and support a whole house approach at scale, with the rigour laid out in PAS20351, but the high profile nature of the GHGs

provides an ideal opportunity to develop this, and ensure local tradespeople know about it and get trained and accredited.

VI. The customer journey through the one stop shop model

Being clear about the customer journey as a local authority and then using it to shape key communications and any engagement plan is an important component of a successful strategy. Implementing energy retrofit in our homes involves a myriad of market players. The one-stop-shop approach helps to deliver hassle-free green upgrades as set out in the previous chapter. Services are bundled together to offer an end to end journey; raising awareness, undertaking assessments and designs, arranging contractors and organising finance.²⁴

²⁴Jana Cicmanova, Miriam Eisermann, Thibaut Maraquin, “How to set up a one-stop-shop for integrated home energy renovation?”, <https://energy-cities.eu/publication/how-to-set-up-a-one-stop-shop-for-integrated-home-energy-renovation/>.

The customer journey shown below in Figure 4 helps to define the stages of a one-stop-shop from the perspective of the householder.

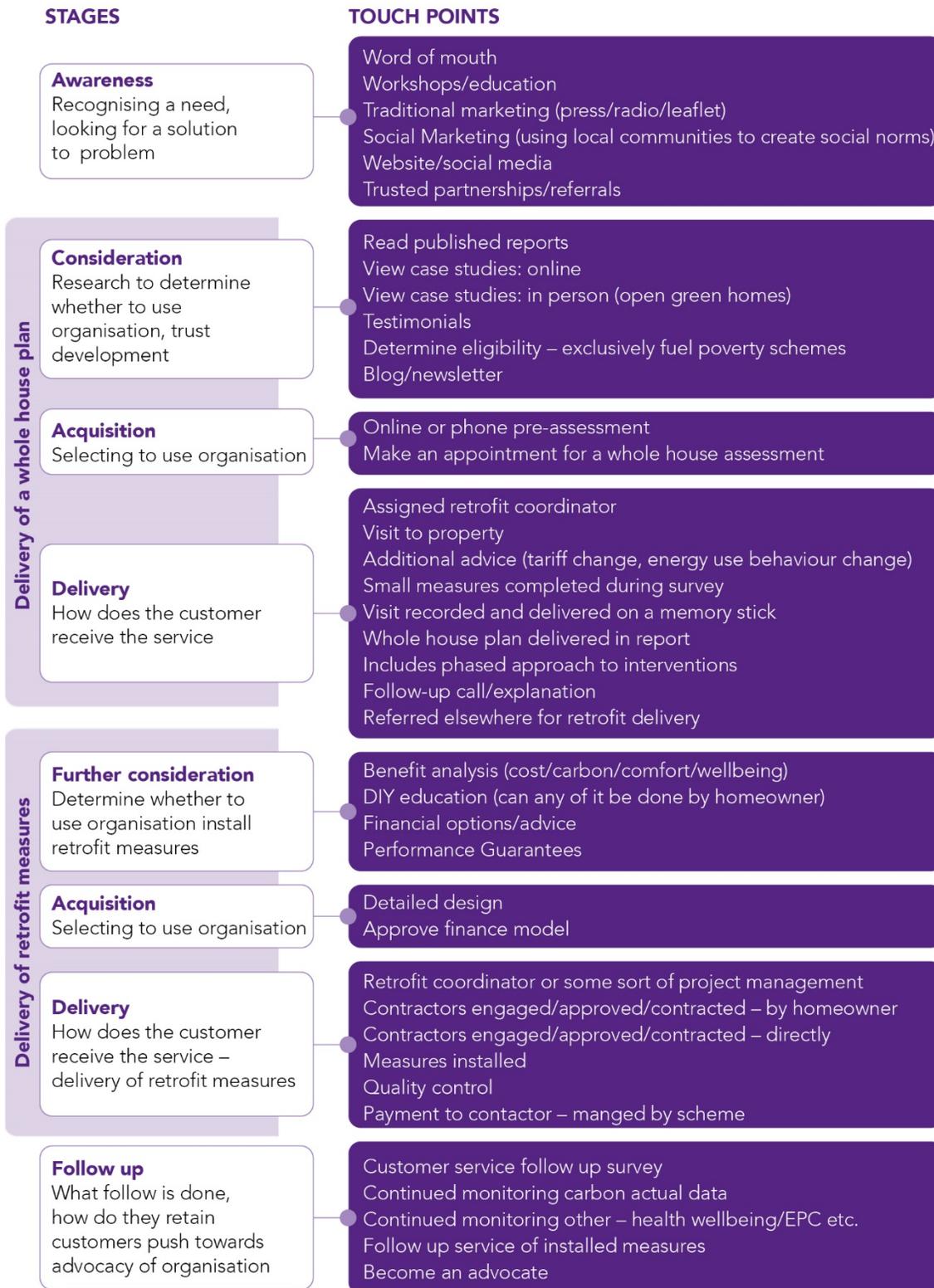


Figure 4: The customer journey through the one stop shop model (Credit: Otley Energy)

The Retrofit Playbook

Part 4 – Finance

Section Contents

- I. Key actions for local and combined authorities
- II. Introduction
- III. Funding the development and delivery of a Retrofit Strategy
- IV. Supporting retrofit finance mechanisms for householders
 - a. Blended funding model
 - b. Potential funding mechanisms
- V. Finance as part of the customer journey
- VI. The opportunity in a neighbourhood-based approach

I. Key actions for local and combined authorities

1) Funding the development and delivery of a retrofit strategy:

- Advocate for central government funding and maintain a robust strategy with defined elements ready for funding opportunities such as the Local Authority Delivery Scheme.
- Convene an early meeting of relevant cross-department officers and politicians to secure buy-in to retrofit commitments and co-ownership of the retrofit strategy as a funding priority.
- Capture and monitor data on the impacts of home retrofit by using models such as the World Green Building Council [Build Upon²](#) Framework to capture the environmental, social and economic co-benefits of retrofit. Use this data to inform funding priorities within the local authority.
- Support an active network between the combined authority, relevant officers from other local authorities and the local energy hub in developing city and regional strategies and funding for retrofit, ideally as part of broader local energy strategies.
- Prepare a full stock assessment that supports funding applications as well as policy and programme development, including consideration of employment potential, the potential benefits of healthier homes for an ageing population, and the potential for and costs of decarbonisation.
- Consider a formal prospectus process as undertaken by [Bristol](#), commissioning sector specialists, or consider an 'open door' policy to proposals that could generate funding and resource.
- Review UK100 proposals for a national Net-Zero Development Bank and share with stakeholders to start the conversation about the potential for a city-wide/regional approach.

2) Supporting retrofit finance mechanisms for householders:

- Support the work of the work of UKGBC and partners including the [Green Finance Institute](#) in identifying the role of local authorities in promoting, utilising and providing emerging funding models such as 'pay as you save', as part of a 'blended funding' approach.
- Stimulate demand for householder funding mechanisms through targeted marketing and messaging (see Part 3).
- Explore opportunities for volume discounts and product finance as part of city-wide initiatives and neighbourhood-based approaches.
- Explore ways to help householders navigate through finance options, especially for more vulnerable members of the community. Local authorities could play a role either through their existing financial inclusivity teams,

directly providing advice, supporting trusted community organisations or through support for the one-stop-shop model.

- For local authority housing stock, use maintenance budgets to accelerate the decarbonisation of the existing stock, which will stimulate the supply chain and skills ecosystem and start to shift the social norms and attractiveness of home upgrades.

II. Introduction

There are two key aspects of finance that are essential for a successful city/LA-wide home retrofit programme:

- 1) **Funding the development and delivery of a retrofit strategy:** how to generate the funding and resource necessary to enable local authorities and their partners to develop and deliver a retrofit strategy.
- 2) **Supporting retrofit finance mechanisms for householders:** householders require a suite of finance mechanisms to ensure that everyone is in a position to be 'willing and able to fund' retrofit, regardless of their financial circumstances. In this section we discuss the idea of a 'blended funding' approach, and the work of the Green Finance Institute's Coalition for Energy Efficient Buildings (GFI CEEB).

The local authority has the potential to play a critical role in mobilising a 'blended funding model' (see below) as a facilitator, coordinator and provider of finance:

- **Facilitator:** Partnering with financial institutions to promote trusted products to householders alongside central government initiatives such as the Green Homes Grant.
- **Coordinator:** Playing an active role with other social landlords in creating the quality assurance ecosystem to underpin funding mechanisms and acting as an 'anchor' homeowner in group buying and neighbourhood-based approaches.
- **Provider:** Funding the acceleration of maintenance and refurbishment budgets, utilising Green Leases, offering grants through creative approaches to combining related social impact budgets, providing low cost loans by raising 'patient capital' such as Community Municipal Investments or providing guarantees and considering a role in supporting or delivering Energy Service Companies.

III. Funding the development and delivery of a Retrofit Strategy

Whether CAs and LAs take a facilitation, coordination or provider role, the development of the retrofit strategy will require additional funding, resource and professional support which presents a challenge for local authority budgets under pressure.

Developing a retrofit strategy is an example of the catch-22 that the UK100 'Financing Local Energy' initiative, discussed below, is seeking to address. It requires a resource and financial investment to support the development of projects in the absence of readily available funding or well-established income-generating case studies.

In order to be ready to capitalise on funding competitions as they become available, Local Authorities should prepare a full stock assessment that supports funding applications as well as policy and programme development, including consideration of employment potential, the potential benefits of healthier homes for an ageing population, and the potential for and costs of decarbonisation.

Potential sources of resources and funding to address this conundrum and support local authorities include:

- i. **National government** allocating the necessary funds to support a local authority role in driving retrofit and wider net-zero ambitions, and local authorities prioritising housing retrofit when funding opportunities arise.
- ii. **Knowledge sharing** through programmes like Accelerator Cities, GFI CEEB and other related initiatives (see Appendices) to develop replicable approaches that reduce risk and avoid organisations needing to reinvent the wheel.
- iii. **City/region-wide coalitions** of key stakeholders convened around the multiple positive impacts of retrofit. These stakeholders can share responsibilities and resources and open up opportunities for generating funding and additional resources through a partnership approach.

Box 4: Examples of City or region wide programmes²⁵:**Bristol: City prospectus and joint venture**

The Bristol City Council 'City Leap Prospectus'²⁶ attracted 180 expressions of interest and has led to the pursuit of a joint venture partner capable of developing and financing the portfolio of projects identified.

Greater Manchester: Mission Based Approach

GMCA has adopted a 'Mission Based Approach' to the region's net-zero commitments with cross-sectoral stakeholder 'Challenge Groups'. They are undertaking a detailed review of their investment requirements before going out to the market.

Warrington: Direct investment

Warrington Borough Council directly owns renewable generation assets, developed and financed by industry partners and then acquired utilising a combination of their own funds and borrowing through the Public Works Loan Board (PWLB). A key success factor has been a strong cross-disciplinary team of internal experts and a long-term strategy.

Nottingham: Partnerships

Nottingham City Council has a number of established and demonstrator projects in partnership with the city's universities and private sector partners including a joint venture project developing a subsidy-free commercial model for community energy, exploring the opportunity to aggregate multiple community level models to a city scale.

- iv. **Business case development** within the authorities, recognising the cross-departmental benefits of retrofit (health, social care, climate change etc.), and pooling relevant budgets to aid retrofit strategy development and delivery.
- v. **City or regional scale programmes** can help justify upfront resource by addressing a larger number of households. If combined with a wider local energy strategy, local authorities can recoup that investment across a wide portfolio of projects, opening up the potential for regional net-zero development funds (see Box vii below).

²⁵ Polly Billington, Charles Abel Smith, Malcolm Ball (UK100), "Accelerating the Rate of Investment in Local Energy Projects", <https://www.uk100.org/financing-local-energy/>

²⁶ Energy Service Bristol & Bristol City Council, "City Leap Prospectus", https://www.energyservicebristol.co.uk/wp-content/pdf/City_Leap_Prospectus%204-5-18.pdf

- vi. **Partnerships and joint ventures** with other organisations including industry players can provide expertise, share costs and unlock match funding and resourcing opportunities including identifying models with built in funding sources.

Box 5: Example of Joint Ventures

A joint venture between Barnsley Metropolitan Borough Council and a local Housing Association, structured using a Community Benefit Society and operated by British Gas Solar through their Gen Community Ventures scheme under a 'Development and asset management agreement'. It involved installing solar PV on 321 social housing properties and 16 council properties funded through a combination of a community share offer and community and institutional bonds.

- vii. **The potential role of a Net Zero Development Fund.** The city or regional scale programmes emerging, as with the examples highlighted above, provide the greatest chance of mobilising funding and resource across each of these potential sources at the scale required. A priority in the development of these programmes must be consideration of the funding for the programmes themselves and where seed and development capital for projects will come from. The recent proposals for a national Net Zero Development Bank by UK100 as part of their Financing Local Energy initiative²⁷ provides a clear structure to leverage £100bn of private finance from £5bn of public investment in order to address this question. Based on considerable multi-stakeholder consultation, this also provides a model capable of being adapted for regional Net Zero Development Funds that could raise initial seed investment to fund elements including internal resource for local authorities and professional services as well as project specific seed and development capital. Sources of 'patient' and lower cost capital could be considered as a foundation for these funds, such as community shares and Community Municipal Investments.

²⁷ UK100, "Accelerating the Rate of Investment in Local Energy Projects", <https://www.uk100.org/financing-local-energy/>

Box 6: Example of Community Municipal Investments

Developed as part of the Financing for Society report²⁸ which analysed opportunities for community investment for the public sector, Community Municipal Investments are a form of low risk and therefore low cost bond, typically beneath the Public Works Loan Board rate, that appeal to socially conscious investors²⁹. Warrington, West Berkshire have launched Community Municipal Investments already and others are in the pipeline.

IV. Supporting retrofit finance mechanisms for householders

The scale of home upgrades needed to achieve the country's net-zero responsibilities requires putting almost all households in a position to be 'willing and able to fund' phased, whole-house retrofit works. Most past and present retrofit schemes in the UK fall into two categories, those targeting more affluent homeowners often referred to as the 'able to pay' and those tackling fuel poverty with either fully or significantly funded projects.

As most of the population lie somewhere between these two groups, we require a suite of funding mechanisms that can be 'blended' to suit all circumstances.

Blended funding model

The diagram in Figure 6 presents the idea of needing to slide a 'dial' of funding approaches for different socio-economic groups. It also includes the categories of benefits available and the related funding mechanisms available and emerging that could unlock them.

An extension of the Green Homes Grants scheme or implementation of a similar long-term sustained programme of grants of this nature could leverage significant private investment over the long term. Germany's federal energy efficiency programme succeeded in leveraging €6 of private energy efficiency investment for every €1 of public

²⁸ M Davis and L Cartwright (2019), "Financing for Society: Assessing the Suitability of Crowdfunding for the Public Sector", University of Leeds <https://baumaninstitute.leeds.ac.uk/research/financing-for-society/>

²⁹ Place Based climate Action Network, "Turning words into action - How Community Municipal Investments can create a new sphere of civic engagement that will galvanize local action in the fight against the climate emergency", <https://pcancities.org.uk/report-community-municipal-bonds-turning-words-action>

money spent, recouping its outlay through VAT receipts alone.³⁰ It is projected that public capital investment of £1.8 billion per year to 2030, which would bring the total to £2.5 billion – could help unlock at least £4.8 billion of private investment.³¹

As set out in Part 3 (Householder and Landlord Engagement), it is important that the benefits of retrofit are understood and included in communication with the different stakeholder groups in order to mobilise funding and generate demand for funding mechanisms.

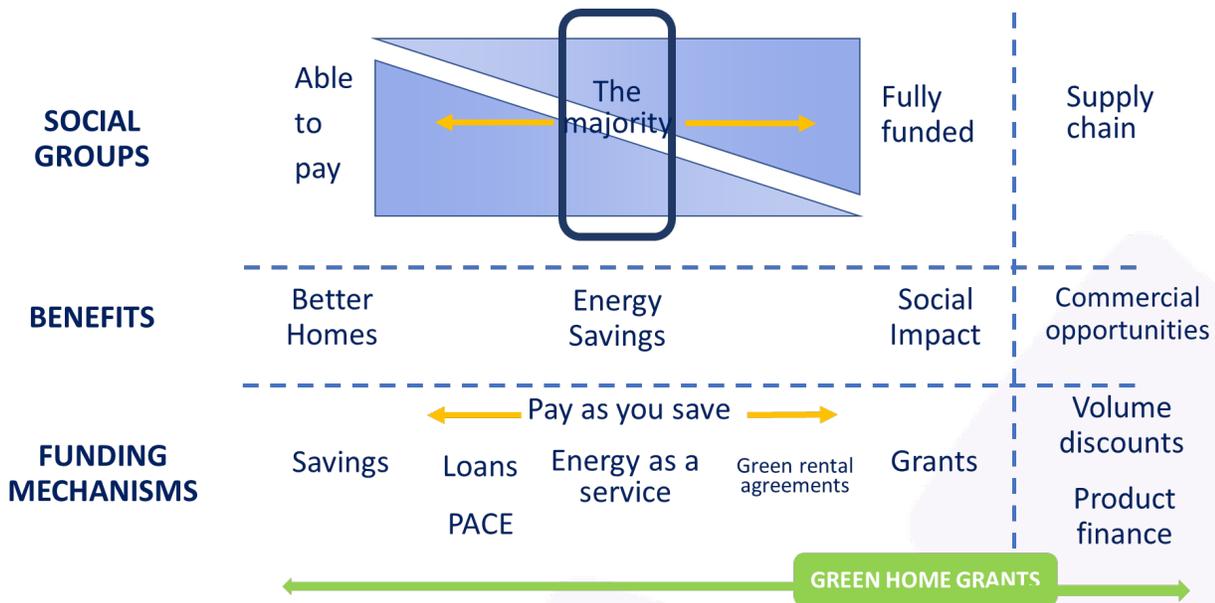


Figure 5: The blended funding approach [Credit: Otley Energy]

The volume of homes to be upgraded provides unprecedented commercial opportunities for supply, fit and finance. Efforts to combine buying power through for example group buying schemes and neighbourhood-based approaches should be able to reduce the overall cost of retrofit and plug an element of the economic gap.

³⁰ EEIG, “Rebuilding for resilience - Energy efficiency’s offer for a net zero compatible stimulus and recovery”, https://www.theeeig.co.uk/media/1096/eeig_report_rebuilding_for_resilience_pages_01.pdf P.15

³¹ EEIG, “Rebuilding for resilience - Energy efficiency’s offer for a net zero compatible stimulus and recovery”, https://www.theeeig.co.uk/media/1096/eeig_report_rebuilding_for_resilience_pages_01.pdf P.5

Box 7: Group buying schemes*Example: London: Solar Together*

Members of Greater London Authority promote a time bound group-buying programme that enables the community to install solar panels and battery storage on their homes at an affordable price by combining their buying power. Homeowners register in 'rounds' and pre-vetted installers take part in a reverse auction to encourage the maximum possible discount is achieved. This model is now being replicated around the country.

<https://solartogether.co.uk/london/home>

Potential funding mechanisms

In their report '*Financing energy efficient buildings: the path to retrofit at scale*'³² the GFI CEEB layout 21 demonstrator projects based on detailed profiling of the barriers to retrofit and other characteristics associated with owner-occupied, private rented and social rented homes.

The demonstrators are aimed at bringing practical solutions to market and fall into 6 categories:

Data, digitalisation and enabling frameworks: Highlighting the vital role that reliable data and a quality assured supply chain will play in trust for both consumers and funding providers as well as exploring the role that 'Building Renovation Passports' (see page 24-25) could play in promoting these priorities and creating demonstrable value in house prices.

Example: Metered Energy Savings

A standardised savings calculation methodology to deliver rich data on real-time energy savings over the lifetime of a retrofitted building.

Tenancy agreements: Addressing the split incentive between landlord and tenant by allowing energy savings to be recovered through rental payments and promoting 'affordable living' measures that combine rent and energy costs.

³²Green Finance Institute, '*Financing energy efficient buildings: the path to retrofit at scale*'
<https://www.greenfinanceinstitute.co.uk/report-financing-energy-efficient-buildings-the-path-to-retrofit-at-scale>

Example: Green Leases

Green Leases with an 'Energy Alignment Clause' enable landlords to recover the cost of a retrofit, based on the predicted energy savings, and minimise the landlord-tenant split incentive.

Lending products: A number of loan mechanisms to make it easier and more attractive to fund retrofit through borrowing products appropriate to different homeowner circumstances.

Example: Property Assessed Clean Energy 'style' financing

Financial institutions provide long-term capital for retrofit projects, while local authorities or associated independent third parties collect repayments via an additional property charge that is passed through to the lender.

Saving and investment products: Aimed at both encouraging investment in homeowner's own properties and in investments that will provide the capital for larger scale retrofit schemes, for example Community Municipal Investments in the above case study.

Example: Energy Saving ISA

Energy bill savings from a retrofit project can be directed towards an ISA or savings product, to help tenants build up their savings for a mortgage deposit or other investments.

Energy service products: Unlocking the cash savings in energy efficiency savings to fund the initial investment on behalf of homeowners including insurance and guarantee backed mechanisms to provide confidence across all tenure types.

Example: Comfort as a Service

Financial mechanisms to unlock the cash savings in energy efficient and optimised homes, to support the investment case for housebuilders and homeowners to achieve high efficiency standards.

Guarantee mechanisms: A government guarantee to support large-scale retrofit projects in the social housing sector, aimed to scale the supply chain and drive economies of scale that benefit all housing tenures.

V. Finance as part of the customer journey

The central role that funding will play in stimulating demand means that it needs to form a critical part of the customer journey in the one stop shop. The individual financial and tenure circumstances of householders will need to be established early in the process, and householders will need to be given a clear ‘menu of financial options’, with advice about how they can be combined.

Solutions are emerging that go as far as incorporating finance as an integrated element of the overall business model such as the Energiesprong model.

Example of Integrated finance: Energiesprong

A Dutch model that includes holistic measures such as prefabricated external wall and roof insulation, smart heating systems and onsite generation, funded by an energy service contract whereby the upfront investment is made by the Energy Service Company and recovered through guaranteed energy savings.

<https://energiesprong.org/>

It is easy to imagine a role for ‘financial coordinators’ working alongside ‘retrofit coordinators’, to help homeowners navigate through the emerging options, especially for more vulnerable members of the community. Local authorities could play a role either through their existing financial inclusivity teams, directly providing advice, supporting trusted community organisations or through support for the one-stop-shop model.

Example of a Finance Coordinator: Lendology CIC

A Community Interest Company that manages local authority loan facilities, including for retrofit and predominantly for the fuel poor market. By their nature they are social impact oriented and therefore provide an informal yet accredited financial coordinator role, signposting customers to available grants and, where appropriate, alternative sources of finance. <https://www.lendology.org.uk/>.

VI. The opportunity in a neighbourhood-based approach

As the financial mechanisms emerge, it will provide the opportunity to engage with whole streets and offer funding packages that can work across all tenure types and suit all financial circumstances. By its nature this will unlock discounted works as a result of combining buying power. Local authorities and housing associations taking part in these approaches will be able to play a foundational role in the funding mix through their own repair and maintenance budgets.

Local authority housing stocks, associated maintenance budgets, access to central government funding along with relationships with other social housing landlords and stakeholders places them in the ideal position to catalyse neighbourhood-based approaches.

Box 8: Case study: neighbourhood-based approaches

Example: Leeds group repair scheme

Leeds City Council combined energy efficiency measures as part of a wider Neighbourhood Renewal Approach in a community within the 1% most deprived in the country, successfully engaging with 100% of property owners, predominantly private landlords. Included in the multiple positive social impacts were improving EPC Bands from an average F/G to B/C, increasing average room temperatures from 12oC to 18oC and despite this reducing fuel bills by an average £325. Contributions were up to 90% depending on circumstances.

The Retrofit Playbook

Part 5 – Skills and supply chain

Section Contents

- I. key actions for local and combined authorities
- II. Introduction
- III. Understanding the local skills and supply chain
- IV. Defining and prioritising the audience
- V. Technical issues to be aware of
 - a. Traditional buildings
 - b. Repair and maintenance
 - c. Ventilation
- VI. Linking up with the one-stop-shop model

I. Key actions for local and combined authorities

- **Know the stock:** What type of stock is there? How old are the homes? What type of construction are they? How many homes are there of each type and age? What improvements do they need? Are there any heritage constraints? Answering these types of questions is important for establishing the type of skills and supply chain that are needed to upgrade the homes in an area. Homes of different ages and construction types need different skills, materials, systems and approaches to upgrade their energy efficiency. A one size fits all approach will not lead to the results needed. In fact, quite the opposite, potentially leading to poorer energy efficiency and risking the health of residents, as well as the integrity of the building itself.
- **Understand the local skills and supply chain:** What relevant skills are available in the area which are suitable for upgrading homes? What do suppliers provide for upgrading homes? How many of each are there? What is their capacity? Answering these types of questions will provide a clear picture of what is available locally.
- **Map the stock (demand) against the available skills and supply chain:** How do the skills and supply chain correspond to the type of stock in area? This activity will enable any gaps in available and suitable skills and the supply chain to be identified.
- **Identify gaps from mapping:** This is the critical result from the mapping and will provide a sound basis for developing a strategy and action plan for addressing the gaps identified.
- **Develop strategy to address gaps:** How can the gaps be addressed? Who needs to be involved in developing the strategy – local business, colleges, representatives from the community? What training is available in local colleges and education institutions? Are their apprenticeships available in local businesses that correspond to the skills needed?
- **Develop relationships with training providers and local supply chain:** Having buy-in from all stakeholders from the outset can lead to more tangible and meaningful results; this includes trades people, suppliers and training providers. Remember, this is a journey for everyone involved and some aspects will be completely new and go against everything that someone knows. For example, if there are a lot of traditional buildings in the area, some builders will only have used methods that are suitable for more modern construction, even though they have worked on traditional buildings using these methods, and it will be difficult for them to see why they need to do things differently going forward.
- **Support development of local skills and supply chain:** Provide practical solutions for the supply chain, including the development of an action plan to deliver the solutions through task groups.

- **Support integration of supply chain into OSS model to deliver whole house approach, improve quality and reduce unintended consequences:** the retrofit coordinator role is key here.

I. Introduction

Local/combined authorities can have an influential role in advocating and supporting the development and sustainability of the local supply chain. As a trusted organisation in the community, local authorities are in a unique position for vetting the local supply chain and thus providing residents, funders and other stakeholders with the confidence needed to upgrade homes. For example, this could be as a result of suppliers being on established contracting frameworks that local authorities use for their own stock.

Additionally, local authorities are in a unique position of having access to core data about homes, education and businesses that can all be leveraged and brought together to meet the needs for upgrading the homes in the community.

II. Understanding the local skills and supply chain

There are two key strands to achieving an understanding of the local supply chain and skills. The first is the requirement to understand the local building stock and the demographics of the people that live in the local area; this is important as the supply chain and skills need to correlate, as different building types and occupants need different approaches to upgrade them.

The second part (explored in figure 6 below) is to then understand the status of the local supply chain and skills within a local authority area; these then need to be mapped against the demand, which is determined by the type of buildings and the existing energy use intensity of these buildings, as well as the local demographics.

The following process could be followed to undertake the recommended mapping:

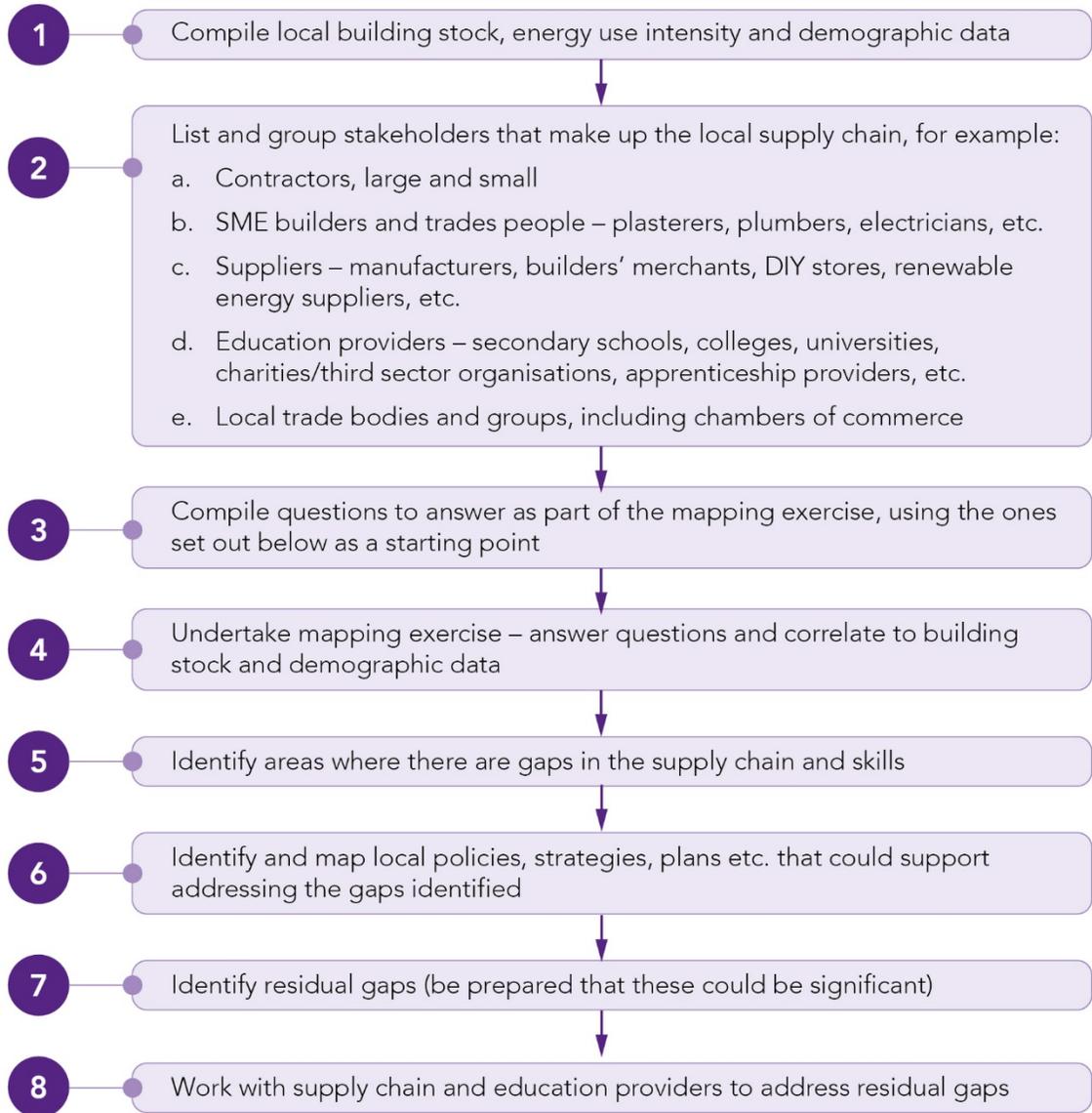


Figure 6: Understanding the local skills and supply chain (Credit: Jo Atkinson at the Active Building Centre)

The following questions have been compiled as a starting point to begin the mapping exercise:

Box 9: Undertaking a mapping exercise

Building stock

- *What data is there on the local building stock? For example:*
 - *Quantity*
 - *Age*
 - *Construction type*
 - *Energy efficiency*
 - *Previous upgrades*
- *What are the demographics of the local area for the different types of buildings? For example:*
 - *Do more people on lower income, or with greater health and/or education deprivation live in homes that are older, or system built, etc.?*
 - *What level of fuel poverty exists in the local area?*

Supply chain

- *What does the existing supply chain consist of? i.e. number and type of:*
 - *Contractors*
 - *SME builders*
 - *Suppliers*
 - *Education providers*
- *What service or goods do each provide?*
- *How many people do each of the organisations employ?*
- *What relevant qualifications and experience do employees have?*
- *What is the demand for retrofit in the local area?*
 - *Currently*
 - *Projected*
- *Does the supply chain meet demand now and have the potential to in the future?*

Skills and training

- *What training opportunities are available? At:*
 - *Schools*
 - *Colleges*
 - *Universities*
 - *Apprenticeships*
 - *Charities / third sector organisations*

- *What professional membership bodies are proactive in the region, e.g. FMB, CIOB, RIBA, CIAT, etc.?*

How does the training available compare to what is required to meet demand?

Also engage:

- *local chambers of commerce*
- *Talent Retention Scheme*
- *Opportunities for toolbox talks - Training by builders for builders*

Keep records of retrofit / upgrade schemes / projects – data should be collected and stored at an individual building level, wherever possible.

III. Defining and prioritising the audience

Local authorities should create an Action Plan³³ to develop and support local skills and the local supply chain. This could be done by setting up a task group to coordinate action and deliver solutions. The task group should include representatives from across the supply chain, including skills development, to ensure buy-in from all stakeholders, for example representatives each of these sectors:

- **Supply chain: professional services** (Retrofit coordinator, assessor, architect, engineer etc.)
- **Supply chain: suppliers** (Builders merchants, suppliers of individual components, e.g. insulation, renewables, heating and hot water appliances, etc., system suppliers, e.g. complete external wall insulation systems)
- **Supply chain: installers** (Trades, e.g. contractors and SME builders)
- **Education providers** (Schools, colleges, universities, specialist providers etc.)
- **Professional membership bodies, Chambers of commerce**

Once the task group is established, it can begin to develop and implement solutions for the local supply chain, including:

³³ National Energy Foundation, “Breaking Barriers”, http://www.nef.org.uk/themes/site_themes/agile_records/images/uploads/BreakingBarriers_SummaryReport.pdf

- Solutions to the complexity in the supply chain through
 - Education
 - One stop shop
 - Whole house approach
 - Coordination
 - Sharing best practice
 - Product development
- Solutions around installation issues through
 - Education
 - Approach
 - One stop shop
 - Collaboration
 - Coordination
 - Tools
- Solutions around government / political issues
 - Policy
 - Standards
 - Drivers
 - Innovation
 - Education
 - Influencing
 - Landlords

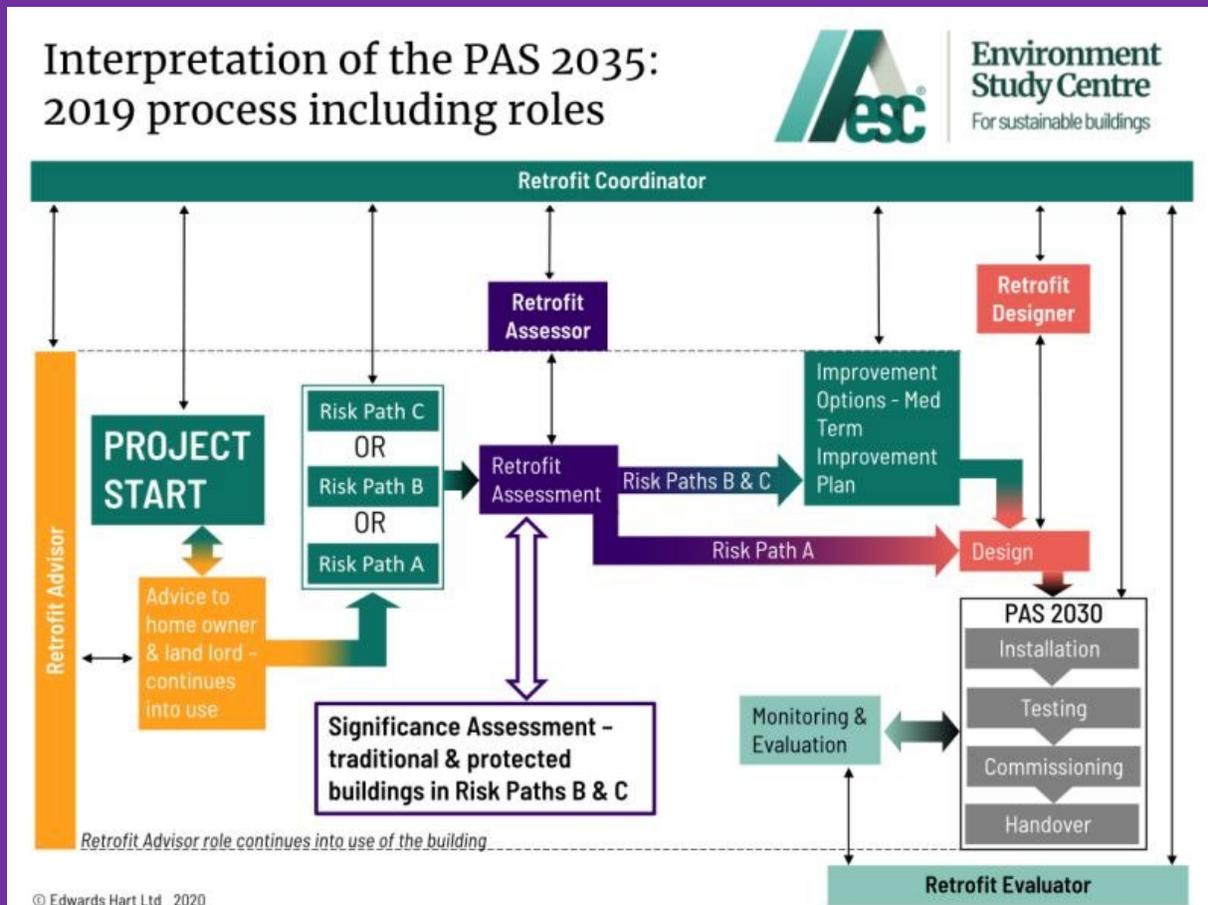
Box 10: PAS 2035: 2019

The purpose of this document is to provide the specification and guidance for the retrofit of homes, so as to minimise risks and ensure that upgrades are of a good quality and appropriate for the type of building, by following a standardised process.

Advocating the adoption of following this guidance and specification for the upgrading of all homes is a key role for local/combined authorities.

There are five key stages to upgrading homes following PAS 2035: 2019, which are all overseen by a Retrofit Coordinator.

1. Advice
2. Assessment
3. Design
4. Installation (PAS 2030: 2019)
5. Evaluation



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IV. Technical issues to be aware of

There are some critical issues pertinent to the skills and supply chain for upgrading homes that local/combined authorities need to be aware of, and can thus influence through their role.

Traditional buildings

Generally, buildings constructed before 1919 consisting of solid brick or stone external walls, or timber frame with any infill, are classified as traditional.

These buildings need a different approach to being upgraded. They need compatible materials and methods to be used, which will not have a detrimental impact on the building and consequently the occupants.

For example, solid walls readily allow the movement of moisture through evaporation, and this needs to be maintained if an insulation layer is added to improve its thermal performance. Plastic based insulations and waterproofing layers do not allow the movement of moisture. Therefore, the use of these materials could cause moisture to get trapped within the structure and damage the integrity of the wall, as well as lead to damp and mould developing on the internal surface, which is bad for the health of occupants.

Recognising the significance of traditional buildings and the need for a different approach to their upgrade is a key role for local/combined authorities.

Repair and maintenance

Before any upgrades are undertaken to a building, it needs to be in a good state of repair and thus have any maintenance works completed.

For example, there is no point in putting insulation in the roof if there is a hole letting water in. The insulation will just get wet and it will not perform the job as expected.

Furthermore, once upgrades are completed, maintenance must be kept up. Not only can poor maintenance lead to upgrades not performing, this can be a condition of warranties or guarantees issued by some solution providers, such as wall insulation.

Ventilation

The provision of new or additional ventilation is critical when upgrading the fabric of buildings, particularly old and leaky homes.

V. Linking up with the one-stop-shop model

Just as the householder needs to be led through a smooth 'journey' from awareness, consideration, acquisition, delivery and follow-up, so the supply chain needs its own journey to transition from where they are now.

Contractors need to be made aware of the opportunities in the market, engaged, supported in upskilling and monitored for quality and service. Figure 7 below outlines the steps in this process:



Figure 7: The supplier journey (Credit: Otley Energy)

The Retrofit Playbook

Part 6 – How local authorities can engage Registered Social Landlords on retrofit

Section Contents

- I. Key actions for local and combined authorities
- II. Engagement
 - a. Landlords
 - b. Tenants
- III. Finance
- IV. Skills and supply chain
- V. Making a plan
- VI. Review of Portfolio and Investment options
- VII. Procurement and Delivery
- VIII. Post-occupancy evaluation

I. Key actions for local and combined authorities

- Involve and work with RSLs in the area as part of retrofit strategy development, and on skills, finance and engagement
- Set up a forum for RSLs to work collaboratively - a space to share learnings and challenges, and where tradespeople, experts and fund providers could present and engage
- Explore sourcing finance for RSLs at low/LA borrowing rates
- Work on joint bids for grant or loan funding to improve the business case for RSLs to undertake retrofit
- Set up 'buying groups' so RSLs can procure services and materials.
- Employ an in-house specialist for coordinating and overseeing retrofit who could supervise work on site, ensure quality and that the building performs as designed. This person could be charged out to RSLs. They could also help scrutinise tender bids, help identify good financial advisors and host the RSL forum.

II. Engagement

Landlords

The motivations for the Registered Social Landlords (RSL) market segment include:

1. Reducing fuel poverty, for both;
 - a. Resident well-being and good health, and
 - b. so that residents can afford to pay their rent and are less likely to leave, reducing void rates and all the issues associated with that. There is a proven direct correlation between EPC band, rent arrears and void days³⁴
2. Good maintenance of their housing stock
3. Compliance with regulation
4. The social mission of RSLs

Registered Social Landlords are likely to have homes outside of the Local Authority area too and will need to make a retrofit plan for this wider portfolio.

RSLs can be a powerful delivery partner. To engage with and support this group, Local Authorities could:

- Involve and work with RSLs in their area as part of strategy development, and on skills, finance and engagement.

³⁴ Sustainable Homes, "Touching The voids", <https://www.rockwool.co.uk/learning/advice/touching-the-voids/>

- Set up a forum for RSLs to work collaboratively - a space to talk about retrofit and share learnings and challenges - and put forward relevant people (tradespeople, experts, fund providers) to present to that forum.

Tenants

The registered social landlord will have the primary responsibility to engage with tenants to get the work carried out.

Tenants' motivations and barriers will vary and can be drawn from the common barriers and motivations for all residents and the differing psychological types as set out in Part 3.

However, in addition, there will be issues around choice and control, and this needs to be handled sensitively through a well-considered tenant engagement process.

III. Finance

A key barrier (as per recent NHF research) for RSLs is access to finance.³⁵ RSLs have a maintenance and repair budget, but this is not usually enough for deep retrofit.

The cost range is usually between £15,000 to £70,000 to retrofit a property depending on how challenging the property is and how deep the retrofit is. For example, a deep retrofit using the Energiesprong approach with a heat centre is only really viable for a cluster of neighbouring properties. Even if the budget is increased and costs can be brought down, the funds available from the maintenance and repair budget will struggle to cover the high upfront cost of deep retrofit.

Potential solutions for Local Authorities include:

- Low-interest finance or loans. Could Local Authorities explore lending RSLs money at LA borrowing rates?
- Carbon offsets. Local Authorities could establish a zero carbon offset scheme to help fund retrofit, working with RSLs to become the recipients.
- Hosting an RSL forum. An RSL forum hosted by the Local Authority could be used to joint bid for grant funding. Any grants or loans would help improve the business case for RSLs to undertake retrofit. It could also be used to set up buying groups so RSLs can procure services and materials, alongside a knowledge-transfer forum.

³⁵NHF, "New NHF research highlights barriers to retrofitting homes", <https://www.housing.org.uk/resources/barriers-retrofitting-homes/>

IV. Skills and supply chain

As set out in Part 5 on skills and the supply chain, in common with householders, RSLs need to have confidence in the supply chain. They could also develop the skills within their organisation. RSLs need:

- reassurance of technical capabilities (i.e. accredited suppliers)
- a procurement framework of people who are able to undertake retrofit
- RSL knowledge-transfer forums

Local Authorities can play an important role to help to connect RSLs with the skills supply chain and upskill RSLs themselves

V. Making a plan

This is significant cost undertaking for RSLs as it will be a zero-carbon assessment for their whole portfolio. RSLs could undertake desk-based analysis working with a partner. For example Parity Projects and its Portfolio tool, supplemented by additional data collection as required to facilitate delivery.

This zero carbon assessment would include a basic specification for the analysis; how much it will cost, and 5-10 suppliers that can carry out the work.

An RSL forum could be used to share and compare results of this portfolio scoping exercise, showing the scale of the challenge, indicative cost, and areas for savings. Some RSLs will be able to make a plan and do the assessment themselves.

VI. Review of Portfolio and Investment options

Next a detailed assessment is needed using multiple factors like fuel poverty, maintenance cycle etc. to determine which part of the RSL portfolio should be retrofitted first. For example, this could be those areas where fuel poverty is highest. Then a feasibility study is needed for each housing estate. This is quite a major process to create an estate plan for one neighbourhood.

This is already a major strand of RSLs' work generally, and increasingly retrofit and sustainability goals are incorporated into this review. It can be at a typology level (e.g. archetype of property) or neighbourhood level.

For example, this could be those areas where fuel poverty is highest. Then a feasibility study is needed for each housing estate. This is quite a major process to create an estate plan for one neighbourhood.

VII. Procurement and Delivery

The RSL board would need to send out a tender and go to market next, with a specification written based on the feasibility study. There is a problem as there is a lack of retrofit contractors – and there is especially a lack of contractors who do the whole retrofit from start-to-finish. There is a need for medium -sized companies who can do this across whole estates.

Local Authorities could have in-house specialist for retrofit who could supervise work on site. This person could be charged out to RSLs. Someone who knows what quality should look like and ensure the building performs as designed. They could also help scrutinise tender bids, identify good financial advisors and host the RSL forum.

Within the RSL journey we also need to consider tenant journey for retrofit works.

VIII. Post-occupancy evaluation

RSLs have a particular interest in the success of retrofit projects because, as set out at the start of this section, they want to increase social value, reduce fuel poverty and enhance resident well-being. As they are generally long-term asset owners, there are also solid commercial reasons for the monitoring and evaluation of projects, such as reducing rent arrears and void rates, ensuring good maintenance of their housing stock and compliance with regulation.

Post Occupancy Evaluation (PoE) is a valuable tool to ensure that the work is being carried out to the correct standard, and that occupant behaviour is securing the benefits of the improvements made. For example, low temperature heating systems may take longer for spaces to reach the desired comfort levels and so heating patterns need to be adjusted accordingly.

One example of an appropriate methodology would be the Building User Survey (BUS) methodology which investigates occupant satisfaction levels alongside technical building energy performance.

To help prevent misunderstandings with tenants about the use of newly retro-fitted buildings, a "soft landings" strategy approach, akin to the BSRIA Soft Landing framework could be adopted.³⁶

Overall, post occupancy evaluation is a valuable learning tool for housing associations to continually improve their retrofit programmes; and ultimately ensure that funds are invested in the most effective measures to achieve the energy use reductions and associated tenant well-being outcomes. HAs are also well-placed to carry out post occupancy evaluation, as they often have long-standing relationships and established methods of surveying already.

³⁶ BSIRA, "Soft landings", <https://www.bsria.com/uk/consultancy/project-improvement/soft-landings/>

Case Studies



Case studies & interactive policy mapping

UKGBC have produced an interactive map displaying case studies of local authority best practice, including policies, relevant initiatives and programmes. The map can be accessed here: <https://www.ukgbc.org/interactive-policy-map>.

This is a live resource open for local authorities to submit information their own policies or initiatives. In addition, key examples will be included through the text of the playbook, with an accompanying explanatory annex.

To submit a case study, please complete the following [form](#).

On the national level, we are also aware of the retrofit policies and initiatives put in place by the Governments of Scotland, Wales and Northern Ireland.

The following specific initiatives are currently featured in the playbook as 'pull-out' examples, with more details to be included in the explanatory annex in the full version:

- London - 'Solar Together'
- Leeds - Otley Energy
- Bristol - 'City leap prospectus'
- Warrington - Community municipal investments & direct investment
- Greater Manchester - City Strategy & mission-based approach
- Greater London Authority - Building passports
- Barnsley - Joint ventures
- Nottingham - Partnerships
- Leeds - City Strategy & neighbourhood renewal
- Energiesprong

Appendices

I. Other relevant initiatives

The Accelerator Cities programme is working to build a broad coalition of stakeholders working in this space. These provide important frameworks to ensure that city strategies are effective and developed in accordance with emerging best practice.

Relevant initiatives	
<p>UKGBC Accelerator Cities: Developing a play book for the role of local authorities in developing city-wide strategies for net-zero home upgrades. https://www.ukgbc.org/ukgbc-work/accelerator-cities/</p>	<p>Green Finance Institute: Coalition of Energy Efficient Buildings: Developing a range of funding products to address a broad range of financial barriers across all tenure types and recognising the importance of quality assurance and confidence. https://www.greenfinanceinstitute.co.uk/areas-of-work/ceeb/</p>
<p>UK100: Financing Local Energy: Addressing the local authority resource and development finance gap between available investment and investment ready projects. https://www.uk100.org/</p>	<p>Just Transition: Banking a just transition: Developing investment principles for the finance community to ensure projects driving the transition to a net-zero economy are inclusive in nature. A key recommendation to the finance community is to partner with local authorities. https://www.lse.ac.uk/granthaminstitute/banking-just-transition/</p>
<p>Place-Based Climate Action Network: Working with cities and communities to translate climate policies into action on the ground. https://pcancities.org.uk/</p>	<p>Energy Cities: A network of European Cities developing locally driven approaches to the energy transition including a recent report on the role of local authorities in developing ‘one-stop-shop models’ (Part 2). https://energy-cities.eu/</p>
<p>LSBU CEREB Framework A programme theory which draws lessons from energy efficiency schemes around the world. It has distilled the best practice elements of each programme into five pillars for successful retrofit market transformation. The Framework describes how programmes can allocate support and resources in order to build the local supply chain’s capacity to deliver whole house retrofit at scale. https://www.youtube.com/watch?v=5D6scgbgpgA</p>	

Principles developed by the Just Transition specific to housing, re-presented here, that start to provide context for the development of business cases for regional priorities:

Just Transition: Principles for the housing sector

<http://www.lse.ac.uk/granthaminstitute/publication/financing-a-just-transition-to-net-zero-emissions-in-the-uk-housing-sector/>

- Ensuring that the costs of decarbonisation are shared fairly across different household groups.
- Focusing efforts so that the needs of vulnerable consumers are prioritised – particularly households facing fuel poverty.
- Maintaining access to finance for households whose properties have poor energy and environmental performance and commit to making net-zero investments.
- Taking care that efforts to green the building stock do not have unintended negative consequences for consumers (such as reduced access to capital).
- Building an effective supply chain that provides decent work for the broad range of jobs and small businesses needed to deliver decarbonisation.
- Finding innovative ways of involving communities in the design of net-zero strategies for housing, particularly at the local level.

II. Understanding the tools and standards available to help meet targets

Standards

These provide guidance to support the development and delivery of upgrades to homes. They can help with achieving higher standards of upgrade works, ultimately leading to greater residential satisfaction, as well as the co-benefits from warmer, healthier, and more comfortable homes. Here are some examples of the key standards that apply to upgrading homes:

Building regulations: Part L1&2B	This sets out the minimum requirements to be achieved when undertaking works to existing dwellings. The requirement to comply with building regulations is triggered when certain building works are undertaken.
PAS 2035: 2019	This is a Publicly Available Standard providing guidance and specification for the retrofit of existing dwellings.
PAS 2030	PAS 2030 is the standard all Green Deal Installers and all ECO installers must be compliant with. It addresses areas including installation controls, equipment, inspections, handover and correction action procedures.
EnerPHit	EnerPHit, (Quality-Approved Energy Retrofit with Passive House Components Certificate), is the Passivhaus standard for existing buildings.
Energiesprong	Energiesprong is a Dutch social-housing initiative now launched in the UK, that relies on industrial prefabrication and the use of renewable technologies to meet a NetZero (zero energy) standard. A key aim is to significantly reduce installation times, and that the combined savings from energy bills and maintenance finance the cost of the work.
TrustMark	TrustMark is the Government Endorsed Quality Scheme covering work a consumer chooses to have carried out in or around their home.

Tools

These exist to support the realisation of the standards. Some are linked to building performance legislation, others are specific to a particular standard. Here are some examples of the tools that can be used to support the upgrading of homes:

SAP / RdSAP	The Standard Assessment Procedure (SAP) is the methodology used by the Government to assess and
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	<p>compare the energy and environmental performance of dwellings. The SAP methodology is based on the BRE Domestic Energy Model (BREDEM), which provides a framework for calculating the energy consumption of dwellings. Reduced Data SAP (RDSAP) was introduced in 2005 as a lower cost method of assessing the energy performance of existing dwellings.</p>
PHPP	<p>The Passive House Planning Package (PHPP) contains everything necessary for designing a properly functioning Passive House. The PHPP prepares an energy balance and calculates the annual energy demand of the building based on the user input relating to the building's characteristics. PHPP forms the basis for quality assurance and certification of a building as a Passive House or an EnerPHit retrofit.</p>

III. Further resources

Climate Change Behaviours - Segmentation Study Professor Iain Black, University of Stirling, and Dr. Danielle Eiseman, The Cornell Institute for Climate Smart Solutions June, 2019

<https://www.climateexchange.org.uk/media/3664/climate-change-behaviours-segmentation-study.pdf>

Defra – 2008 - A framework for proenvironmental behaviours

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/69277/pb13574-behaviours-report-080110.pdf

Market Segmentation and Energy Efficiency Program Design – 2008 – US study

https://www.energy.gov/sites/prod/files/2014/01/f6/market_seg.pdf

Using a consumer-segmentation approach to make energy-efficiency gains in the residential market – 2013 – McKinsey – US study

https://www.mckinsey.com/~media/McKinsey/dotcom/client_service/EPNG/PDFs/Using_a_consumer-segmentation_approach_to_make_energy-efficiency_gains_in_the_residential_market

Engaging the New Energy Consumer Accenture perspective—operational imperatives for energy efficiency – Accenture -

https://www.accenture.com/~media/accenture/conversion-assets/dotcom/documents/global/pdf/industries_9/accenture-utilities-engaging-consumers-acn-perspective.pdf

Understanding Net Zero: A Consumer Perspective – 2020 – Energy Systems Catapult

<https://es.catapult.org.uk/reports/net-zero-a-consumer-perspective/>

Field Trial Learnings – Insight Report – 2019 - Energy Systems Catapult

<https://es.catapult.org.uk/reports/ssh2-field-trial-learnings-insight-report/>

The C40 Cities Climate Action framework is founded on well-established and common-sense change management principles and therefore provides a useful and relevant structure to understanding the development of a city-wide strategy.

https://cdn.locomotive.works/sites/5ab410c8a2f42204838f797e/pages/5ae2f92374c4837e195d0e00/files/20200324_C40_Climate_Action_Planning_Framework.pdf?1591007745