

Tooling up the Green Homes Industry

Financing the Retrofit Supply Chain



About this briefing

This paper is the final output of a series of roundtables, co-convened by the Green Finance Institute and Bankers for Net Zero. The roundtables brought together leaders from finance, industry, civil society and public sector to explore how best to accelerate the deployment and scale-up of green home technologies across the UK. Our particular focus was on identifying how public and private finance can support UK manufacturers, in particular SMEs, to pivot their production lines towards energy efficient and zero-carbon heat products.

The Coalition for the Energy Efficiency of Buildings was established in 2019 by the Green Finance Institute, with support from E3G, to catalyse new markets for financing the decarbonisation of buildings, promote the enabling conditions for market growth, and deliver a scalable model for stimulating financial innovation, both at home and internationally. The Coalition brings together over 350 members representing all sectors involved in the built environment – from finance and business, to academia, civil society and the public sector – and is designed to identify the barriers to investment in net-zero homes, and actively develop the financial solutions and data tools needed to unlock these barriers and support widescale investment into greening the building stock.

Bankers for Net Zero is a collaborative initiative bringing together leaders from the UK banking sector, along with representatives from business and government, who share a commitment to accelerating the UK's transition to net zero carbon emissions. The initiative was established in 2020 to develop ambitious but achievable policy recommendations and pledges to action ahead of COP26. The banks participating in the initiative are Barclays, ClearBank, Ecology Building Society, Handelsbanken, Tide and Triodos. Delivery of the initiative's programme of work is led by the All Party Parliamentary Group on Fair Business Banking, Volans and Re:Pattern.



Introduction

All told, the built environment is responsible for approximately 40% of the UK's carbon footprint.¹ Housing alone accounts for 23%.² For the UK to achieve its goal of reaching net zero emissions no later than 2050, an estimated 29 million existing homes will need to be retrofitted to reduce the emissions generated to heat and power those homes. That's a million homes a year – every year – to 2050, assuming each home only needs to be retrofitted once (which is a pretty heroic assumption based on past performance).

Achieving the pace and scale of action required in this area is not an incremental challenge: in terms of orders of magnitude, we are talking about a 10X – not a 10% – scale-up of the retrofit industry. Much of the focus to date has (rightly) been on how to scale demand for retrofits.³ But here we focus on what it will take for the retrofit supply chain to scale at the pace required to produce the breadth and volume of low carbon technologies needed to decarbonise our homes.

Of course, the two sides of the market cannot be disentangled: the biggest barrier faced by the businesses in the retrofit supply chain – manufacturers, installers and lead contractors – is uncertain demand. But it is by no means the only barrier. This paper sets out to enhance the effectiveness of policies designed to stimulate demand, and encourage innovation by the finance sector, by showing how public and private finance can support the massive scale-up of capacity in the retrofit supply chain that will be required for such policies to succeed.

Amongst the multiple challenges that manufacturers experience in the pivot towards low carbon products, a significant barrier is the high capital expenditure to repurpose existing (or establish new) manufacturing lines. The investment challenge is particularly acute for SME manufacturers. Capacity issues are not limited to manufacturers. Installers and lead contractors also face challenges in scaling and skilling up to deliver retrofits at the quantity and quality required to get to net zero by 2050.



1. <https://www.ukgbc.org/climate-change>

2. <https://www.theccc.org.uk/wp-content/uploads/2020/12/Sector-summary-Buildings.pdf>

3. Both the Green Finance Institute and Bankers for Net Zero have addressed the demand side of the equation in previous publications. See especially <https://www.greenfinanceinstitute.co.uk/wp-content/uploads/2020/06/Financing-energy-efficient-buildings-the-path-to-retrofit-at-scale.pdf> and <https://volans.com/wp-content/uploads/2021/03/RetrofitRevolution.pdf>

The retrofit supply chain today

There are three main parts to the retrofit supply chain:

1. Manufacturers of Green Home Technologies
2. Installers
3. Lead Contractors

While each of these groups faces their own unique challenges, there are many characteristics and challenges that are common to the retrofit supply chain as a whole. Specifically:

- The majority are SMEs: there are a few larger companies in the solar PV sector and wider energy efficiency sector, but most of the retrofit market today is addressed by small firms.
- The UK retrofit industry is still relatively fragmented compared to some European countries with few retrofit managers able to create simple end-to-end propositions for clients or integrate a range of new innovations or techniques.
- Fragmentation makes it difficult for consumers to know who to engage with: there aren't many recognised brand names in the retrofit industry today.
- Artisanal approaches remain the norm, meaning the industry is labour intensive and costs are relatively high compared to other more industrialised sectors.
- The dominance of SMEs also means the supply chain is relatively flexible and responsive to demand, but also vulnerable to unexpected adverse shifts in demand (as happened after the scrapping of the Green Homes Grant voucher scheme).
- SME suppliers typically have limited capacity to make significant long-term investments (e.g., in skills development or new manufacturing technologies).
- Even if they had the capacity to invest, many would hold back due to low levels of confidence about their sales pipeline (partly a result of previous policy reversals).
- In terms of financial profile, firms in the retrofit supply chain typically have a low-risk appetite, limited debt capacity and relatively weak balance sheets.



What's needed to help the sector scale up?

For manufacturers, the primary challenge is how to scale up and/or pivot production techniques and processes. For installers and lead contractors, skills and training are an equally, if not more significant challenge.

Estimates of the scale of CAPEX investment required in the sector are difficult to make due to uncertainties about future demand and future costs for specific technologies, but as a proxy for the overall scale of investment required, the Climate Change Committee's Sixth Carbon Budget, published in December 2020, suggests that investment in decarbonising homes will need to rise to a peak of £14 billion per year by 2028 and continue at a scale greater than £6 billion per year until 2048 (see figure 1). In order to scale up, businesses in the retrofit supply chain will require access to many different forms of finance, including debt finance, equity finance, project finance and asset finance.

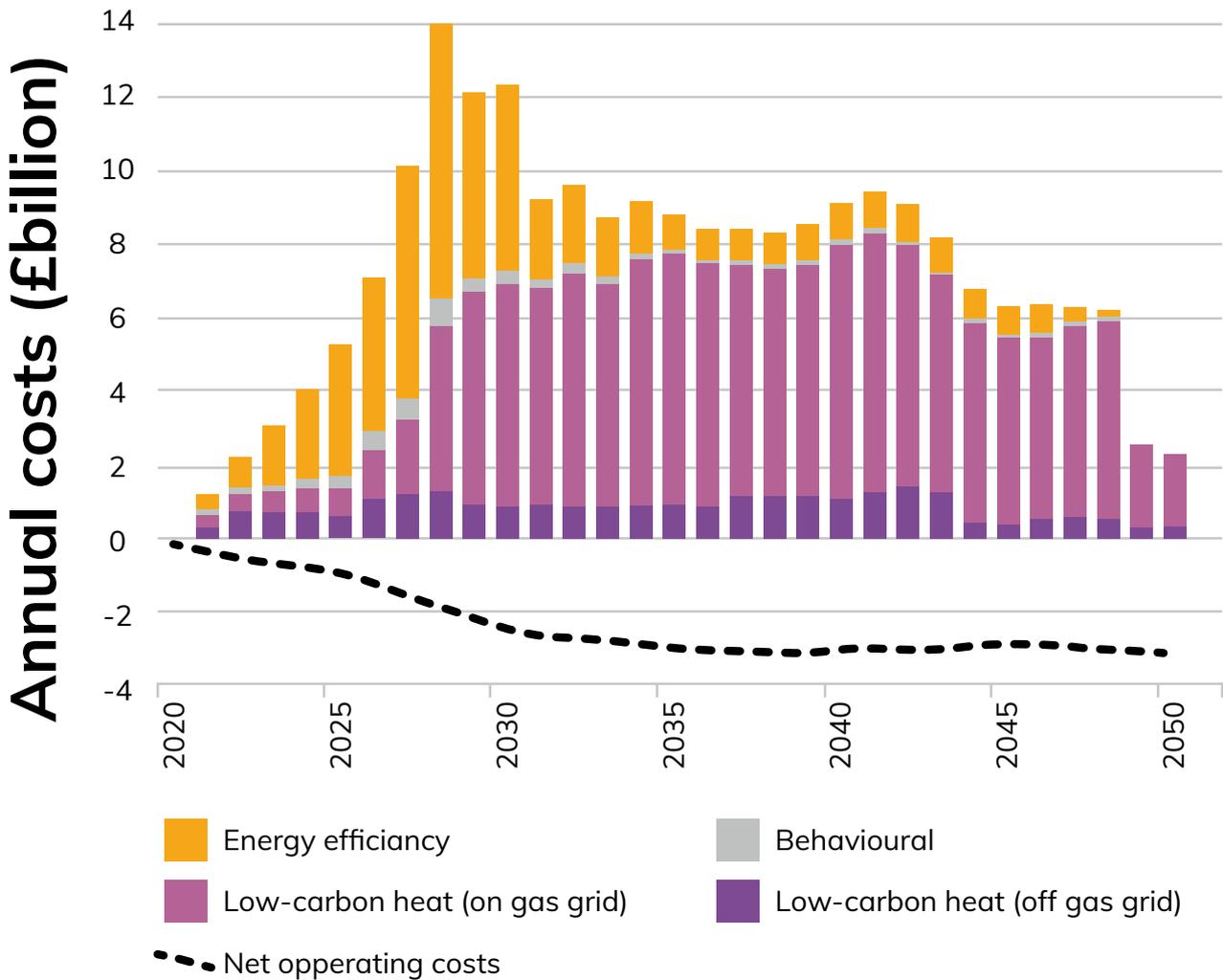


Figure 1: Household investment and operating costs for existing homes, Balanced Net Zero Pathway (Source: Climate Change Committee, Sixth Carbon Budget, December 2020)

As for skills and employment, the CCC projects 200,000+ additional skilled workers being required by the late 2020s across the retrofit supply chain to deliver a net zero trajectory. The number of skilled workers required remains above 200,000 all the way to 2050 (see figure 2).

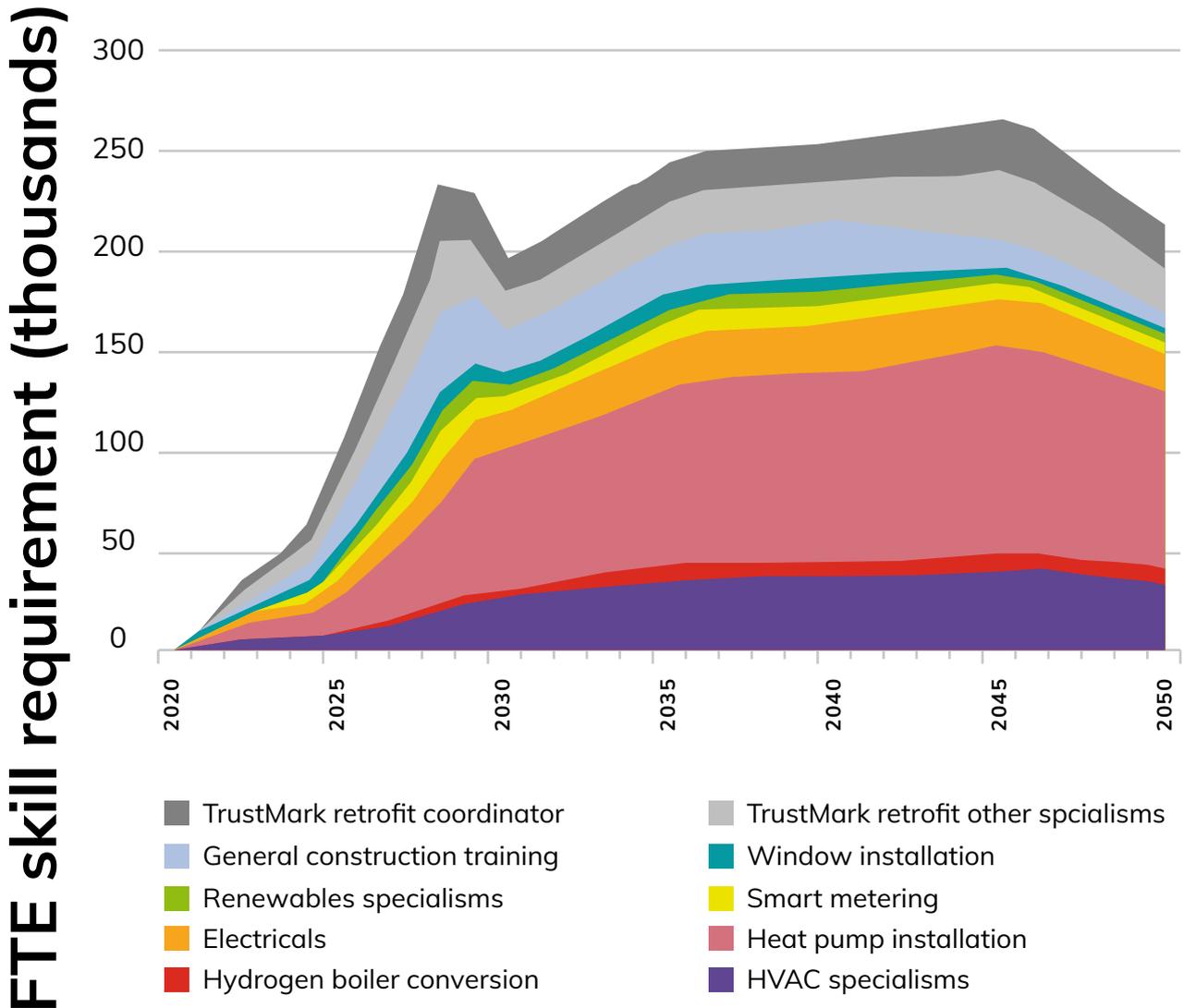


Figure 2: Additional FTE requirements for each qualification level and specialist skill (Source: Climate Change Committee, Sixth Carbon Budget, December 2020)

Barriers

What's holding back the scale of investment in retrofit supply chain capacity that is needed to meet the UK's climate goals?

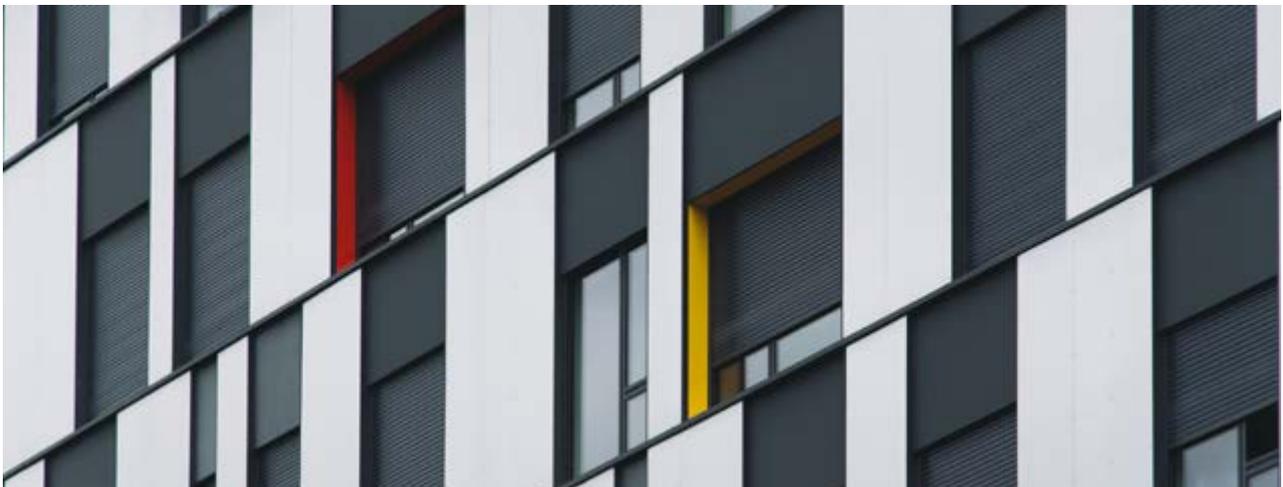
Participants in the roundtable discussions convened by Bankers for Net Zero and the Green Finance Institute highlighted a number of barriers to investment, the most significant of which are detailed below – categorised using the PESTEL (Political, Economic, Social, Technological, Environmental and Legal) framework:

Political barriers

- The lack of long-term clarity and certainty about the policy and regulatory strategy for decarbonising homes.
- Limited policy mandating for interventions such as Building Renovation Passports, which could play a significant role in building knowledge, confidence and trust, which would in turn spur the market to grow faster.
- The lack of trust in policy in this area, following previous policy failures and/or reversals, most recently with the Green Homes Grant, which was withdrawn in March 2021.

Economic barriers

- The risk profile of some green home technologies, e.g., heat pumps, is still relatively high (or at least perceived to be, due to limited information and awareness).
- The cost of getting a high-quality survey done can be high, which can deter property owners and therefore limits the pace of market growth.
- Payback periods for some aspects of a home or building retrofit, based on current technology and installation costs, are longer than most households or businesses are willing to take on.
- Parts of the retrofit market are stuck in a high-cost trap: costs will inevitably fall as new technologies are deployed at greater scale but that creates a disincentive for businesses and households to be first movers, which in turn slows down the rate at which costs fall.



4. See <https://www.greenfinanceinstitute.co.uk/building-renovation-passports>

- Green home technologies are not seen as aspirational by consumers in the way that some other green products (e.g., electric vehicles) increasingly are. Nor is retrofitting seen as an aspirational sector to work in.
- Awareness of what can be done to improve the energy and carbon footprint of buildings is generally low amongst consumers. Specific concerns about the performance or side-effects (e.g., noise) of certain green home technologies are prevalent – as is the perception that renovation work will be disruptive.
- The growth of the private rented sector in recent decades creates a hurdle since renters and landlords tend to have a shorter-term outlook when it comes to property improvements than owner-occupiers.
- The more regularly people move house – or, perhaps more importantly, think about moving house – the less likely they are to invest in greening their properties today, or, in some cases, the more likely they are to take a “minimum viable” approach to retrofitting in order to meet a particular threshold (e.g., EPC rating) that will affect property value at the point of sale.

Technological barriers

- The lack of availability of accurate data on current building performance and the performance improvement(s) that can be achieved by installing specific solutions makes it hard for consumers, contractors and finance providers to assess the value of potential investments.
- A desire to reduce costs can result in a race to the bottom in terms of quality, which is a risk both in terms of the industry’s reputation and alignment with net zero goals.
- Installers and contractors are generally more familiar with old, polluting technologies (e.g., gas boilers) than newer technologies (e.g., heat pumps), meaning that they often default to recommending the technologies they are most familiar with. Consumers who do want to install a newer green home technology may have a harder time finding someone with the necessary training and experience to do the work.

Environmental barriers

- Existing environmental ratings (e.g., Energy Performance Certificates) do not capture operational information on the environmental impact in a form that is easy to communicate or understand.

Legal barriers

- Insurance companies struggle to insure some retrofit solutions and materials (e.g., cladding), limiting the options available to retrofit coordinators and increasing premiums.
- Some potential solutions designed to overcome barriers to adoption for green home technologies (e.g., Property Assessed Clean Energy financing, which involves attaching finance to a property rather than a property owner, thereby facilitating investments with longer payback periods) require new types of agreements involving local authorities, housing associations, lead contractors and finance providers. These require a level of coordination and collaboration that is not yet common in the sector.

Solutions

What will it take to overcome the barriers to scale highlighted above?

In this section, we cover two types of solutions – financial and non-financial – focusing on those ranked as highest priority by roundtable participants. We also set out key recommendations for creating an enabling policy and regulatory environment, though this aspect is covered in more detail elsewhere.

Highest-potential financial solutions

1. Increase access to sustainability-linked loans for SMEs

Sustainability-linked lending can play a significant role in channelling finance towards firms in the retrofit supply chain to support more sustainable business activities, but, today, sustainability-linked loans (SLLs) are generally highly bespoke products only available to larger companies. With increased standardisation, however, SLLs could be extended to the SME market, becoming a key instrument to finance the capital expenditures required to repurpose existing (or establish new) manufacturing capacity for businesses in the retrofit supply chain.

2. Create dedicated “Green” or “Transition” SME funds

The SME-dominated retrofit supply chain largely falls between the cracks of existing investment funds and approaches: too late-stage and insufficiently high-growth for venture capital; too early-stage and high-risk for institutional investors. Yet, given the size of the potential market to 2050 (based on an assumed net zero pathway), the retrofit supply chain is eminently investible if the right combination of different pools of finance – public and private; debt and equity; venture and institutional – can be pulled together.

3. Add green criteria to existing public finance schemes and use guarantees to “crowd in” private capital

Both the British Business Bank (BBB) and the recently launched UK Infrastructure Bank (UKIB) have a vital role to play. At the BBB, existing schemes such as the Enterprise Finance Guarantee (EFG) scheme and the Recovery Loan Scheme (RLS) can, and should, be targeted towards firms that provide solutions that are needed for the UK’s net zero transition. Meanwhile, the UKIB can actively seek to replicate international best practice for crowding in finance for SMEs, particularly the guarantee schemes run by the European Investment Bank.

Explainer: Sustainability-Linked Loans

The sustainability-linked loan (SLL) market has grown rapidly since the first deal in 2017. The Loan Market Association’s Sustainability Linked Loan Principles define SLLs as:

“Any types of loan instruments and/or contingent facilities (such as bonding lines, guarantee lines or letters of credit) which incentivise the borrower’s achievement of ambitious, predetermined sustainability performance objectives. The borrower’s sustainability performance is measured using sustainability performance targets (SPTs), which include key performance indicators, external ratings and/or equivalent metrics...”

“Instead of determining specific uses of proceeds, sustainability linked loans look to improve the borrower’s sustainability profile by aligning loan terms to the borrower’s performance against the relevant predetermined SPTs.”

Sustainability-linked loans often align the interest rate margin with the borrower’s performance; for example, the interest rate decreases if the borrower achieves their sustainability targets, and vice versa.

Explainer: European SME guarantee scheme

The European Investment Fund’s InnovFin SME Guarantee provides guarantees and counter-guarantees on debt financing between EUR 25 000 and EUR 7.5 million, in order to improve access to loan finance for innovative small and medium-sized enterprises (SMEs) and small mid-caps. The facility has been rolled out through financial intermediaries, which are guaranteed or counter-guaranteed against a portion of their potential losses by the European Investment Fund.

5. See especially <https://volans.com/wp-content/uploads/2021/03/RetrofitRevolution.pdf>

6. <https://www.ing.com/Newsroom/News/ING-and-Philips-collaborate-on-sustainable-loan.htm>

7. British Business Bank - Enterprise Finance Guarantee: Facilitating lending to the UK’s smaller businesses

8. British Business Bank - Recovery Loan Scheme

9. https://www.eif.org/EIF_for/banks_financial_institutions/index.htm

Highest-potential non-financial solutions

1. Create advisory hubs that bring together customers, suppliers and finance providers

There is a vital need for education, advice and coordination to get the retrofit market moving. On the demand side, this is about increasing homeowners' awareness of what's possible, where to turn for trustworthy advice on the right approach for their property and how investments can be financed. On the supply side, it is about increasing businesses' confidence to invest by making the demand for retrofits more visible, while also ensuring SMEs know where they can turn for finance to help them pivot and/or scale up. Community advisory hubs should bring together both technical and financial advice to simplify the journey for potential customers. Local hubs should be integrated into a nationwide ecosystem, leveraging existing institutions such as trade bodies, Local Enterprise Partnerships, initiatives such as the SME Climate Hub¹⁰ and Zero Carbon Business Partnership,¹¹ and the BEIS-supported 'Simple Energy Advice' website.¹² Banks can play a proactive sign-posting role.

2. Create the rules and protocols to enable more accurate, real-time assessments of property performance

Data gaps are a key challenge for the retrofit market. Without accurate, real-time measurement of buildings' actual environmental performance, it is difficult for all market actors to assess risks and opportunities. The data (mostly) exists: what's missing are the rules to ensure it is presented in a standardised form and the infrastructure to ensure it is securely accessible to decision makers at the right times. Two of the Green Finance Institute's ongoing demonstration projects are actively seeking to address these challenges – by pioneering Building Renovation Passports¹³, sometimes known as Building Renovation Plans, and creating an industry-standard protocol to measure energy savings that result from a retrofit.¹⁴

3. Strengthen the ecosystem of SME accelerators and growth hubs

For many SMEs in the retrofit supply chain, access to finance is only one of the barriers they face. Accelerators and growth hubs, like the UKRI-backed Made Smarter Innovation hubs,¹⁵ or Barclays Eagle Labs,¹⁶ can ensure their needs are met in a more holistic way – connecting SMEs to the financial and non-financial resources they need to scale their businesses. A first step would be to review the existing landscape and survey SMEs on what support they really need. Banks and finance providers can play a critical role here – not least because of the complementarity between the role played by accelerators and the dedicated “green” or “transition” SME funds proposed earlier (see financial solution 2).

10. <https://businessclimatehub.org/uk>

11. <https://www.zerocarbonbusiness.uk>

12. <https://www.simpleenergyadvice.org.uk>

13. <https://www.greenfinanceinstitute.co.uk/building-renovation-passports>

14. <https://www.greenfinanceinstitute.co.uk/wp-content/uploads/2021/02/Towards-a-protocol-for-metered-energy-savings-in-UK-buildings.pdf>

15. <https://www.madesmarter.uk>

16. <https://labs.uk.barclays>

Creating an enabling policy and regulatory context

The success of these financial and non-financial solutions is fundamentally dependent on the creation of an enabling policy and regulatory environment that gives all market actors confidence to invest for the future. The government’s forthcoming Heat & Buildings Strategy must set out a long-term strategy and pathway for decarbonising the built environment that is clear and credible. Given past policy failures and reversals, which have undercut confidence on both the demand and supply side of the market for retrofits, the stakes are high: another round of piecemeal, short-term policy making risks crippling the UK retrofit industry for years. Without confidence in the long-term trajectory of the market, skills and investment will flow out of the sector, not into it.

This paper is not the place for detailed policy recommendations, but a number of key principles that should guide policy formulation surfaced in our roundtable dialogues:

1. The ability of the retrofit industry to thrive without public support depends on the costs of retrofits declining over time. The most effective way for the Government to drive costs down is to **front-load market support** – using the funds already committed to the decarbonisation of social housing and public buildings to pump prime the market and increase demand for retrofits in the near term.
2. The other factor critical to the development of a self-sustaining retrofit market, besides technology and installation costs, is the impact retrofits have on property values. Here, a **clear regulatory pathway for energy performance standards** for all building types is crucial. The Government should set out how standards will ratchet up over time and how non-compliance will be penalised, so that these can start being factored into valuations and financial decisions today. For example, introducing an energy-adjusted Stamp Duty Land Tax (see box) would be one way to ensure property valuations better reflect energy performance.
3. Finally, as part of its broader Net Zero Strategy, the Government should set out an overarching strategy for applying an **adequate and consistent carbon price** to every tonne of CO2 emitted in the UK, as recommended by the Zero Carbon Commission.¹⁸ This is critical to ensure a level playing field for new green home technologies, particularly the low carbon heating solutions that are needed to displace gas boilers over the years ahead.

Explainer: Minimum Energy Efficiency Standards (MEES)

The Domestic Minimum Energy Efficiency Standards (MEES) regulations came into force on 1st April 2018 and set a minimum energy efficiency level for domestic private rented properties in England and Wales. The regulations are designed to encourage landlords and property owners to improve the energy efficiency of their properties to a minimum Energy Performance Certificate Rating of E.

Following a similar consultation by the Scottish Government,¹⁷ HM Government has committed to consult on the introduction of Minimum Energy Efficiency Standards for owner-occupied homes in 2021.

Explainer: Energy-adjusted Stamp Duty Land Tax (SDLT)

An energy-adjusted Stamp Duty Land Tax (SDLT) would act as a long-term driver of consumer demand and has the potential to catalyse the market for energy efficiency improvements and heat decarbonisation. Adjusting the SDLT when a home is purchased to reflect the energy and carbon performance of the property can encourage householders to act.

The adjustment can also be designed to be revenue neutral to HM Treasury, and gradually introduced so there is enough pressure to both drive and reward action but not so much as to shock the market.¹⁹

Financial solutions	Non-financial solutions	Policy and regulatory measures
Increase access to sustainability-linked loans for SMEs	Create advisory hubs that bring together customers, suppliers and finance providers	Front-load market support – using the funds already committed to the decarbonisation of social housing and public buildings to pump prime the market
Create dedicated “Green” or “Transition” SME funds	Create the rules and protocols to enable more accurate, real-time assessments of property performance	Set out a clear regulatory pathway for energy performance standards for all building types
Add green criteria to existing public finance schemes and use guarantees to “crowd in” private capital	Strengthen the ecosystem of SME accelerators and growth hubs	Set out an overarching strategy for applying an adequate and consistent carbon price to every tonne of CO2 emitted in the UK

17. <https://www.gov.scot/publications/energy-efficient-scotland-improving-energy-efficiency-owner-occupied-homes-analysis-responses-public-consultation-exercise/pages/9>

18. <https://www.zeroc.org.uk/policy-positions>

19. <https://www.ukgbc.org/ukgbc-work/a-housing-market-catalyst-to-drive-carbon-emission-reductions>

Conclusion

Greening the built environment is one of the biggest economic, social and environmental opportunities for the UK over the next three decades. It will create jobs, stimulate economic growth, reduce fuel poverty, improve health and wellbeing – not to mention helping to eliminate the 40% of UK greenhouse gas emissions that are produced by the sector. With the right support from policy, regulation and finance, the retrofit industry has the potential to be a major green industrial success story for UK plc.

Both public and private finance have an important role to play in helping support the rapid growth of the retrofit supply chain that's needed. For the financial sector, this represents a major innovation opportunity, with new products and services needed to support what should become a high-growth market segment. Public financial institutions like the UK Infrastructure Bank and British Business Bank can and should play a catalytic role by leveraging their existing capacity to provide loans and, especially, guarantees to crowd private finance into the space.

Finance, however, is only one part of the equation. This paper also emphasises the critical need for advisory services to enable SMEs to pivot and scale. And – most important of all at this point in the evolution of the UK retrofit industry – a bold package of policy and regulatory measures is needed to drive demand for energy efficiency and low-carbon heating solutions across all parts of the UK built environment. This is not about eye-catching short-term commitments, but rather about putting in place credible long-term regulatory and policy frameworks that can provide confidence to the retrofit supply chain that demand growth is going to be consistent and resilient over the long term.

Ultimately, all of these priorities are interdependent. To achieve the necessary “10X not 10%” improvements in both the depth of individual property retrofits and the pace at which retrofits are rolled out across the entire UK building stock, we must harness the combinatorial effects between policy (to drive demand), finance (to enable investment) and industry (to deliver high-quality retrofits at scale).

The scale of the opportunity is clear – and so is what it will take to make it happen. We hope the suite of solutions outlined in this paper can inform action by policymakers and financial institutions to unlock a Green Homes Revolution that benefits the whole of the UK.



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