Enabling local rapid change solutions to the Climate Emergency

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Abstract

Three quarters of UK Local Authorities (LAs) have declared Climate Emergencies. Most include an ambition for carbon neutrality by 2030. Yet a lack of clarity on a national policy framework through to 2030 means that LAs now face the challenge of creating an enabling environment to respond to urgent Climate Emergency targets.

This paper reviews the implications of the LA Climate Emergency Declarations for local policy making in respect of low carbon retrofit. It will focus on evidence from a council whose dedicated project team is creating and implementing 2030 Climate response strategies, as well as built environment practitioners who have expertise to deliver retrofit services. Using documentary evidence and expert testimony, this paper will explore the gaps in creating an enabling environment/policy roadmap to 2030, the role might local government play in delivering large scale domestic retrofit, and how to align the various stakeholder groups.

The paper finds that despite the simplistic term 'retrofit', the domestic retrofit landscape is far from simple. It is not a homogenous entity, rather a complex, multi-layered and segmented eco-system. We propose reviewing this segmentation through the lens of 'first-mover' which would help clarify where efforts should be focused, and which measures could be taken to accelerate consumer engagement. The authors discover there is potential for Local Authorities to develop novel approaches to retrofit processes, by taking the role of 'middle actor', reshaping the customer journey and engaging a range of stakeholders to stimulate local economies and deliver on social and environmental goals. Open collaboration with third sector organisations can provide access to research, resources, and networks to help deploy rapid change solutions.

Introduction

In 2019 the UK Parliament declared a binding policy target of net zero greenhouse gas emissions by 2050. Also in 2019, UK Local Governments began declaring climate emergencies, many of which included targets to be carbon neutral by 2030. At the time of writing, three quarters of UK District, County, Unitary, and Metropolitan Councils have declared a climate emergency, as well as 8 Combined Authorities (City Regions) (climateemergency.uk, 2021). For the sake of narrative clarity, these different formats of UK local government will be simplified as Local Authorities (LAs) for the purposes of this paper.

Within the wider capacity building challenges presented by the climate emergency declarations at both national and local level, this paper focuses on rapid change solutions within the built environment, and specifically creating an enabling environment for retrofitting existing buildings at scale.

There is now an asymmetry in UK climate policy, with national government pursuing a net zero 2050 target and the majority of its local governments seeking more aggressive 2030 targets for much of their stock. Many national government decisions (such as the future of the gas grid) will have significant impacts on any local strategy, but these decisions will not be made quickly enough for the 2030 timeline. This creates a great challenge for LAs in creating rapid change solutions within an environment of political uncertainty. Local Governments must create strategies that are cross-sectoral and flexible so as not to preclude future policy pathways. They must also focus on creating an enabling environment so that future policies at both the national and local levels can be more effectively implemented.

Driving retrofit at scale has long been a challenge for the UK, and declarations of climate emergencies now give new urgency to the issue, as well as create new constraints given the policy uncertainty through to 2030. This paper will consider the barriers that will impact local policy responses to climate emergency declarations. In particular, it will focus on hidden barriers that are under-acknowledged and describe the missing or misaligned

policies and processes that result. It will use documentary evidence and expert testimony, including 10 semi-structured interviews with key local stakeholders to explore the following research questions:

1. What barriers exist in creating an enabling environment/policy roadmap to 2030?
2. What are the respective roles of local and central government?
3. What is needed to align other stakeholders?

It will begin with a review of the existing literature, briefly summarising the well acknowledged barriers in the retrofit space. It then describes the methods and new data underpinning this work to analyse the research questions above and new findings to help stakeholders further understand the retrofit ecosystem, and overcome misperceptions and barriers. It will close with a discussion of retrofit capacity-building in the broader context of UK climate policy, as well as recommendations for local governments in creating their climate emergency strategies through to 2030.

Literature

Retrofitting homes and buildings is widely acknowledged as among the most challenging policy and technical issues in meeting our net zero ambitions. Not least, the current rate of renovation in the UK needs to increase by around 7 times, rising to 9 times in England which is significantly behind the devolved nations in rate and scale of energy efficiency renovations (BEIS, 2019). This means that over the next 29 years, every building in the country needs to undergo a major retrofit making retrofit the most important and the most challenging part of the UK's net-zero programme for the built environment with the amount of effort, and the degree of active planning and direction required 'unprecedented in peacetime' (CITB, 2021).

The issue of retrofit is long studied in the UK, and many existing policy barriers have been very well documented. Past research has very thoroughly explored the barriers at play in driving retrofit at scale, such as technology choices, upfront cost, unclear supply chains, and skills gaps, leaving industry experts to conclude that achieving net zero requires major changes in buildings and construction practices, 'but both remain very hard to achieve' (Killip, 2020). Furthermore, 'the problem of decarbonising heating in buildings has been studied for more than 20 years, but there is still no settled consensus on strategy or choice of technology (Oreszczyn et al, 2020). There is a wide body of research with actionable policy recommendations to address many of these barriers (see e.g. Bonfield, 2016) and yet the core problems persist.

Policies thus far have largely focused on single-measure installations, and much of this low-hanging fruit has already been reached. Despite this, UK buildings still account for 17% of total UK GHG emissions, mainly the result of burning fossil fuels for heating (CCC, 2020) and these emissions are largely considered hard to treat. At the heart of this issue is the fact that the UK has spent decades of infrastructure investment to deliver low-cost natural gas, and the UK heating system (more than any EU contemporary) is almost wholly reliant on this single, high carbon, energy vector. The future of the UK gas grid is the subject of intense study and wide debate, the scope of which is outside this paper. There is currently no clear consensus, although the Committee on Climate Change (CCC) suggests that '19 million heat pumps need to be installed by 2050' (HPA, 2019) and 'the role of hydrogen as a vector for supplying heat to individual homes is … only likely to play a strategic role in providing backup for the electricity grid at multiple levels, including the very long-term energy storage that will be needed from about 2040 onwards' (Oreszczyn et al, 2020).

This lack of a clear, cohesive government policy on energy efficiency is causing retrofit to fall behind other sectors, such as transport and energy generation in terms of decarbonisation. There is a need for more detailed plans and a coherent policy framework. Further support is needed to reach net zero ahead of 2050, as many councils have committed to do. Local authorities need multi-year supportive policy and resourcing frameworks (ADEPT, 2020). No surprise, then that the debate continues to create uncertainty not just for resource allocation at the local level, but also in respect of the actions that councils should be undertaking to support skills development and wider market capacity building activities.

There is also the issue of fixing a broken retrofit eco-system. For example, the UKGBC retrofit playbook cites the systemic failure in tackling the retrofit challenge is compounded by piecemeal national policy, and cites national level issues such as an over-emphasis on 'top-down' policy, a planning system that does not adequately address retrofit, Energy Performance Certificates (EPCs) not being fit for purpose, and at local level, a lack of long-term strategy, short-term funding and annual budgets, and lack of resource (UKGBC, 2020).

Method

This paper aims to evaluate attitudinal barriers alongside systemic process issues. Attitudinal unknowns can involve factors such as long-held unconscious biases, for example stakeholder attitudes towards traditional structures and hierarchies, cultural norms or familiarity. Because these barriers are unseen, they act to override choices within a rational choice framework, making it harder for organisations to affect a move away from incumbency, even when that move is logical and fits within stated aims.

One example of this type of attitudinal bias was an energy efficiency study researching consumer barriers to early market utility switching. The researchers discovered that consumers held unspoken concerns around gas safety and worried that switching from the incumbent might incur the displeasure of the 'Gas Board' who would then refuse to help if they got called out to a gas leak. The industry had created a switch process, wholly unaware that consumers had little knowledge of the physical and organisation structures of utilities beyond their fuse own box. This barrier was addressed by explaining to consumers that switching was simply a billing mechanism, they would be using 'the same pipes and wires' and getting 'the same good service around gas safety'.

This paper also looks at practical gaps caused by poorly aligned policies, poorly designed processes and legacy issues, which might be informational, functional, or fiscal. These particular obstacles tend to be poorly acknowledged or hidden among other factors Even once attitudinal barriers have been identified, these hidden process gaps severely limit action in response, and vice versa. Understanding hidden attitudinal and process barrier is key to understanding stakeholder engagement, mapping customer journeys and designing programmes and interventions that effect systemic change (Gillich, 2018). By exploring the issue of attitudinal and process barriers in concert, we aim to seek new insights into the longstanding issue of retrofit that can support Local Government decision making in creating rapid chance solutions to the climate emergency.

This work began with a study of how to apply the CEREB Framework, a methodology for programme design to enable retrofit market transformation, to a local authority in the UK (UKGBC, 2020). The CEREB Framework is based on the study of over 50 market transformation programmes. In evaluating methodology for the design of 'optimal' domestic retrofit programmes, the frameworks identifies a set of five common pillars needed to build successful retrofit markets over time (Gillich, 2018): 1) local market understanding; 2) engaging homeowners; 3) workforce engagement; 4) financial incentives and 5) data and evaluation. This study sought to describe the first pillar of the CEREB Framework - local market understanding - for one LA by using a qualitative research approach which included a literature review and documentary analysis of the local policies surrounding the delivery of retrofit over decade leading to 2030, as well as semi-structured interviews with local stakeholders.

Market data was initially drawn from international sources comprising published peer-reviewed academic literature plus some non-peer-reviewed, so-called 'grey' reports from consultancy groups, independent think tanks, government agencies and others. The review spans evidence from almost 60 documents, primarily from the UK, with some spanning Europe, Asia and North America.

Our researchers also sought input from a breadth of retrofit and built environment commentators such as academics and market analysts, retrofit focused workshops and conferences, and education, skills and apprenticeship bodies.Preliminary data was gathered via shared learning at workshops and conferences and informal one-to-one interviews. As the research project progressed, sector specialists were approached for recommendations and directions towards broader research and relevant policy information. A selection of 10 local stakeholders was identified for semi-structured qualitative interviews. Expert testimony was sought from a 'local government staff member' in the form of a written questionnaire and their responses are used to triangulate the paper's findings (see Discussion section).

The stakeholder interview candidates were identified from the pool of employers sending students to London South Bank University under a built environment degree apprenticeship program. They represented a range of organisations, ranging from SME's with 50 employees on a single site, to 7,000 UK employees and a global presence within the built environment sector, with a building services offer. Of the 10 who agreed to take part in semi-structured interviews, seven at director level with engineering qualifications, and three were HR managers with oversight of training.

Semi-structured interviews are a suitable tool in seeking to understand unconscious and conscious attitudinal barriers as well as systemic, operational and legacy issues within a complex system such as retrofit. Interviewees were posed a short list of open framed questions to gain an understanding about the impact of the Climate Emergency on their organisation, process and service offering changes, and an understanding how their organisation approached 'up-skilling and/or up-sizing their workforce to meet the growing demands of the green economy.' A specific question was posed around attitudes to retrofit, (avoiding a prescriptive definition), with

further probing as to the meaning for that particular stakeholder and / or their business. Each interview was conducted over MS Teams and lasted for one hour. Prior to the interview starting, permission was gained from interviewees for the researcher make voice recordings and store /interrogate transcripts for the purposes of this research project.

After all interviews were complete, transcripts were loaded into NVIVO software, a qualitative analysis system, and analysed across 8 primary nodes. Nodes are themes for which the analyst records trends. The primary nodes reflected the soft interview structure. Following analysis under these primary nodes, the data was then divided into further nodes as other themes emerged (See figure 1.) A mind map of themes was created, and comments categorised to create meaning and segment differing attitudes across the cohort. This then highlighted further areas that required verification, questioning (of respondents, industry experts) or further in-depth research.

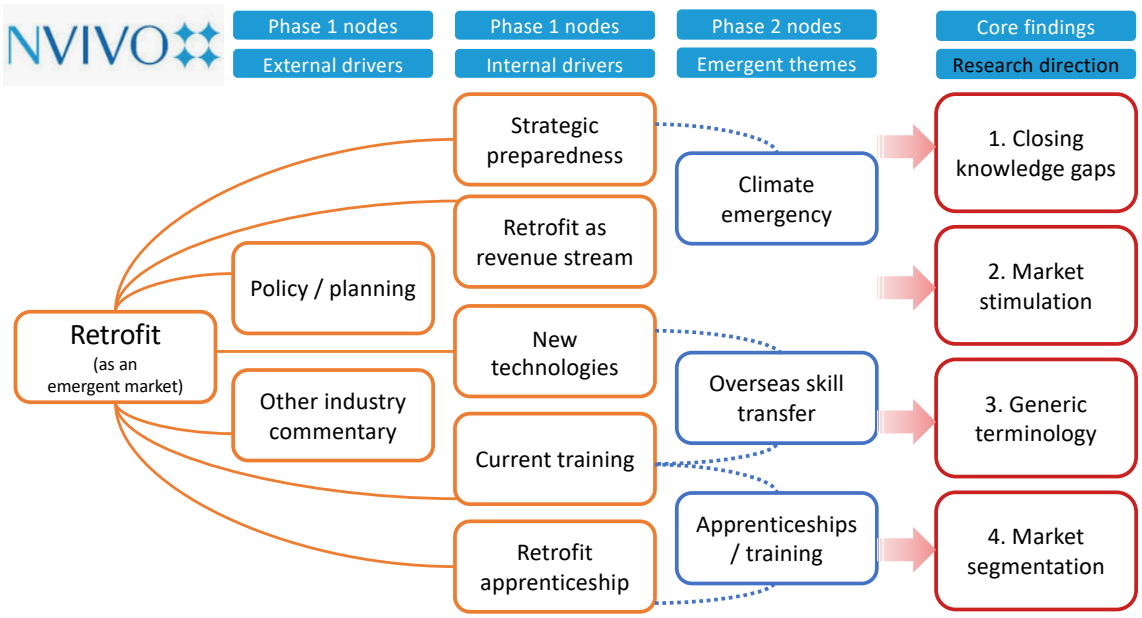

Figure 1: Shows the intitial Phase 1 (internal and external market drivers) and Phase 2 (emergent themes) which were selected as nodes in NVIVO software to conduct qualitative evaluation of stakeholder semi-structured interview transcript, with core findings that further informed the research direction.

The 4 specific core findings that informed the research direction were identified as:

1. Closing knowledge gaps: *Whilst a shift of focus as a response to the Climate Emergency is evident across the sector, a training lag / knowledge gap is widely reported*
2. Market stimulation: *A step change in scale of retrofit is widely accepted as being imminent and inevitable, but the market is not forming of its own volition*
3. Terminology: *Retrofit is a generic term and means different things across different segments; retrofit as a catch-all is an inadequate term for the complexities of the process and of the market.*
4. Segmentation: *The different meanings and modes of operation needs clearer segmentation and a more nuanced understanding of drivers and inhibitors.*

Qualitative research included literature review and documentary analysis of the local policies and forecasts surrounding the delivery of retrofit over a decade leading to 2030. This involved a library (internet-based) search for papers, policy documents and resources specifically mentioning the terms: retrofit; local authority retrofit; net zero; net zero building; decarbonisation; fabric first; energy efficiency; retrofit skills; Trustmark; PAS2035.

As with the qualitative interviews, findings were was evaluated using NVIVO. A selection of the most relevant articles, papers and reports were loaded onto the NVIVO system and analysed using a series of nodes and sub-nodes relating to the selected data points (See figure 2). This process involved highlighting relevant extracts and assigning them to the appropriate node or sub-node. New nodes and sub-nodes were added as new themes emerged and unused nodes discarded on an iterative basis. The outputs of each node were then further analysed to extract themes emerging from across the literature, particularly where these gave new insights, for example, nuances around the skills and knowledge gap, terminology, segmentation, generic and specific definitions of retrofit, roles of local authorities, energy efficiency measures and retrofit market drivers and barriers.

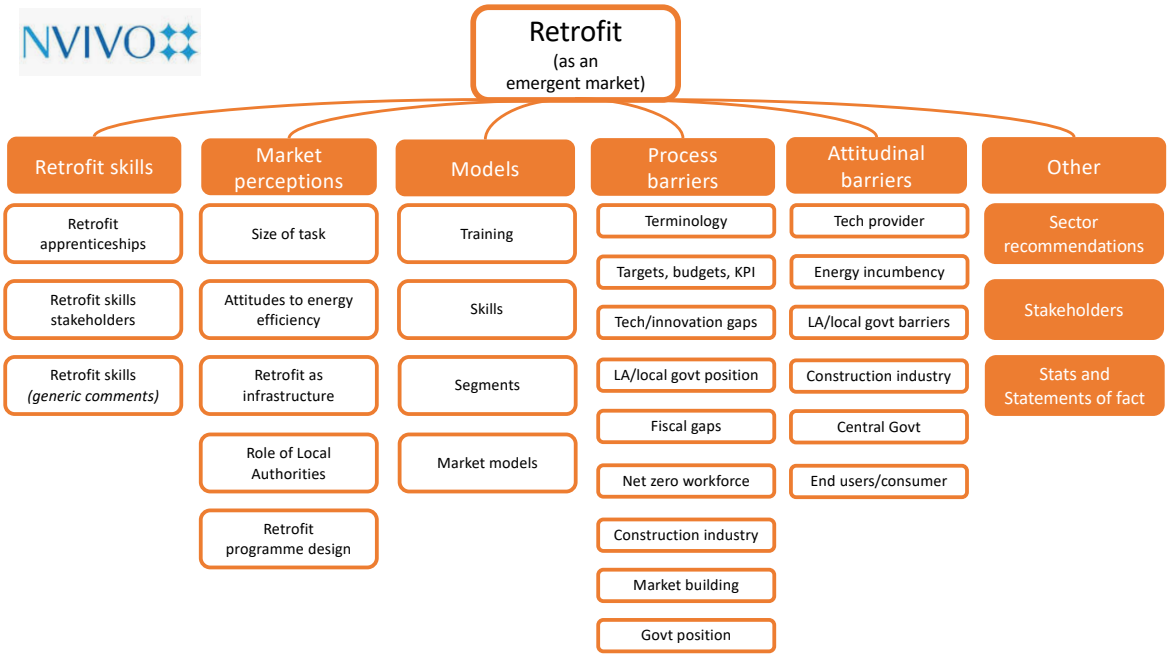

Figure 2: Shows the 8 primary nodes and 27 subnodes selected as data points in NVIVO software, in order to conduct a qualitative evaluation of selected articles, papers and reports pertinent to the research topics.

Analysis

The role of Local Authorities

The role of Local Authorities as drivers of change in respect of Climate Emergency Action is wholly complementary to their role in creating of a positive socioeconomic environment for citizens. Councils possess 'unique insight into local communities and circumstances' and 'their service delivery and regulatory functions, and their convening power enables them to drive carbon emissions reductions … in ways that can also deliver better public health, reduced inequalities, a healthier environment and thriving local economies.' (ADEPT, 2020) The significance of Local Authorities deploying their vertical and horizontal influence to effect rapid change has been demonstrated in their response to the Covid-19 crisis, 'supporting and identifying and supporting vulnerable residents, joining up service delivery across agencies, and keeping central government on top of intelligence in every local authority area, often on a daily basis'. (ADEPT, 2020)

Given the broad responsibilities and influence of local government, climate emergency responses are not limited to reducing their own carbon emissions, but involve complex, cross-sector planning and action. ADEPT's 'Blueprint for accelerating climate action and a green recovery at the local level' identified and grouped these activities across seven themes: 1) growing the zero and low carbon economy; 2) retrofitting homes and buildings; 3) decarbonising transport; 4) delivering zero carbon planning and development that protects and enhances nature; 5) reducing waste and encouraging sustainable consumption; 6) restoring nature for all and 6) developing local authority funding, governance and accounting systems that are fit for purpose. (ADEPT, 2020)

However, despite this extraordinary reach and a willingness to act on Climate Change from the majority of councils and local authorities, they face many barriers and limitations - legacy issues, misaligned policies, and historical demarcation lines between Central and Local Government – which will inhibit the ability of Local Authorities to effect rapid, wholesale change at the rate and scale that is needed, and to which they have committed.

Moving beyond finance deals

Past large-scale policy efforts within the UK such as the Green Deal and the Green Homes Grant have largely focused on cost barriers. Even when seeking 'whole-house' solutions incentives are often tied to specific measures. Outside isolated pilots, funding does not support the capacity-building activities needed to build a retrofit market in the longer term. Post-evaluation showed The Green Deal failed in part because it 'did not sufficiently engage the workforce through an ongoing communication strategy' and 'should have better facilitated both technical and non-technical skills development' (Gillich, 2017) and was also seen as a 'dramatic

policy failure which has not driven any significant demand for energy efficiency measures in the 'able-to-pay' sector' (CCC, 2016).

Despite the many lessons to be learned from the Green Deal in 2013/15 another offering, the 'Green Homes Grant', was rushed in during 2020/21. In its haste to create a scheme to deliver economic stimulus, the Government failed to consult industry adequately on its delivery, set a timescale which was overly short term and has presided over scheme administration which was deemed 'nothing short of disastrous'. (House of Commons, Environmental Audit Committee, 2021)

Consumer perceptions

These market-based schemes have typically failed to build capacity within the market in the longer term and also fail to engage inert consumers. The schemes operate on the assumption that consumers make rational cost-saving decisions, have energy savings on their radar, and have motivation to act – with or without all the obstacles in their way. Nor does it appear that increasing cultural concerns about climate change and the environment necessarily translate into heating system transitions, as people do not recognise the link between home heating and carbon emissions. (Anaam et al, 2020) Therefore we can conclude that expending effort to make energy savings remains a low priority for householders. This is shown not only in Green Deal take up, but also reflected in findings in energy utilities where policymakers have sometimes relied on a rather narrow view of the behaviour of consumers, by assuming they make wholly rational decisions. (Deller et al, 2021)

These findings support another theme that emerged from the literature reviews and stakeholder research which relates to the need to increase engagement across all stakeholder groups. Citizen Advice' 'Lessons for net zero', an evaluation of energy efficiency and low carbon home improvement schemes between 2012 and 2019, makes 8 recommendations. The first two are 'Design and implement a simple and easy to access consumer journey' and 'Take all opportunities to influence behaviour'. Their report reflects other findings that engagement and conversion opportunities arise at the points in people's lives when they tend to be more predisposed to making energy efficient home improvements. These are known as 'trigger points' and examples would be moving home, major building work or undertaking home improvements. They conclude that Government schemes could be more effective if they can engage consumers when making these changes, by providing accessible offers. (Citizens Advice, 2020) Kerr et al advocate for a broader approach to stakeholder engagement, wanting to balance a 'supply-push' and 'demand-pull' approach. They identified the need to develop proactive, integrated retrofit supply chains as well as engage and service consumers. In this scenario supply-side firms and intermediary advisors would act as effective proponents of energy efficient retrofit, integrating the retrofit offering alongside much more prevalent general home renovations. (Kerr et al, 2018)

Given the UK's clear preference for market-based instruments over stronger regulatory frameworks, a far greater emphasis is also needed on understanding the mechanics - and failings - of the providers within that market and building trust within the market if it is to succeed. According to research conducted by Citizens Advice, quality problems are a particular risk for energy efficiency and low carbon technologies. Few consumers are familiar with these technologies and it's hard to tell good work from bad. Many previous retrofit schemes have had well documented problems with substandard work, causing damage to building work and interiors, and leaving consumers with long-term problems in their homes that are costly to resolve, disruptive and distressing. (Citizens Advice, 2020)

Therefore, a focus on upskilling and training for retrofit market creation is going to be a critical component. A major contributing factor to low quality outputs to date is that the market has given little or no incentive for the construction industry to align its skills, because 'training does not confer any significant advantage in the labour market' (Killip, 2020). Research into construction sector skills shows trained and untrained workers are competing for the same jobs, working in the same conditions of low pay, low job security and low prestige, and this leaves the sector very sensitive to wider economic cycles, with labour shortages in economic boom times followed by rapid drops in the numbers of jobs available during recessions. This has resulted in a significant skills shortage – both in terms of volumes of contractors and in relation to the mammoth task ahead – meaning 'profound labour market reform is required in the construction industry if the UK is to get anywhere close to net zero'. (Killip, 2020)

Even in established professional segments, whilst the pathways to knowledge transfer may be better established within organisations than for individuals navigating the sector, there is low uptake on what it means to respond to the climate emergency. As one of Interview Case for this study put it: "In terms of upskilling, there's not a sort of organised system in place... we kind of take it upon ourselves, it is a bit ad hoc. We've got a programme for general training, mandatory safety, making sure statutory liabilities are covered. All construction related. Beyond that, anything regarding green is less structured." (Interview Case #5)

The research showed evidence that larger organisations with EU offices are getting information from their EU counterparts. The degree of preparedness and willingness to undertake training and adopt new technologies was made easier in these organisations that have access to horizontal knowledge share via EU colleagues. This is especially relevant where they operate in jurisdictions which are ahead on policy or tech adoption, for example the Netherlands where The Dutch government has mandated no gas-only boilers to be installed in homes from 2021, leading to heat pump market growth of more than 50% per year and set to escalate as the policy embeds.

"We've had the benefit … we're a multinational company with offices in the EU, and they've got quite a good history. In fact, the way that you design heat pump systems is actually mandated." (Interview Case #1)

Terminology

In carrying out and analysing the interview data for this study, it was clear that respondents carried different definitions for the term 'retrofit', and that in common parlance the word covers too many operational factors, funding options, and skills to be used as a catchall term. Our data uncovered a marked distinction between organisational and individual perceptions of the retrofit market and different drivers across these different stakeholder groups. This reflects Killip's observation that construction itself is far from a homogeneous sector, covering as it does everything from handyman services to major infrastructure projects. There are different types of buildings, different types of firms, new-build and renovation projects. In terms of the workforce and workforce education, a key distinction is between professionals (designers, project managers, consultants) with university-level education as opposed to on-site construction workers, who may have vocational education and training (VET) at different levels, be apprentices or have no formal training at all. (Killip, 2020)

This research found that those differences translated almost directly across to the retrofit sector, with massive variations from top to bottom. Further, we found that the term 'retrofit' itself is commonly used interchangeably with other activities, such as refurbishment or 'repairs, maintenance and improvements (RMI) within the UK construction sector. The same word is used to describe programmes (of varying ambition) across domestic, commercial and public buildings. Nor is the term precise in scope, with the word retrofit covering anything from a some insulation, a building upgrade, refurbishment or repurposing, to a 'deep retrofit' involving full energy and building fabric measures. Some retrofit involves future proofing or resilience measures such as cooling, and in some contexts 'retrofit' is taken to refer to wider ecological systems such as water and waste. Retrofit might have a primary focus on preservation and conservation in heritage projects, or be conducted with a primary or secondary purpose of alleviating fuel poverty. In some countries, for example Japan, the term retrofit refers primarily to seismic measures, with energy efficiency measures being considered a secondary factor.

Within the UK domestic market, we found this blurred terminology hid many assumptions and led to confusion when retrofit policy, funding, quality assurance and skills were discussed generically. The 'retrofit' term was used irrespective whether the context was large-scale social housing programmes, or a single home installing energy efficiency measures - despite programme design and project inception, funding, methodology, and even work force being wholly different within each scenario. This led us to look at how the domestic market segmented to try to identify the specific attributes and attitudes within core segments which broadly identify as:

Local Authorities	**Private Rented Sector (PRS) comprising** - *Large landlord organisations* - *Medium landlords* - *Single / small (aka accidental) landlords*
Social Housing	**Owner Occupiers**

Segmentation - first mover theory

Given the crossover and complexities between these segments, we found the most helpful and clear method of segmentation was to divide the domestic retrofit market based on who acts as the 'first mover'.

The term first-mover was initially used by Arup in a slightly different context, stating that the public sector needs to act as first-mover in promoting and implementing housing retrofit schemes (Jankel, 2013). Our first mover theory suggests the first mover is whoever takes responsibility for (and instigates) the retrofit process within that market segment.

This distinction is critical because where the first-mover is an organisation, such as social landlords or Local Authorities, there are clear pathways to programme design, stakeholder engagement and supporting policies and funding mechanism driving retrofit activities. Projects are typically larger schemes which are designed and project managed by building service professionals. Procured contractors carry out the work, either under contract to the first-mover or their partners. There is a higher likelihood of a longstanding funding scheme being available such as the Energy Company Obligation (ECO). There is often a route for the dissemination of new skills and practices through established channels such as CPD or degree apprenticeship programmes. Delivery models for community retrofit tend to be public-sector driven, either directly, or through arrangements with partners. The public sector tends to adopt the role of the first-mover, using established channels to create programme pathways, engage stakeholders, de-risk transactions and providing an evidence base for others to follow.

Where the first-mover in the retrofit process is an individual, this is almost always the property owner, such as the owner-occupier or private landlord, and the pathways to impact are far less established, and in some cases non-existent. There are fewer funding schemes for support and accessing these schemes. such as the Green Homes Grant, when they do arrive is challenging for the reasons discussed above. While the Green Homes Grant also required TrustMark qualifications in contractors, uptake was low. Where no Government funding is involved, there is no legal requirement for the assessors or contractors to operate under PAS2035 or be Trustmark registered. Where there are regulatory drivers in place affecting individual first-movers such as the Private Rented Sector Minimum Energy Efficiency Standard for landlords, the thresholds are low, with policies under enforced and widely regarded as ineffective.

When evaluating knowledge gaps and future training needs, there was further evidence of the divide between the approach of building services professionals within the more established supply chains who are trained and capable of designing and fitting large scale projects, versus the less formal unregulated workforce ‘operating in a low-skills equilibrium, whereby low quality assurance and significant design–performance gaps accompany low educational attainment and low wages’ as identified by Killip (2020).

This divide was also evidenced by Interviewee responses about their views on PAS2035 - the new industry specification that lays out all retrofit energy efficient enhancements to the UK’s existing housing stock but in reality only affects the individual first-mover market of owner-occupiers or small landlords. 9 out of 10 Interviewees had little or no knowledge of this standard. Only one – an industry senior with engagement at a strategic level within Construction Industry bodies - felt able to comment at all: “I think the whole approach from PAS2035 is refreshing, and it’s different, and it’s better. I’m not so sure the UK really gets it yet. In the big change, that’s got to happen.” (Interview Case #8)

This first-mover difference is further evidenced by the disparities in the distribution of Energy Performance Certificates (EPCs) between owner-occupier, privately rented, and socially rented homes shown in Figure 1. Socially rented homes have a far higher proportion of their stock in the A-C EPC bands and nearly none in the F/G EPC bands. This is due to a combination of better policy design and implementation in the former tenure group. Viewing these projects through the lens of whether the first-mover in the retrofit process is an individual or an organisation allows insight into the barriers and drivers, and the effectiveness or ineffectiveness of the policies historically used to address those barriers.

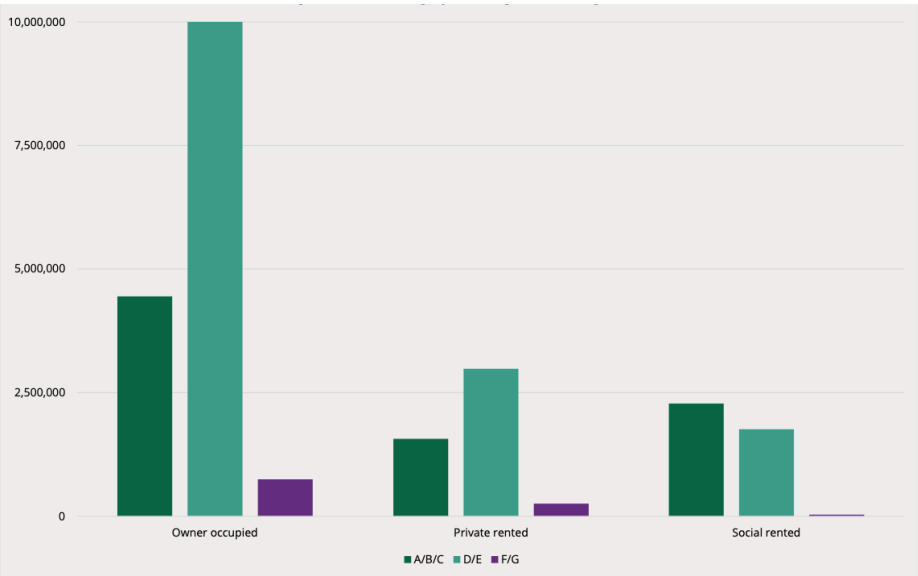

Figure 2: EPC Rating by Tenure, 2021, shows the disparity between EPCs for the social rented sector (where Local Authorities and Social Housing Landlords are first-mover, versus the owner occupier and private landlord sectors (where the individual is first mover). (House of Commons, Environmental Audit Committee, 2021)

Channel strategy versus financial self-interest

The owner-occupier and private rental sector are the market segments that would most benefit from a redesigned customer journey around a cohesive channel strategy. In commerce, organisations invest in channel strategies to bring products and services to market out of self-interest. But no singular entity 'owns', organises or invests in domestic retrofit. The market has not self-organised and take up has been minimal. A framework for quality control exists within PAS2035, but there is little to drive individual first-movers to move or markets to catalyse. In a well-developed retrofit market, there would be potential for the contractor to prompt action, making suggestions about new energy efficiency retrofit options the way they would for a kitchen renovation or a replacement boiler. For now, there is nearly no evidence of this taking place.

Distribution channels of this nature are complex behavioural systems in which people and companies interact to accomplish individual, company and channel goals (Kotler et al, 2005). A more integrated customer journey based on service process design principles could galvanise consumer behaviour, ensure smarter interventions at more trigger points, and create a more balanced 'supply-push and demand-pull' system, based on proactive, integrated supply chains better skills, quality assurance and improved customer protection throughout.

It is especially pertinent for LAs to take the lead and guide their residents to action on retrofit. Research shows despite a cultural shift, the growing public engagement in climate change has yet to translate to public understanding of specific issues, particularly with respect to creating a market demand for retrofit action. This lack of consumer motivation towards home retrofit should not come as a surprise. A poll showed regarding customer attitudes towards the decarbonisation of home heating found 'natural gas' is perceived to be lower-carbon than grid electricity in the UK. Furthermore, in the same study around two-thirds of people admitted they 'have limited or no knowledge of the concept of Zero Carbon and also 'a lack of awareness of the term 'Net Zero' (Hyde et al, 2020)

When prompted, these consumers admitted they do not feel ultimately responsible for reaching net zero, although some recognise that they will need to play some part in doing so. Most default towards saying the government and energy companies have a much bigger role to play in making it happen—although they did not always trust that either would do so. Some feel like they are already doing their bit for the environment generally, through recycling or reducing plastic waste but when it comes to changing the way they use energy, they are unsure what steps they should take. (Hyde et al, 2020)

The low priority of – and low motivation for – addressing energy issues in domestic consumer segments is not hidden. Nonetheless it is worth noting that policies have to date been designed with the belief that inertia in itself is not a barrier that needed to be addressed. UK policies such as the Green Deal were created with the belief that consumers would seek out retrofit out of financial self-interest. The low uptake of the Green Deal was due in no small part to a lack of interest among the able-to-pay market. Nearly a decade later, and following much wider public engagement on the issues of climate and energy, the UK Green Homes Grant programme was similarly structured around addressing the cost barrier and trusting the market would develop out of financial self-interest.

At the time of writing the UK government has just ended the Green Homes Grant, nearly a year ahead of schedule and after only delivering measures to 10% of the promised number of homes. Demand for the Green Homes Grant varied significantly nationwide. In some regions, uptake was sufficiently high that there were not enough qualified installers to meet demand. However, there were also reports of installers being unable or unwilling to register for the scheme, due to high entry costs and administrative complexity. Even if this response did suggest that homeowners were very engaged in the market, there is no evidence that this engagement persists post-subsidy. Industry commentators are already citing the Green Homes Grant as yet another example of a boom-and-bust policy cycle that deters rather than encourages long term interest in a market for retrofit.

From those interviewed for this work, even the more professional, established stakeholders, who generally serve the public sector-led and commercial retrofit market, confidence in retrofit as a near-future revenue stream varied. They broadly grouped into three categories which we termed: early adopters, followers, and pragmatists.

The early adopters were actively discussing decarbonisation, passive design and finding low impact solutions with clients. Some have been studying it and championing it for years, and are now able to respond to market movements where they see growing demand: "What's interesting is we've internally we've been kind of playing with these topics for about four years, five years - since about 2016 - and it's only been the last two years that we've been able to kind of, you know, actually monetize, if you like." (Interview Case #1)

Follower organisations are seeing the change as it happens and will play catch-up, but are keen to engage with the market when they see a business case: "We're quite good at adapting so we have the skill sets and we can

apply them. The last year has been a massive difference, and a big change in culture. Just over a year ago … we launched a big (net zero) strategy, it was just a massive culture change within the business." (Interview Case #5)

Pragmatists will likely need to be pulled by regulatory or market forces. They will engage but tended to be wary of green hype: "If I'm honest we're not doing a thing to specifically gear up for it (retrofit). Maybe that's naive, but … the marketplace determines it, and that in turn is usually led by regulations because that's what actually drives things in the real world, people becoming interested." (Interview Case #3)

The pragmatists (who made up 2 of the 10 interviewees) also showed a commoditised approach to the work, responding to the client's price-driven brief, fitting the job to the price, rather than suggesting future-proof solutions: "The construction industry is very reluctant to change. It's…driven by costs. Always has been, always will. (Interview Case #3); and "It's not about sustainability. It's not about passive design. At the end of the day it's about profitabilities." (Interview Case #10)

Across both segments of the market - public sector and private - there is a longstanding barrier to retrofit described as 'low priority of energy issues' particularly compared to cost. This work suggests that while this is still very much the case for some, there are some organisations serving the public and commercial sector for whom energy and carbon are becoming a priority within their service offering. However, the barrier still exists that low-carbon retrofit has still not gained enough momentum to even be considered a market in its own right. As noted above, most Interviewees represented organisations that are starting to find emergent markets for those larger retrofit projects, but there is little evidence that this momentum will translate to individual householders or landlords in the able-to-pay market without significant intervention.

Discussion

The documentary analysis and Interview data enable answering of the research questions posed above. The research methods and findings were presented to staff from the participant case study council as stimulus, and their views are documented:

1. What barriers exist in creating an enabling environment/policy roadmap to 2030?

The first barrier identified is attitudinal - the low recognition of retrofit as a distinct market. The low priority of energy issues is a longstanding barrier but deserves renewed focus because increased public knowledge about climate change hasn't translated to demand for building retrofit. The resulting gap is the correspondingly weak response to market-based policy signals or complex propositions such as the Green Homes Grant.

The second barrier is the segmentation of the retrofit market based on whether the first-mover in the retrofit process is an organisation or an individual. The resulting gap is that the segments do not receive a sufficient distinction in the policies designed to target them.

First-mover theory adds nuance to programme design and raises the question of what measures are needed to prompt uptake in the able-to-pay PRS and owner-occupier segments - and that these prompts are not limited to fiscal measures. A one-size fits all approach has largely assumed that financial self-interest will drive uptake, for example the lack of a clear route to market for PAS2035 outside of ECO. Where the first-mover is an organisation there is a slow but visible pathway towards creating an enabling environment for 2030 but where the first-mover is an individual the path to creating an enabling environment for 2030 is far less clear.

2. What are the respective roles of local and central government?

According to the interviewed Local Government Staff Member: "Central Government should be avoiding short term programs with unrealistic delivery deadlines that deliver rushed, short term outcomes but may lead to unintended consequences and don't help to solve the root causes of the system challenges."

Central Government has the clear challenge that large scale infrastructure decisions cannot be made in haste. Further, despite many calls for retrofit to be treated as a national infrastructure project, it is still does not fall under infrastructure, and policy approaches and fiscal support remains piecemeal. However, there is also a need for clarity as shown both in documentary evidence and the Interview Cases presented. Much of the industry will ramp up in response to clear long-term policy signals. Where Central Government seeks market-based mechanisms these mechanisms must better engage the markets they target. The details of these markets are often best understood by Local Governments themselves.

For the segment where organisations are the first-movers in the retrofit market, the Local Government should seek to expand capacity for retrofit through existing skills dissemination routes and scale up markets. For the

segment of the market where the first-mover is an individual the council should seek to use their local networks to take on the role of 'middle actor' to galvanise services and prompt first-mover action. Local Authorities can then drive a cultural shift as trusted actors and leverage the national level drivers to create rapid change.

"Local Governments are committed to serving their residents and improving their neighbourhoods, and therefore some measure of trustworthiness, holistic/long term decision-making, and a deep understanding of what works and doesn't work locally. As a result, local government is well-placed to act in a co-ordination and enabling role for delivery – ideally working with private and third sector partners (including universities, citizens) who are more nimble and specialist and in the case of small and social enterprises have excellent local knowledge and networks. (e.g. the emergency food provision hubs and local testing centres run during the pandemic by local gov in partnership with local charities, NHS, etc.)" (Local Government Staff Member)

This observation is validated by UKGBC research which suggests that local authorities are consistently more 'trusted' than national government and other stakeholders. Because overcoming the barriers to home retrofit requires a holistic, city/local authority-wide strategy and the need for high levels of co-ordination across multiple actors, local/combined authority leadership will be essential to deliver action on home retrofit. (UKGBC, 2020)

3. What is needed to align other stakeholders?

The alignment of stakeholders again is best driven at the Local Government level. However, Councils are extremely resource constrained. There is great potential to use open collaboration to ease these constraints, however, even this collaboration requires an initial investment of time to build the needed links.

"Resources (financial and staff time) are extremely stretched and silo-ed, which makes collaboration/partnership building difficult to achieve – internally and externally. We need more open collaboration to provide access to research, resources, and networks to help deploy rapid change solutions. That is councils working with groups like universities and with each other." (Local Government Staff Member)

Conclusions

The declaration of a Climate Emergency and the ambitious 2030 targets will require a step change in the way local authorities and councils work with partners and communities to tackle the impact of climate change within their local areas. Several barriers exist that will challenge Local Authorities in creating an enabling environment for these changes.

Firstly there is scope for an assessment of whether the term 'retrofit' is apt for consumer facing market building or if there is a need for a new lexicon around decarbonisation, future-proofing and climate resilience.

Secondly, there is a weakness in the market channel strategy. Where the 'first-mover' in the retrofit process is an organisation (e.g. social landlord), this work found that there are existing channels to drive retrofit action and upskilling. These channels should be strengthened and expanded. But where the first-mover is an individual (e.g. homeonwers and private landlords), channels are weak or non-existant. This is a critical barrier, as policies insufficiently distinguish between the two groups, leading to a lack of drivers for individual first-movers.

It is worth noting that decarbonising existing buildings poses a challenge worldwide. There are a range of successful examples such as regulatory efforts in Germany, effective ratepayer funded programs across the EU, and strong market driven policies in particular US states such as California and Oregon. The UK can also point to its share of successful retrofit pilot projects. However none of these have delivered decarbonisation of the existing stock at the pace and scale demanded by the Climate Emergency. In short, no low carbon retrofit market can yet be considered mature in the way that we consider the market for amenity renovations. Yet while these problems are not unique to the UK, the UK does have several embedded features that will make these problems particularly challenging to solve.

The UK's adherence to the principle that retrofit markets will form simply out of financial self-interest in response to a price signal has been repeatedbly disproven in practice, but remains a tent-pole in retrofit policy making. Where they have attempted to create an enabling environment such as with PAS2035 and Trustmark, the routes to market for these measures are lacking. The first-mover framing described in this paper argues that the UK has much work to do in even establishing the channels through which such skills uptake and broader motivation for retrofit will reach individual first-movers such as private homeowners.

National government should empower local government to explore retoftit solutions around first mover principles. Where resource constraints limit action, Local Authorities should seek open collaboration to expand knowledge exchange across these networks and develop novel localised approaches to retrofit processes.

For individual first-movers the local government should use their networks to serve as trusted middle-actors to drive the retrofit process. By reshaping the customer journey around a go-to-market channel strategy they could bring the stakeholders together around a quality assured, locally focused retrofit service. This could be rooted in a customer-centric channel strategy with a 'service process design' approach, using nudge theory and behavioural analysis, aligning all local stakeholders around an intuitive vertical channel that drives behaviour change and integrates services into a cohesive experience. This approach has been successful in other domains such as transportation, where London's fragmented and siloed modes of travel have been brought together under one brand, with Transport for London (tfl) integrating a wide range of providers and data sources to gives a simple customer through-line for travel planning, journeys and billing across all modes of transport.

A similar channel strategy model would build on the foundational work of the UKGBC's Retrofit Playbook (UKGBC, 2020) with the overall goal of building a holistic retrofit offering around an integrated service design model, which would build community and neighbourhood action, engage retrofit providers, prompt large scale take-up and smooth the customer journey. As well as helping local councils deliver on their climate targets and steward their areas towards better environmental outcomes, this model would accelerate take up of retrofit in hard-to-reach segments, support local businesses, get young and disenfranchised residents into green jobs, alleviate fuel poverty and inadequate housing, and help consumers embrace more sustainable choices.

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