Department for
Business, Energy
& Industrial Strategy

Evaluation of the supply chain demonstrator project

Year 2 Evaluation report

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Scheme description

The Department of Business, Energy and Industrial Strategy (BEIS) has commissioned six demonstration projects to test different approaches for increasing the rates of energy efficiency improvements amongst able to pay owner occupiers[1] as part of the Local Supply Chain Demonstrators scheme. The aim of the demonstration projects is to increase the uptake of retrofit work in target areas through:

- Providing support for local supply chain integration and project coordination
- Targeting able to pay owner occupiers and the private rented sector with attractive and more affordable opportunities for retrofit work.

The six demonstration projects are being delivered in the following target areas: Bristol and Bath, Cornwall, East/West Sussex, Greater London, Greater Manchester, and Oxfordshire. Each project is being delivered by a consortium. One delivery organisation has taken the 'lead' in each consortium (the 'lead delivery partner'), with a number of other organisations involved in the delivery and decision making of the project (these have been referred to as 'other delivery partners' in this report).

Each of the demonstration projects has developed its own approach to meeting the project aims, taking into consideration factors unique to their geographic area such as:

- The level and skill of the existing supply chain
- Characteristics of the housing stock
- Existing information, tools and systems.

Despite differences across the individual projects, the expected outcomes of the Local Supply Chain Demonstrators scheme (the 'scheme') as a whole are:

- The coordination of different parts of the retrofit supply chain to improve the quality and consistency of retrofit work, while increasing the skills and knowledge of supply chain actors through training.
- The generation of further learning regarding the barriers to retrofit work as well as successful engagement routes for different consumer groups and different parts of the supply chain.

[1] Primarily, though across the projects a small number of domestic landlords have also been engaged.

- The development of sustainable business models for retrofit and partnerships that will continue beyond the project period.
- A (minor) increase of retrofit projects, particularly deeper retrofit, in project areas through the coordination of market players.

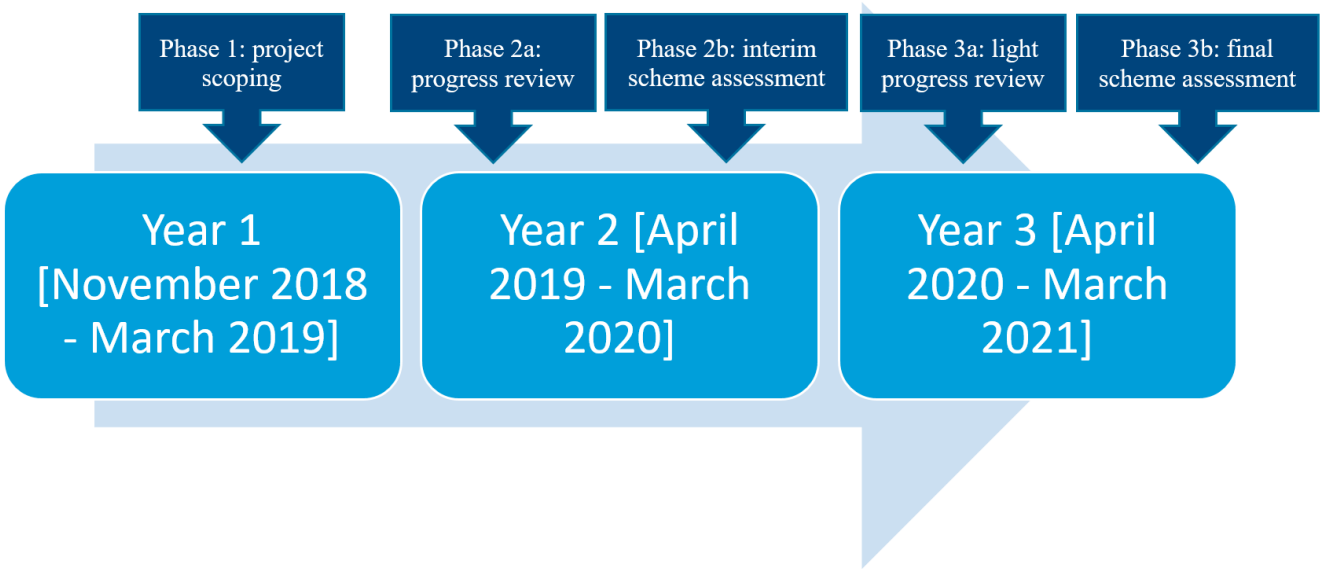
Projects received their grant offer letters in November 2018, and they are expected to run until April 2021 as three years of activity:

- Year 1: November 2018 – March 2019
- Year 2: April 2019 – March 2020
- Year 3: April 2020 – March 2021.

Funding has been confirmed on an annual basis at the end of each financial year, and is now secured until March 2021.

Evaluation description

BEIS has commissioned evaluation to run concurrent to scheme delivery.



The aim of the evaluation is to assess the extent to which the Local Supply Chain Demonstrators scheme has achieved the objectives and outcomes above. The evaluation will consider the outcomes generated by the different approaches adopted by the six different demonstration projects and allow an assessment of how and why those different approaches have worked within their target areas.

The aim is not to produce a set of directly comparable findings but is instead intended to build the evidence base for future interventions on the supply chain and produce a set of valuable learnings.

The evaluation includes three elements, as set out in Table 1.

Table 1: Evaluation elements

Evaluation element	Purpose
Process evaluation	• Assess the customer experience of individuals who retrofit their homes via supported projects. • Review the experiences of those involved in delivering the scheme. • Identify the key characteristics of schemes which generate successful outcomes and those which are less successful.
Outcome evaluation	• Identify the effects of the projects on the local retrofit market. • Capture insight into other outcomes e.g. interest in the potential of the retrofit market, and the cost/barriers of retrofit.
Impact evaluation	• Measure energy reduction impact where feasible.

This report sets out the findings from Year 2 of the scheme, principally the evaluation activity conducted in phase 2b – January to March 2020 but with insight added from phase 2a (conducted August – October 2019)[2]. The first findings section discusses overall themes and insights for the scheme, before individual sections explore each demonstration project.

[2] There were no inconsistencies in findings between the phases that would suggest the evidence could not be combined.

Summary methodology

Year 2 evaluation activities

The following table summarises the activities undertaken in phases 2a (August – October 2019) and 2b (January to March 2020) of the evaluation. A fuller description of the approach is set out in the Evaluation Plan, a working document updated after each phase.

The same broad methodology was used for all projects with elements excluded, or varying in scale, for project specific reasons (e.g. no customers yet in Cornwall). There was also variation in the composition of the wider stakeholder sample and lead partner topic guide questions to explore issues of pertinence to each project.

	Evaluation element	Summary of activity
Primary research	**Interviews with project 'leads'**	At the outset of each phase, we conducted interviews with each of the six lead delivery partners. This explored their perspective on project progress over the preceding months, as well as an opportunity to liaise on provision of data needed to enable other evaluation elements. We also conducted follow-up discussions with other main contacts or colleagues as recommended by the lead delivery partner for further detail / information.
	Interviews with 'other' delivery partners	We conducted 25 interviews with other delivery partners across Year 2. Whilst important in gaining their perspectives, these partners often had different functions to the lead and the lead sometimes deferred discussion of certain details or aspects of the project (e.g. marketing or data) to these partners. Each 'lead' and 'other partner' interview focused around some core questions, but also included exploration of project-specific activities and issues.
	Supply chain interviews	Across Year 2 we conducted 25 interviews with representatives of supply chain firms 'signed up' to the project, as well as 18 with retrofit coordinators[3]. Discussions provided

[3] The full requirements of this role varies across the demonstrator projects, but it is broadly intended to support customers through retrofit projects, from home assessment and measure selection, through to quality assurance of completed works.

	Evaluation element	Summary of activity
		insight into their motivations for engaging with the projects, expectations of benefits, and realisation of those to date. We had intended to interview supply chain contacts who had initially engaged with the projects but then dropped out (e.g. those that didn't complete courses or attended engagement events but subsequently decided not to sign up), but the projects were unable to provide contact details. Instead we have identified some relevant organisations in the target market for each area and conducted short, informal interviews with a sample of those.
	Customer interviews	In phase 2b, we conducted 46 in depth interviews with customers of each project (i.e. householders) from as wide a range of profiles as feasible, exploring their motivations and experiences to date. Most were at an early stage of engagement with the projects.
	Wider stakeholder interviews	Interviews with delivery partners identified a number of additional organisations ('wider stakeholders') that projects may be sub-contracting to, or have other arrangements with, outside of formal partnerships. We interviewed 15 of these wider stakeholders. Examples included local government, supplier member organisations, and community groups.
	Observational research	Conducting visits to the project areas enabled first-hand observation of activity, provided opportunity to conduct more conversations with stakeholders, the supply chain and customers, as well as better integrating the evaluation team into the projects. Across phase 2b, 6 events were attended (four in-person and two online), including project board meetings, coordinator and supplier training, and community group engagement events. In addition, in January 2020, an event was held at BEIS offices which attended by the evaluation team and representatives of all projects, to share learnings and experiences of delivering the projects to date.

	Evaluation element	Summary of activity
Secondary research	KPI review	BEIS conduct monthly catch ups with the projects whereby data aginast pre-agreed KPIs[4] is reported. The Year 2 evaluation reviewed KPI information collated by projects as of the end of February 2020, to understand (a) how each project is progressing against deliverables and (b) feed into understanding readiness to conduct other elements of the evaluation plan.
	Review of marketing materials	The evaluation sought to assess the marketing activity for each project in terms of reach, engagement and conversion to participation in the project. This was conducted through delivery partner interviews, desktop review of marketing materials for each project, review of other external studies and data presented in project documentation.
	Energy impact metrics review	As part of the evaluation plan for the scheme, it was recommended that energy impacts would be assessed through the SAP point improvement for the homes that have benefitted from retrofit activity as part of the demonstration projects. Based upon limited project progress and consequently low numbers of completed retrofits, the feasibility of this element was assessed in phase 2b. It was concluded that this element will not be taken forward in phase 3.
	Review of any further relevant documentation	To help contextualise key assumptions, the evaluation reflected on existing evidence and learnings from related projects, studies and academic papers. This is cited throughout the report and a full bibliography is provided as an appendix.

Challenges / limitations

- **Project progress;** phases 2a and 2b comprised a lower level of evaluation activity than had originally been envisaged. This was largely due to project progression being slower

[4] With targets around completed retrofits, customer insight, customer / installer engagement, and developing a self-sustaining model.

than anticipated; an issue explored in depth throughout this report. This had particular effects on the following:

  - Supply chain interviewing – this element was still conducted to some degree in phases 2a and 2b, but the numbers and range of respondents was reduced from original expectations. This reflected the low numbers overall (and within certain sectors) signed up to the projects.
  - Customer interviewing – a large quantitative survey of customers had been planned for phase 2b. Based upon the number and status of customers engaged in the projects as of February 2020, this was not deemed feasible, and a smaller, more qualitative approach replaced it. Furthermore, those customers interviewed were almost all at the earlier stages of the customer journey, meaning very limited insight on the supply chain / delivery of works.
  - Energy impact data – across the projects there are very few completed retrofits or even commenced works, meaning very little energy impact data has been collected / can be analysed to date.

- **GDPR;** a number of evaluation activities were dependent on projects sharing data with the evaluation team. It had been understood that projects had already secured agreement from customers to be contacted for research and evaluation purposes when they signed up. However, it transpired that this was not always the case and / or projects had concerns about the basis on which their customers and suppliers could be contacted for the purpose of the evaluation. As a result, a number of the projects contacted these groups asking them to 'opt-in' to be contacted by the evaluation team. Linked to this, project teams were keen not to burden those customers and supply chain who were yet to clearly commit to the project. This mixture of self-selection and initial project team control of the parameters of the sample means there might be limitations to the representativeness of responses from those who did participate. On the other hand, the issues and reservations of those not participating / dropping out have been comprehensively discussed with delivery partners across both phases, including in the group workshop with BEIS at the end of January 2020.
- **Ad hoc re-design of project activities;** there is an inherent tension in the scheme objectives. On the one hand, the different project approaches would ideally stay unaltered so their effectiveness could be properly tested across the three years. On the other hand, the projects are required to deliver some level of outputs / outcomes, and are seeking to develop a sustainable model to carry forward post-funding. It is on this basis that Year 2 has seen a number of implemented and planned adjustments to project approaches, particularly around supply chain engagement and customer offers in an attempt to boost numbers. It is positive that the projects are showing themselves to be agile and adaptable, but if this is a necessary component of delivering energy efficiency retrofit to the able-to-pay market, it raises challenges for the evaluation team in terms of understanding how this can be scaled. In addition, the evaluation becomes less able to objectively detect what aspects are working or not, becoming more reliant on project leads reporting how they have adapted and why.

- **Covid-19;** our findings reflect that the vast majority of phase 2 interviews were conducted prior to March 2020. Respondents were still discussing setting in motion plans made in Year 2, and prospects for Year 3 outputs and outcomes. Responses on priorities, planned activities, and expectations for Year 3 might be quite different should evaluation conversations be repeated now. At the time of writing, project lead partners have provided initial responses on how they envisage Year 3 delivery will be affected by Covid-19; these responses are summarised in the relevant section of the chapter below. Another issue, mainly for Year 3, will be assessing project performance in building the supply chain and householder appetite for retrofit in the face of severe economic challenges.

Year 2: overarching themes

Context and progress

The principal purpose of the demonstrator projects is establishing partnerships and generating learning, seeking only a 'minor increase' in retrofit projects.

To date, all six demonstrator projects have established models and ways of working, informed by extensive research in Year 1[5]. Furthermore, all have established delivery structures (e.g. internal systems and marketing collateral) for identifying and engaging with the supply chain and customers, though Cornwall and London are at more of a trial stage.

However, actual delivery, in terms of completed retrofit, is significantly behind what was first envisaged by either BEIS or the projects themselves at the outset of the scheme, or even when assessed against targets revised in Year 2, as illustrated in the Table below.

As a result, recruitment and processing of customers is behind schedule / where projects originally expected to be at the end of Year 2. Therefore, whilst many project KPIs, especially those around establishing structures or delivering marketing activity are still rated 'green', targets on numbers of customers engaged / completing the process and recruitment of supply chain to deliver works have not been met.

	Bristol		Cornwall		E/W Sussex		London		Manchester		Oxfordshire	
	Target (T)	*Actual (A)**	*T*	*A*	*T*	*A*	*T*	*A*	*T*	*A*	*T*	*A*
Completed retrofits	652	12 known	0 (revised)	0	300	0	100	0	*N/A [target revised to 'engagements'*	0	250 (revised)	0

** As of the end of February 2020*

It should be noted that whilst currently reliant upon BEIS funding, the demonstrator projects are looking to the long term in their project design and rollout and have therefore not sought to rush into delivery unprepared. Especially in phase 2a, most felt their progress at the time was defensible in the context of funding challenges (discussed below). In addition, the impression from some project partner conversations was that the numerical KPIs, especially those around customer numbers and retrofit measures, are more aspirational guidelines[6] than required

[5] Set out in our interim evaluation report in March 2019.
[6] Discussions between BEIS and the demonstrator projects took place at the outset of Year 3 to ensure a shared view on the role of KPIs. It was agreed that the KPIs for Year 3 should be seen as expected deliverables, rather than aspirational guidelines.

targets: *"we were asked to provide some KPIs, but I don't know that they were necessarily priorities…getting people to do anything is a step in the right direction."*

To date, the projects are generating lots of learning around what is / is not working and why - one of the key aims of the scheme. There have been broadly similar challenges and successes across the projects. This chapter presents these and the implications for activity (and delivery of scheme objectives) in Year 3.

Successes

Generating learning and answering scheme objectives

The primary purpose of the demonstrator projects is not the delivery of energy reduction impacts, but to generate learnings and insight. Maximising completed retrofits should in turn maximise such insights, in particular testing supply chain coordination in the planning and delivery of works. However, limited progress, as long as there is understanding of the reasons for it, is equally as valuable in the context of the scheme, and therefore, evaluation objectives.

As noted above, in terms of generating learnings on the barriers to successful customer and supply chain engagement, the projects can be regarded to have been valuable to date.

And even whilst the numerical indicators (on firms signed up to the projects and completed retrofits) are lower than anticipated at this point, there have been extensive efforts to engage and to up-skill the supply chain and develop sustainable business models for retrofit beyond the scheme funding period.

Partnership working

As intended, the demonstrator projects have across Years 1 and 2, established structures for partnership working between multiple delivery organisations, with clear separation of roles and responsibilities. Though these are yet to be significantly tested with customer throughput in some projects, thus far the project set ups have reinforced existing organisational relationships and brought together organisations that had not worked together before.

Customer engagement

All delivery partners commented positively on householders engaging with the projects (aside from Cornwall, where signing up customers has been postponed to Year 3[7]). Several projects have found that, even without significant marketing activity, they have had hundreds of expressions of interest from customers in the target groups for their projects[8], to the point where processing them efficiently has become a challenge.

Especially in the context of limited marketing, this initial interest may be indicative of a level of latent householder interest and willingness to explore whole house retrofit. This latent demand, and the typical profile of customers to date[9], cannot be taken as strong evidence of the ongoing interest in retrofit amongst the wider 'able to pay' market. In effect, the projects may be capturing and servicing 'early adopters'. In addition, as noted in the 'challenges' section below, this initial householder enthusiasm for engaging with the projects has not necessarily translated to an appetite for progressing with retrofit works[10]. However, for each project, being able to highlight such interest amongst customers and the presence of a potential 'market' for retrofit activity in each area is crucial to efforts to engage the supply chain.

Interviews with customers in phase 2b found similar drivers to action across the projects. Motivated to explore retrofit for primarily environmental concerns, many customers had reached a trigger point of considering substantial home refurbishment or had recently moved home.

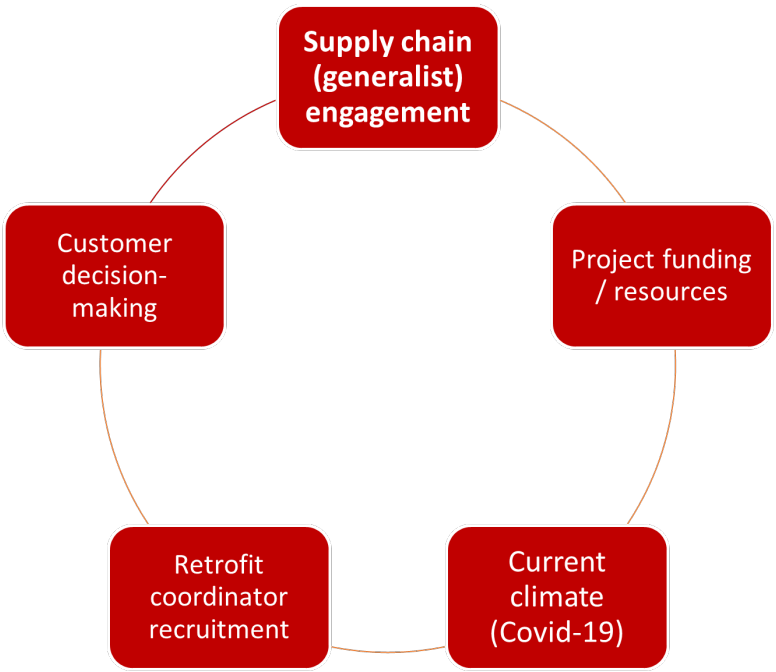
The predominant motivation for customers to engage with the demonstrator projects was the prospect of an authoritative source of new ideas and / or endorsement of their existing ideas on suitable retrofit measures, based upon robust evidence. Some also wanted help in finding good quality installers.

The most common attribution given to the projects was that they accelerated action that would likely have happened anyway, and / or suggested ideas for specific measures that may otherwise not have been considered. However, some customers acknowledged they may not have progressed far at all without the project support.

[7] Though Cornwall's delivery model was always scheduled to engage with customers later than the other projects.
[8] For example, 218 for the Oxfordshire Cosy Homes pilot in Year 2 as of the end of February 2020.
[9] Very environmentally aware, driven to explore retrofit by primarily environmental considerations, often linked to eco community organisations and with simpler measures already in place in their properties.
[10] In many cases it is too early to say whether a retrofit project will develop, but there are already a substantial number of confirmed 'drop-outs'.

Although a self-selecting sample, customers interviewed in phase 2b were almost unanimous in their satisfaction with the service received to date, usually a home assessment and, for some, support with sourcing contractors.

Issues / challenges



Some of the challenges that projects have experienced could not be foreseen and have resulted in unexpected issues arising. The challenges of supply chain engagement, retrofit coordinator recruitment and customer behaviour would, to some extent, have been considered by the demonstrator projects when agreeing targets with BEIS. Whilst acknowledging that supply chain and customer recruitment targets were deliberately ambitious, the extent of the shortfall for some KPIs is substantial. This was explored with project teams. It was acknowledged that the aforementioned issues were considered, but their severity has often been greater than envisaged. This section explores both the predicted and unforeseen challenges.

Supply chain engagement

A key objective of the scheme was to tease out the barriers and challenges to successful engagement and coordination of a potential retrofit supply chain, and in this regard it is succeeding. Projects are aiming to engage a potential supply chain by: (a) offering a pipeline of leads / customers; (b) home assessment information; (c) by picking up project administration and customer management to remove a barrier to accessing this market.

The current situation, almost identical across the projects, is one of sufficient interest and engagement from specialists (e.g. heat pump installers) but disinterest from many of the generalist builders integral to building the critical mass within the supply chain for a rolled-out

retrofit scheme[11]. For the specialists, there is often the underlying driver of supporting environmental action. The motivations envisaged by the project teams also apply for these firms i.e. the prospect of winning more business.

It was envisaged that the generalist builders would deliver some fabric work, preparatory work for complex measures, and many of the more straightforward measures, as well as, in some projects, acting as the trigger point at which more carbon neutral solutions can be upsold[12]. The lack of supply chain participants effectively prevents delivery of whole house retrofit works, certainly at the scale the projects were aiming for.

Multiple interdependent reasons have been given for the situation:

- General scepticism about likely returns / long term scheme prospects of a Government funded scheme on the basis of previous experiences e.g. Green Deal. Killip et al. argue that the failure of the Green Deal led to a return to familiar and core business activity and that Government policy is not long lasting enough for the supply chain to heed and respond properly and so little attention is paid to it (Killip, G., et al., 2020). Wider industry stakeholders interviewed as part of the evaluation corroborated this. They stated that some in the supply chain have had "their fingers burnt" with past initiatives and, as a result there is a lack of trust in government initiatives.
- Many builders deemed of sufficient quality to be approached tend to have full order books and often have no interest in growing the business, negating one of the key 'selling points' of the projects (in the form of lead generation for the supply chain): *"the ones that get it are busy."* Various papers cite the fact that not all microenterprises want to grow (Maby, C. and A. Owen, 2015) and that currently there is plenty of work to do without engaging in the low carbon sector (Killip, G., 2015). As one wider industry stakeholder commented, efforts to engage the supply chain in retrofit activity are met with *"we're ok, thanks"*.
- Many builders consider energy retrofit in general, and particularly whole house retrofit, as being fraught with risk due to the complexity of some of the technology and the interdependence of measures, including the need for these to be installed in an optimal order. This point is echoed by Killip et al., who comment that deep retrofit carries higher process risk in terms of ordering of tasks and technical risks to structural performance when multiple changes are made without considering the building physics as a whole. It requires much more in-depth project management (Killip, G., et al., 2020).
- Where the project model anticipated the involvement of a coordinator for all retrofits, paid for through a percentage of the building contractor fee, some contractors have expressed reservations about having to inflate their costs to factor in this additional fee.

[11] Where any such firms had engaged with the projects, these seemed to be driven by a personal / organisational interest in and commitment to environmental goals as much as expectation of increased commercial benefits.
[12] In Cornwall for example, it is expected that builders brought in for conventional refurb projects can initiate conversations with the householder about retrofit measures.

- Whilst intended as a beneficial offering to the supply chain, aspects of the retrofit coordinator role could be perceived as a threat e.g. QA of work, undermining customer trust etc.
- Wider industry stakeholders consulted as part of the evaluation speculated that some marketing messages and media used to directly engage the supply chain may not resonate with the audience. The people, the language and the marketing (e.g. discussing fuel poverty) may not be meaningful to generalist builders.

Overall, with strong customer demand for firms' existing offer, the theoretical benefits (increased customer referrals and sales) do not outweigh the perceived drawbacks (increased costs, challenge and scrutiny) for many of the supply chain.

Many of the underpinning reasons listed above are felt by delivery partners to be exacerbated by the focus upon recruiting smaller, more local supply chain firms which tend to have less capacity, time and resource to engage with the demonstrator projects, and generally less interest in expanding. As wider industry stakeholders commented, this group tends to have a good level of business from existing customers and relationships and are comfortable with this. An exception is the Carbon Co-op project in Manchester where it has been difficult to engage the 'established' retrofit supply chain, but progress seems to be being made since realigning their focus on smaller, local, general contractors. Albeit it is noted that many of the latter group have existing enthusiasm for energy efficiency.

The challenges in recruiting the supply chain necessitate a careful balancing act with engaging customers - not over-recruiting customers who, without sufficient project supply chain capacity, might not get attention for weeks or months and so lose interest. But similarly, being able to evidence a large potential customer base is crucial to attracting the supply chain to the project and seeing it as a viable income stream.

Beyond a collective advocacy for regulatory change to push more of the supply chain towards retrofit, project responses to date on this issue have varied. There are examples of subsidised training, indicating some anticipation that incentives may be needed. RetrofitWorks, whilst testing a number of specific marketing approaches to the supply chain (e.g. pub talks), is giving serious consideration to establishing some delivery firms to fill the gaps in the current profile of signed up firms.

A view of the unengaged supply chain:

- In phase 2b, the evaluation approached building firms operating in the geographical areas covered by the scheme that were not signed up to the projects. A key finding from this exercise is that despite contacting substantial numbers of firms, interviews were only secured with five. This seemingly reflects the challenges the projects are encountering in engaging firms, even if the reasons for disinterest could not be confirmed.

- The respondent sample itself could be considered atypical; for example, three of the five that agreed to interview already deliver retrofit measures (albeit as part of wider

renovation work rather than projects focused specifically upon retrofit)[13]. In the context of the apparent enthusiasm for the project's work (once described), and the established retrofitting experience of at least three of the five respondents, it is notable that none had heard of the demonstrator project operating in their area when its name was prompted.

Customer behaviour

As described in the above section on 'successes', customer enthusiasm has been one of the more positive elements for the projects in Year 2. Levels of interest have been such that some projects have on occasion postponed promotional activity (in order to alleviate the bottleneck on later stages of the customer journey), or have received significant levels of householder interest without conducting much marketing at all.

That said, and whilst some projects do not seem to be closely tracking the precise status of customers not progressing with works, general feedback across the projects was that customers are taking longer than expected to reach decisions on next steps[14]. This is increasing project administration in following up with customers (e.g. regular checking in by assigned retrofit coordinators) and delaying completion of retrofit projects.

The evaluation explored this further, as customer decision-making times might be considered a known and understood factor, 'priced in' to customer journey models. The lack of supply chain for particular measures is a contributing factor to delay; this has meant both delays in being able to progress works where the customer is ready, but also reticence amongst project teams to 'nudge' undecided customers, as they know the project supply chain isn't established to meet demand. Another factor contributing to delay seems to be the cost of works being substantially (i.e. many thousands of pounds) higher for some works than customers expected or are comfortable with, despite most categorising as 'able to pay'. In such cases, time has been needed for customers to more closely consider whether they want to progress, revise plans, and / or source further external finance.

Other customer challenges have included:

- For Cosy Homes Oxfordshire in particular, a higher than expected proportion of customers wanting to explore complex whole-house retrofit. Whilst acknowledged to be a positive outcome in many ways, this does create an unexpected level of requirement for resources from multiple sources, and becomes a greater challenge in the context of an insufficient supply chain. To paraphrase one delivery partner, the ambition is welcomed, the consequent logistical issues less so. This is slightly distinct from the

[13] This may underpin the finding that when given a description of the demonstrator project operating in their area and asked if there were circumstances in which they would sign up, three of the five (the same three as above) said that they would. All cited both the potential for more business and a personal belief in the importance of energy efficient retrofit. Another respondent said they might consider such work for a financial incentive. The final firm's response aligned more with the attitudes cited by the project partners: *"We are comfortable with the work that we do and we get a lot of work just on this side of the market so wouldn't need to get involved in retrofit."*

[14] In many cases, decisions anticipated in project customer journeys to generally take weeks, have taken several months or have, after many months, still not been made.

challenge described above – it is less an issue of all customers requiring more decision making time than expected, but a greater than expected proportion of customers pursuing a journey requiring a longer timeframe.

- Some customers are signing up for an assessment of the best measures and quotes through the project, then going direct to suppliers. This could sometimes be installers they may have known before approaching the project, or sometimes firms providing quotes through the project[15]! This effectively cuts out the project and does not serve to test their end to end delivery model. Some customers are not seeing the added value of the coordination and quality assurance that the demonstrator project is offering.

Retrofit coordinator recruitment

For the projects where retrofit coordinators form an important part of the process, this role has also often been identified as challenging to recruit for, though interviews in this phase indicated that this issue, unlike that with generalist builders, is starting to be resolved. The challenge is felt to be twofold:

1. Finding people with the appropriate mix of skills; a combination of technical skills (potentially across a substantial range of measures and property types) and softer skills (customer relations).

2. Attracting sufficient interest; becoming a coordinator requires substantial training (involving time and monetary costs for courses) and it was noted that some in the industry still recall their investment in Green Deal Assessor training, which did not yield substantial returns. Current demonstrator project models provide limited initial remuneration for coordinators, with significant remuneration only once / if a customer has taken forward and completed works through the scheme.

The lack of coordinators led, at least early in year 2, to some delays in processing customers through the earlier stages of the customer journeys. And this delay is felt to have led to a small number of customers losing enthusiasm / trust and disengaging.

Project funding

The delay to provision of and revision to Year 2 funding[16] (as well as confirmation of Year 3 funding less than a month before the beginning of that budget year) was cited by delivery partners as a key factor delaying activity, having three principal effects:

1. Preventing recruitment of key positions in the projects (e.g. a marketing lead in Sussex), which in turn impacts upon capacity to carry out certain activities (marketing, events, supply chain recruitment etc.)

2. Creating, amongst those supply chain aware of the revisions, scepticism towards the project as a long-term prospect. Supporting findings from a range of literature on supply

[15] This practice was cited by several respondents in relation to stand-alone renewable energy measures.
[16] Several projects have sourced or are seeking additional funding.

chain barriers to retrofit engagement, a number of stakeholders perceived that this was confirming some supply chain views of retrofit projects as 'another Green Deal'.

3. Creating a general air of uncertainty making the project teams more cautious about over-committing in terms of both resources and promises to third parties. The concern was not so much the revision to Year 2 funding as the possible implications for future funding.

Project resource resilience

Understandably, the projects are operating on tight budgets. Whilst project funding has been significant enough to enable some dedicated resource, responsibility for quite substantial elements often sits with a small core of key staff (sometimes being driven largely by just one). Over Year 2, the excess workload / lack of availability of key individuals has effectively stalled parts of the project. The advantage of the chosen delivery partners is that they have a proven track record; the challenge is that some individuals have a number of additional activities running at the same time.

Covid-19

The UK's important and ongoing response to the Covid-19 pandemic may impact on Year 3 outcomes from the demonstrator projects. Lockdown and social distancing measures limit the methods that can be deployed in, and so potentially the overall effectiveness of, project efforts to engage both householders and the supply chain, especially events and courses. It could be hypothesised that the lockdown will mean household energy costs increase substantially and become more of a consideration. However, there would seem little possibility of households pursuing significant retrofit whilst self-isolating, especially as a significant proportion of older 'able to pay' householders may be in at risk groups. It currently seems reasonable to suppose little to no retrofit activity in Q1 2020-21. Even if lockdown measures are eased (and they could be re-introduced), the effect of the crisis on the supply chain's ability to deliver whole house retrofit is hard to predict, whilst householder appetite and finance available for retrofit may be dampened.

To test these assumptions, in early April all project lead partners were asked to summarise their expectations of Year 3 delivery in the context of Covid-19. In contrast to the above assumptions, their responses presented a predominantly cautiously optimistic picture:

- Overall, project teams envisaged most early stages of processes continuing as before and efforts are being devoted to ensuring the systems are ready when work 'on the ground' can begin again. One major caveat is that responses were typically predicated upon lockdown restrictions easing by Summer 2020. A significantly extended lockdown or 'social distancing' period would presumably revise expectations.
- Many of the project functions and processes have been designed to be delivered principally or entirely online, and so are relatively unaffected. The chapters below include description of online supply chain training already having been developed and delivered in response to Covid-19. It was noted by one project lead that the lockdown

could have the effect of nudging customers to become more IT-literate and so more comfortable with moving to the more efficient, lower cost model that might help project sustainability in the long term.

- Specific marketing elements, principally events, have been affected but projects are sometimes looking at alternatives rather than cancelling these efforts altogether e.g. Futureproof are exploring the feasibility of adjusting the Bristol Green Doors event to online presentations by homeowners.
- There were no clear predictions on the likely effect of the current crisis on householder appetite for retrofit. One project lead argued that a temporary slowdown in appetite could be beneficial in allowing the project space to optimise process and app development. Cosy Homes still expect home assessment recipients who expressed an interest in taking forward measures to remain committed.
- For home assessments, several project leads described apps (detailed in the chapters below) that allow prospective customers to enter details about their home and receive recommendations on suitable measures. In addition, 'virtual' home tours / assessments have been discussed as an alternative to the current coordinator visit and home assessment model.
- Regarding delivery of retrofit, all leads felt that the current situation may have unintended positive effects on supply chain interest in and engagement with their projects, especially amongst the smaller, local, generalist builders that were previously proving very hard to engage. It was noted that many such businesses will have more space to engage with training.
- A key issue acknowledged by several leads was health and safety on site. No firm solution has been developed yet, though RetrofitWorks are trialling a new approach to property improvements for vulnerable customers on another project. This comprises limited or no contact with the householder (especially for measures that can be installed from outside e.g. windows), sealing off parts of the house, using PPE etc. The issue will be explored again as part of the Year 3 evaluation.

Demonstrator project model implications

In terms of customer throughput and 'stress testing' processes, the projects are still in fairly early stages and more significant volumes of activity might provide clearer understanding of which components of the overall delivery models are working well or not. And as already discussed in this chapter, Covid-19, both current measures to tackle this and longer-term effects of those, will almost certainly have an impact upon at least some aspects of the way the demonstrator projects are designed and delivered, both in Year 3 and beyond.

Overall, Year 2 saw some adjustments to delivery models (e.g. a smaller than anticipated focus on how finance for customers features in the scheme) and recruitment initiatives. However, whilst some of the assumptions underpinning the project designs, especially around supply chain appetite, seem to have been challenged, intended customer journeys are broadly

unchanged. The only significant change to an overarching model was in Cornwall and was necessitated by PAS2035[17] rather than any of the above issues. That said, there have been two potentially significant considerations across the projects led by RetrofitWorks:

1. Establishing supply chain firms from disparate contacts to deliver works if the existing supply chain won't engage with the projects
2. Whilst retaining a 'core' offer, being flexible and adapting the offer to customer requirements e.g. if the customer only wants a second opinion on existing plans, providing that as a one-off service for a one-off fee.

Furthermore, the consensus amongst project leads is that the reduced demand for significant domestic building works during the current lockdown may increase propensity to engage with the project from some previously hard-to-engage local, generalist builders.

Regardless of the continuation of, or likely significant disruption to, project efforts, a number of delivery partners and stakeholders have reiterated that substantial customer demand stimulation, and so supply chain interest, is reliant on national policy changes: *"The policy environment isn't right to create demand for retrofit and behaviour change. The Government are not talking about energy efficiency enough. That means that any uptake in retrofit will be piecemeal and will have a microscopic impact. There needs to be a modal shift to create the right conditions for success."* [Wider stakeholder].

In the next six chapters, the report focuses in on the six individual demonstrator projects, providing an outline of their approach and delivery over Year 2, exploring project-specific successes and challenges. A concluding chapter discusses key learnings arising from these Year 2 findings.

[17] Defined by Trustmark as follows: "a framework of new and existing standards on how to conduct effective energy retrofits of existing buildings; it covers how to access dwellings for retrofit, identify improvement options, design and specify Energy Efficiency Measures (EEM) and monitor retrofit projects."

Bristol and Bath: Futureproof

Outline customer journey

- Customer becomes aware of, and then contacts, the demonstrator project. Awareness will ultimately be driven through a coordinated Futureproof marketing campaign across social media and through local networks, but is currently through various community group communications and the Bristol Green Doors events.
- The demonstrator project responds with a quick survey to ascertain more information (property profile, status of existing retrofit plans).
- The customer is then allocated an advisor who manages them; tailored to the specific situation and interests of the customer: *"It can be anything really. It's hard to categorise. We're there to try and support them."*
- At some point the customer might settle on a measure / set of measures and the advisor will assist by referring them to suppliers to gather quotes or surveyors for further surveys, after which a further conversation may be needed. Customers may also contact them back with queries on quotes.
- There is no formal involvement beyond this point. Futureproof may check in with customers on an ad hoc basis to see how they have progressed. The customer may request and be assigned a coordinator to perform handholding / QA.

Summary

Metric	Number / description[18]
Customers engaged / starting the process	c.160
Completed retrofit projects [as of Feb 2020]	12 'measures' known to have been installed
Customer drop-outs	*Unknown*
Supply chain firms engaged / signed up	80
Key successes	• Level of customer interest despite limited marketing

[18] All figures in these tables are approximate, reflecting the numbers at the time of evaluation, which may have changed since, although the Covid-19 crisis would mean it is reasonable to assume any significant change is unlikely.

	• Significant and well-received activity to engage the supply chain • Good communications and sense of community amongst the signed up supply chain.
Key issues / challenges	• Competing priorities for the project lead's time and resources, perceived to be exacerbated by project leads having to step into detailed case work to make up for lack of detailed knowledge / skills amongst advice line staff. • Engaging generalist builders (even after designing an approach tailored to this audience). • A seeming disconnect between the support some customers want and the support Futureproof can provide. Linked to this, sometimes minimal engagement with customers beyond initial contact / referral and so limited knowledge of their progress.
Key adjustments to the project in Year 2	• A decision has been made to try not to link customers directly with supply chain members on the basis that it would be too time-consuming and challenging for advisors to maintain knowledge of every member. Instead customers are being referred to the member list on the Futureproof website to browse and re-engage Futureproof if required.

Significant and well-received activity to engage the supply chain

Futureproof (led by CSE) has had over 25[19] individuals attending training courses to date and have developed ten core training sessions that they feel are not only appropriate for their project but could be rolled out outside the region. This means strong potential for the peer-to-peer training that formed an important part of the proposition. The project training has secured builders as speakers, which is felt to enhance the perceived value of the training and get key messages across better.

In response to Covid-19, the planned 'toolbox training' was launched on Zoom with 20 builder / architect attendees and was felt to have gone well. The evaluation event observation and feedback from attendees, concurred that the session generally worked well online; the only possible drawbacks being:

[19] This does include multiple individuals from the same organisation.

a. The lack of content on soft skills (e.g. selling retrofit)[20] and substantial amount of content the trainer had to cover in the 2½ hour session, the latter meaning the opportunity for questions, and time for detailed answers, was limited. Though both issues would presumably have been true of 'in-person' training.

b. The lack of opportunity for networking; this would seem to be something that could be addressed with future events as nothing in the format prevents inclusion of fixed breaks, or separate / break-out discussions etc.

Networking is an important aspect of the project and partners, stakeholders and supply chain alike highlighted the good sense of community amongst the signed up supply chain. The Futureproof WhatsApp group is reported to regularly find supply chain members asking each other for advice and sharing new products, a realisation of one of BEIS' key objectives for the schemes: *"It's collaborative not competitive…a lot of the time they're working on their own and trying to solve problems and there might be somebody now that they can phone up and say, 'I don't know how to deal with this; I was thinking of doing X, Y and Z, but I'd really interested to hear what you've got to say about it...'"*

Attendee profile and feedback. Interviews with training course attendees found the interlinking influence of personal interest, detection of rising customer interest, and a desire to expand skillsets, as being key motivators for engaging with Futureproof training, though some respondents had existing links to CSE and / or were encouraged to attend by colleagues or external contacts. Attendees represented a mix of experienced firms and new entrants; most had learned retrofit measures on the job with no formal training. Satisfaction with both the training and other services (e.g. WhatsApp group) was high and was compared favourably with college courses. In particular, respondents value the networking, advice sharing and *opportunity* for collaboration, though this opportunity was not reported as having been realised yet. And whilst none felt there had been any growth in work since engaging, there was a general acceptance that *"it's early days"*, and reassurance that Futureproof training has expanded their offer.

Despite this positive picture, engaging the supply chain is proving to be a challenge

Futureproof targeted the supply chain with a social media campaign (34 highly targeted adverts across LinkedIn, Twitter and Facebook) to promote the launch of the Toolbox Talks. These achieved 175,174 impressions and 1,192 clicks[21], though these numbers cannot definitively assess the effectiveness of the campaign in securing supply chain sign up. Taking into account the extent of this campaign, subsidising of the training for some firms (based on the extent of work delivered in the region) and regular promotion in trade press, the eventual

[20] This is a deliberate choice; as one partner stated: "*we assume they know how to sell and how to liaise with customers."*

[21] Four different messages were tested, with ones about meeting customer demand seemingly most effective; messages around planet saving and creating a community of builders less so. Futureproof are also not using the term 'upskilling' in promotion, concerned this could be patronising: *"The message is, we think you've got the skills, we think you would be really good at it, but what we're not sure is whether you understand how it all fits together and how important it is."*

sign up to the course might be considered low. One partner noted that their pool of suppliers to refer customers to lacks trusted window and EWI installers, and roofers.

One factor nominated by the team is that it isn't formally certified (i.e. not applicable for the CITB Construction Skills Levy[22]) and they understand that many builders will not want to spend money on training if they aren't getting certification off the back of it.

Perhaps more pertinently, project partners accept that the typical builder they are seeking to attract is often a small, family firm, perhaps with a handful of subcontractors. Such firms have little free time (and energy) to engage with Futureproof on top of their day job. They have full order books and consequently have limited interest in tackling a new, perhaps more challenging field. As noted by one partner, some intend to retire within the next ten years anyway.

Futureproof's challenge felt to be indicative of wider issues in supply chain training

One delivery partner was keen to raise a wider issue regarding the focus of conventional training, their contention being that whilst the majority of work comprises refurbishment and maintenance, formal skills providers focus almost exclusively on new build. They feel this translates to a lack of sometimes basic understanding amongst new entrants of refurbishment and retrofit. Furthermore, even where trained in the basics, they feel the industry often does not know about the products best suited to retrofit jobs, meaning the right products aren't used: *"They don't go to a builder's merchant and ask for diathonite because they've never heard of diathonite. And the builder's merchant won't stock the product if they've not got enough people asking for it."*

One delivery partner linked this issue to big manufacturers relations with colleges*:* a *"self-fulfilling loop"* whereby only large manufacturers can afford to subsidise the training colleges, meaning the exclusion of smaller companies' products from these courses and many builders merchants. This is also a finding set out by Killip et al who notes that installer confidence is based on repeat experience and so the industry can be very conservative with a resistance to innovation or change (Killip, G., et al., 2020), a wariness of new technologies (Gupta, R., et al., 2014) and lack of supply chain expertise in both installation and use of technologies leading to reluctance to install (Topouzi, M. 2013).

Slow (to some extent, unknown) retrofit progress

A significant reduction in target retrofit measures was agreed with BEIS, but this target of 652 measures will not be attained, with 11 completed measures recorded as of mid-February 2020. The delivery team are relaxed about this, a stance partly influenced by the view that the targets, even revised, are unrealistic[23], but also due to partner belief that the project is still

[22] https://www.citb.co.uk/levy-grants-and-funding/citb-levy/about-the-citb-levy/

[23] One respondent noting that a target on EWI hadn't even been reached in a separate scheme that came with grants.

delivering useful outcomes: *"I'm feeling confident that what we're doing is making an impact, albeit small scale."*

The low reported numbers may also reflect limited monitoring. After referring customers on to their supplier list, Futureproof currently only know if any works have progressed if customers proactively inform them[24]. Compounding this is the project CRM system proving less effective than hoped at drawing out data, meaning the team have to carry out resource intensive manual work to obtain key statistics.

Despite this, and even allowing for a substantial number of retrofits having been delivered unbeknownst to the team, attributable retrofit measures will be far below 652. Evaluation interviews and analysis suggest several reasons for this…

Limited time for - and prioritisation of - the project

Whilst not reported as a direct factor by the delivery partners, time allocation to the project appeared to the evaluation team to be a key issue. The evaluator's impression at interview was that the lead had not been able to devote significant time to Futureproof in the six weeks after Christmas, with other projects they are involved in, including delivering training courses, competing for attention. One partner acknowledged that over winter, fuel poor programmes (helping vulnerable people with broken boilers who could no longer heat their home) had taken priority.

Although not confirmed by respondents, there is also a potential for prioritisation based upon funding certainty. Prior to Year 3 funding confirmation, delivery partners reported having been asked by BEIS to look at the implications of stretching Year 2 funding beyond March 2020. As well as this requiring time for scenario planning / juggling of resource, it also seems a reasonable hypothesis that the issues with Year 2 funding, and the uncertainty on Year 3 funding, might have led to more guaranteed workstreams being prioritised.

A possible disconnect between the support customers would value and support Futureproof are able / willing to provide

Evaluation interviews indicate that householders seem to be looking for one or both of the following:

- Support to help them make sense of a complex and confusing subject.
- Help in identifying reputable suppliers and want to receive such support from a trusted/reputable intermediary.

With regards to advice provision, several customers said they would have valued more in depth support. The Futureproof advice line provides a high-level appraisal of options and

[24] A situation perhaps indicative of the relatively low concern about the numerical targets i.e. a more rigorous, albeit resource intensive, tracking system could presumably have been developed if deemed important.

assessment of any ideas the customer has (e.g. optimal order[25], identifying which ideas that might be less effective, planning constraints pertaining to particular measures etc.). However, Futureproof has deliberately designed their advice offer to avoid stifling customer choice and to limit (reputational) liability[26]: *"[we won't] tell somebody what insulation they can use. We will give them options of different types of insulations and the pros and cons."* This drawing of boundaries on advice is somewhat borne of necessity[27]. It was acknowledged that advice line advisors sometimes lack in-depth retrofit knowledge / experience to match the sometimes quite complex customer queries. This has at times meant senior project staff being required to step in to deliver responses to customers ("case work'); this was not anticipated and is not felt to be sustainable.

On contractor signposting, Futureproof are not providing customers with a recommended supplier, instead referring customers to lists on the Futureproof website, a different length of list depending upon the measure. The rationale for this decision is limited knowledge about each contractor and again a preference to avoid the liability that might arise from a specific recommendation: *"[the contractor] might not work in that person's part of the city or they're in a different county, or they don't get on with that person, or the contractor's got their books full for 18 months..."*

Whilst project team reservations are understandable, specific contractor advice could be worthwhile on the basis that:

a. Just slightly enhanced data gathering from signed up contractors would enable Futureproof to be more confident in recommending for specific customer profiles / locations. One customer also suggested that, if not contractor names, Futureproof might provide advice as to the sort of qualifications and credentials that customer should expect contractors to have.

b. The decision to not provide specific contractor advice does not appear to be insulating Futureproof from customer dissatisfaction. One customer expressed disappointment that the homes energy assessment reporting had not included contractor recommendations; one felt Futureproof had "left us to it" on searching for suppliers, whilst another talked about contractors on the website not responding to enquiries (indicating that they link these contractor's behaviour with their Futureproof experience anyway).

Furthermore, there could be a perceived dissonance in Futureproof's acknowledgement that retrofit is complex, but that simultaneously customers are sufficiently equipped to select appropriate suppliers themselves.

In summary, customers being without support that they deem valuable may be contributing to delays in their decision making already influenced by other wider factors. As of February 2020,

[25] It was noted that Futureproof have likely deliberately limited their retrofit numbers through conscientious advice: *"lots of people are wanting ASHP and we could have sold loads, but sometimes they clearly needed draught proofing first."*

[26] Project team representatives noted that some customers do not follow advice anyway e.g. they do not want to wait to progress measures in a particular order: *"[We] are choosing not to focus effort on these."*

[27] Whilst there are Home Energy Assessors delivering visits and reports for the project, Futureproof were – at the time of interview – expecting a training session from Carbon Co-op on their online My Home Energy Advice tool, a home energy assessment tool.

several partners and stakeholders had detected, in ad hoc customer follow up, some householder unwillingness to progress due to general uncertainty about Brexit and economic recession etc. The current crisis will have compounded this uncertainty.

Little focus on householder marketing, but interest regardless

As outlined above, the Futureproof customer journey / support is, relative to some demonstrator projects, fairly 'light-touch', especially beyond the home assessment. The project appears to be prioritising supply chain engagement and training. As a result, and conscious of the challenges recruiting a sufficient pool of contractors for some measures, Futureproof's direct marketing to customers has been deliberately minimal, largely limited to a presence at 'exemplar home' events in 2019[28]. The expectation is that promotional activity will be ramped up in Year 3.

Despite this, partners report a "steady stream" of customers contacting Futureproof, seemingly coming across the project through CSE's existing community group networks, word-of-mouth and internet searches, as well through the 2019 Bristol Green Doors event. As of February 2020, around 160 had approached Futureproof and received at least some advice.

Various project and stakeholder representatives attribute this to a particular regional interest in social justice and environmental causes. Whilst drawn from a small and self-selecting pool, customer profiles across the demonstrator projects wouldn't suggest a profile unique to Bristol, but engaged customer numbers for Futureproof are better than most other projects and it may be that there are *more* of these early adopters in the region. Another factor may be the partner organisations being well established in Bristol.

Customer interviews:

- Respondents to the phase 2b research were primarily driven by environmental considerations, but with limited existing retrofit work done. They had been actively looking for support before they found Futureproof (demonstrating some latent demand for support and a group proactively seeking it out, helping to explain the interest despite minimal marketing). Triggers for exploring retrofit at this point were often moving house or embarking on a wider renovation project. Customers accessed the project hoping for expert advice to assess the most effective retrofit options for their property and / or to identify suitable contractors[29].
- In terms of the support received, most had received a home energy assessment and two had commissioned physical work, in both cases Futureproof support had been limited to signposting grant support and contractors. Assessors were praised as highly experienced, friendly and professional.
- Despite recommendations for improvement on supplier signposting and advice depth (discussed in sections above), customers were happy to recommend the service; albeit one noted that they would not recommend it to anyone for whom time is a critical factor. All

[28] https://www.cse.org.uk/news/view/2345

[29] Some had identified contractors but valued the CSE reputation and wanted their independent advice.

interviewees felt that they would be progressing their projects in the absence of Futureproof but slower and potentially opting for simpler measures, as they were less aware of / confident in the range of options available to them.

The aforementioned lack of customer follow up (partly by design but also due to resource constraints) means Futureproof aren't proactively aware of whether (and if so where) customers are stuck on their retrofit journey, and so how they can help them move along it.

Cornwall: Homeworks

Outline customer journey

- A tradesperson undergoes some relatively simple training regarding energy efficiency retrofit. Once training is complete they become a Low Carbon Ambassador (LCA).
- When the tradesperson visits the homeowner about some unconnected general maintenance they can, whilst getting the originally intended job done, have a Low Carbon Conversation (LCC) with the homeowner. This would cover potential things they could do to their home to improve energy efficiency and provide ballpark costings / expectations of disruption etc.
- If the homeowner is interested in getting the retrofit work done, the LCA will refer them to a retrofit coordinator in order for the PAS 2035 process to begin. The coordinator will conduct an assessment (£250) and 10% of this goes to the LCA for making the referral.
- The customer then chooses whether or not to progress with recommendations in the coordinator report.

Summary

Metric	Number / description
Customers engaged / starting the process	5 (trial case studies)
Completed retrofit projects [as of Feb 2020]	0
Customer drop-outs	0
Supply chain firms engaged / signed up	7
Key successes	• Engaging with the PAS 2035 process; the project is fully compliant.

	• Delivery partners exhibited at a home show in Autumn 2019, deemed successful in engaging homeowners (and members of the supply chain to a lesser extent) and suggesting a viable market.
Key issues / challenges	• Re-planning the project upon needing to adapt to PAS 2035, has taken a long time. • There are currently no qualified retrofit coordinators in Cornwall, and it is proving hard to 'sell' the training time and costs to potential coordinators. • The initial round of workshops to engage the supply chain were not as effective as hoped, despite incentives. • Geography, in particular the required travel distances for the supply chain, is felt by several stakeholders to be a unique challenge for this project.
Key adjustments to the project in Year 2	• Changing the model to ensure PAS 2035 compliance, leading to the introduction of Low Carbon Ambassadors and retrofit coordinators. It was previously hoped that a supply chain lead could deliver a quasi-coordinator role.

The model is PAS2035 compliant, but has eaten a lot of time

The original KPI aimed for 760 retrofits in Year 2. Instead there have been no referrals, no training modules delivered, nor much registering of local firms to Trustmark. The resetting of expectations has been discussed and approved by BEIS - the rationale being the need for the project approach to be remodelled to fit PAS2035.

At the outset Homeworks were expecting tradespeople to conduct the retrofit coordinator role. The introduction of PAS2035 forced a re-appraisal and realisation that this approach would not be compliant, with much more rigorous coordinator requirements for even very 'low risk' retrofit work. Homeworks has therefore spent the second half of Year 2 re-designing the project to comply with PAS2035, arriving at a new model and customer journey - as outlined at the start of the chapter. Accompanying this process, an online application will track the number of LCCs that are happening and will include some "gamification"[30].

Homeworks describe this re-design as a significant success, a model that is PAS2035 compliant and (they feel) goes much further than other projects in this regard. The project lead

[30] Gamification being the application of typical elements of game playing (e.g. point scoring, competition, rules of play) to other areas of activity, typically to encourage engagement with a product or service. Current ideas are for LCA competitions, on conducting the most LCCs and / or carbon reductions from completed retrofit projects that began with their referral. Homeworks also hope the per-LCA carbon figures will become something of a currency and topic of conversation in the building community.

notes that this will provide valuable learnings for BEIS and other stakeholders around the proportionality of PAS2035 for low-risk simple measures.

The approach is PAS 2035 compliant, but much else seems unresolved

Analysis of partner and wider stakeholder responses to the evaluation would seem to indicate that for a six month investment of time, many uncertainties remain. Plans for full rollout were already intended to be steady and incremental rather than immediate. Homeworks are in the midst of a first wave of testing with five[31] case study customers (recruited through an exhibition at a 2019 Home Show). The intention was then to expand this to about 70 cases in Q1 2020-21, with a view to 'going live' in Q2, a plan likely to be significantly revised in the context of Covid-19. One stakeholder envisaged that proper testing would require a timeframe much longer than the Year 3 deadline; a suggestion raising the question of where funding for this will be sourced, as the project wouldn't seem likely to be self-sustaining by April 2021. Homeworks was exploring some potential funding through the Welsh Government but their priorities are focused around social housing at present.

The Homeworks approach is therefore currently still theoretical. The changes have not yet been properly tested, and several unknowns remain. These are principally around tradesperson appetite for participation e.g. how tradespeople feel about the 'Low Carbon Ambassador' label and whether the £25 referral fee is likely to be sufficiently attractive to potential LCAs. Homeworks is yet to finalise marketing materials and is still in the process of developing training modules for the LCAs. As one partner described: *"this is a pilot, and will need to go through two or three iterations to get it right…why would installers recommend other installers to do work, what's in it for them? If one installer makes a recommendation, that then delays their own project for three months - whilst further work is done - how do we manage that? We are just working this through."* Several other examples of uncertainties voiced by partners might seem to be issues to resolve during design of the approach:

a. The clustering of the retrofit supply chain and case study customers (will the former want to travel to the latter over sometimes substantial distances across the county?).

b. The extent – and willingness to engage - of retrofit coordinator resource in Cornwall.

These are not peripheral tweaks but questions fundamental to the success of the approach. Whilst just one viewpoint, the evaluation did find stakeholder scepticism about the likely effectiveness of the whole approach unless focused on specific trigger points (and therefore tradespersons): *"The model assumes that…whilst someone is having a kitchen installed or windows replaced, a tradesperson could talk to them about energy efficiency and they would be amenable to it. My concern is that most people call a tradesperson for a specific thing. The idea that someone who they have asked to quote for their kitchen would then start talking to them about their loft...would jar with most. Most people call [heating engineers] when they are*

[31] It was suggested that the unwillingness to expand the pilot beyond this very contained number of case study homes was linked to BEIS funding: *"What we don't want to do is expand it at this point…we start sending stuff out and then can't follow it up because either there's a gap in funding or the funding doesn't happen for next year."* Whilst the precise allocation of Year 2 budget (and so the costs of the re-design) have not been shared, the lack of retrofit delivery in Year 2 would suggest there may be surplus budget for a larger pilot.

in crisis, their boiler has broken or their heating is not working. At the point of crisis, they want the cheapest and quickest swap - they are not open to a more considered conversation. I think they need to think about the trigger points for a more considered conversation, like someone is planning an extension or they have just moved into a new property. I think the project is asking too much of the installer and assuming too much of the customer." Various papers set out skills gaps barriers to the supply chain championing retrofit within the domestic market; including a lack of interpersonal skills and problem-solving skills (Maby, C. and A. Owen, 2015).

Possibly linked to some of the above issues, descriptions of project governance over the last six months indicate a level of disruption e.g. changes of personnel within delivery partner organisations, and the Eden Project (steering board members) pulling out due to *"competing priorities".*

Other re-design side effects

The effective re-setting of the Homeworks project has two further drawbacks:

1. **Lost momentum.** The consensus from partners and stakeholders was that the Homeworks exhibition at a Home Improvement Show in October 2019 had been a success, attracting substantial homeowner and supply chain interest. But the constraints placed on the initial piloting / case study group has meant full advantage cannot be taken.
2. **Obsolete resources.** Some of the marketing collateral and training material was produced before the re-design. Whilst a few items are felt to be reusable, the partner view was that certain resources were no longer relevant.

East / West Sussex: Warmer Sussex

Outline customer journey

- Prospective customer finds out about the project (via community groups / local authorities engaged by the project team and through Warmer Sussex promotional material), enquires and signs up for a Whole House Plan (coordinator visit and follow up report).
- Customer liaises with the retrofit coordinator and chooses a package of measures to progress.
- The coordinator helps to finalise specification, gathers prices from several vetted contractors and puts the agreed contracts in place.
- Measures are delivered under the project's management and the coordinator conducts customer liaison and QA throughout.

Summary

Metric	Number / description
Customers engaged / starting the process	c.50
Completed retrofit projects [as of Feb 2020]	0
Customer drop-outs	0
Supply chain firms engaged / signed up	c.10
Key successes	• Starting to get a pipeline of customers; initial marketing efforts seem to be working well. • Several potentially large projects are about to begin (250 heat pumps through the BEIS Electrification of

	Heat scheme, some of the £2.7m Brighton & Hove City Council retrofit funding might come their way, and Hastings BC are funding MEES enforcement, which could help to drive up both customer and supply chain interest).
Key issues / challenges	• Challenges in engaging generalist builders. Engaging contractors/supply chain is proving a 'chicken and egg' situation with customer recruitment, though the new pipeline of work (see above) should help. • There is a backlog in issuing whole house assessments after assessments have been completed due to coordinator resource.
Key adjustments to the project in Year 2	• A reduced focus upon development of finance packages (on the basis of low demand amongst early adopters) and contemplation of creating supply chain capacity (in response to the ongoing challenge developing an approach to engaging them that still ensures a sustainable model).

Early customer interest, yet to convert to action

Approximately 60 home assessments have been booked or conducted and there are customers wanting to progress work, with one whole house retrofit expected, at the time of evaluation, to be imminent. Warmer Sussex have not been marketing significantly due to the supply chain challenges detailed later in the chapter,[32] but the project seems to be getting talked about through community groups anyway. Whilst some stakeholders feel retrofit is a hard sell against more cosmetic refurb, the project team are not concerned about this aspect: *"we've reached the conclusion that we won't find it too hard finding customers."* They expect that completing some customer journeys and producing some case studies will further increase referrals.

A more significant concern is the time customers are taking to make decisions (an issue general to all demonstrator projects). Linked to this, some ostensible customers appear happy to have a Whole House Plan (WHP) service for (currently) £75, with seemingly no strong intention of acting on it at all, or certainly not in the short term / within the Warmer Sussex process. Delivery partners expect that the introduction of the finalised customer tool (derived from the RetrofitWorks project London) will be useful in enabling householders to conduct a basic assessment of retrofit opportunities for their home, so filtering out those with a casual interest from requiring further project resources. The hope is that this will then allow them to

[32] Referrals to date have tended to come from community groups and / or word of mouth. Ten properties were nominated through one landed estate.

increase the cost of WHPs for the remaining highly motivated cohort. Though there are concurrent concerns about CROHM[33] being too effective: *"We might decide after a while that we just aren't getting enough leads; we've given them free information and they disappear."*

The only other adjustment to the project is the reduced focus, at least for the moment, on finance. The Ecology Building Society is ready to launch, but there are no customers in the current early adopter group that require finance. And there would be project team concerns about signposting or offering advice on finance without a Consumer Credit Licence. The project team is looking at offering any finance package through third parties.

Customer interviews:

- Respondents to the survey comprised a very engaged group, with (primarily) environmental drivers to action and a long term interest in retrofit, many with most simpler retrofit measures already complete, disproportionately with an energy or construction background (e.g. architect, engineer), and with involvement in local energy community groups. These customers reported proactively looking for support before they found the project (again pointing to latent demand), seeking expert advice to assess what work they should do.
- All those interviewed were at an early stage in the process, only just post-WHP or waiting for a visit. The WHP reports were described as being value for money and sufficiently detailed on measure costs / carbon savings etc.; several customers also praised the inclusion of advice on the best order in which to implement measures. Two respondents reported finding the report a bit too technical: "*I'm relatively knowledgeable about this stuff. I wonder how someone would cope who was starting from scratch."* More commented on the longer than expected turnaround times, both for booking assessment visits and to receive the subsequent report[34].
- Most felt that they would have found other routes to take forward retrofit work (again perhaps reflecting the latent demand profile of these early adopters), several acknowledging this might have involved paying more for a similar survey by another organisation. One reported that they might still be thinking about it, or might only have gone ahead with simpler measures.

Progress held up by the supply chain

The project lead described the balancing act being grappled with across the demonstrator projects: how to create enough demand to interest the supply chain and help to see the value in initiatives like retrofit training, whilst not inundating the project with customers to whom they cannot properly deliver and who swiftly become demoralised / disinterested. Several factors were discussed across the interviews with partners and stakeholders:

[33] The Carbon Reduction Options for Housing Managers (CROHM) has been built based upon analysis of energy outcomes from individual and combinations of measures to inform projections, based upon inputted property data, of optimal retrofit measure(s) to undertake in a property.
[34] While some made allowances for a new project, timelines were a particular concern to one respondent, who needed to undertake work in between tenancies and ended up pursuing works elsewhere.

1. An environment across the sector, due to *"having their fingers burnt"* by previous schemes[35], whereby firms are tentative about engaging. One stakeholder felt that the annual funding renewal of the project was adding to this uncertainty: *"why would contractors bother joining if they don't know if it will continue from year to year?"*
2. Far from specific to Warmer Sussex, good generalist builders being sufficiently busy[36], unavailable[37], not interested in growing *("they're at a size that's comfortable*"), and not wanting to cede 'control' of their jobs[38]. And because of this, not being attracted by the project offer of coordination, customer generation or reduced bureaucracy / customer handling.
3. The delays and revisions to Year 2 funding. As well as delaying the appointment of a dedicated RetrofitWorks project manager for Warmer Sussex, one partner feels that with full funding they could have appointed a specialist role marketing to and recruiting the supply chain. Though this may link to the prioritisation of Year 1 funding, one stakeholder questioning the value of the market segmentation work, which they felt *"didn't tell [Warmer Sussex] a lot that they didn't already know."*

One delivery partner is advocating for more supply chain firms to be established. The project team has also been trying to engage councils (who presumably may be able to allocate skills / budgets / fiscal incentives accordingly) using the RetrofitWorks CROHM software, to highlight both the retrofit opportunities in their areas, and the supply chain skills gaps preventing realisation of those.

Increasingly favourable conditions may help address some barriers

The effect of the Covid-19 pandemic on organisational goals and priorities is yet to be fully understood. At the time of interviews in January and February 2020, several schemes in the Sussex area seemed likely to provide the project with more favourable conditions in which to attract customer and supply chain audiences.

Climate emergencies declared by a number of authorities seem to have meant more willingness to engage with Warmer Sussex. Previously, individual officers might have wanted to take more interest, but were isolated somewhat. With the emergencies declared, Warmer Sussex expect that these individuals will have full political backing. The declarations may augur climate emergency funding in the county that the project could access. Indeed, whether connected to the declarations or not, council funding streams are arising for delivery of energy efficiency measures and enforcement of MEPS. Brighton & Hove Council have set themselves a stringent net zero target and are currently planning out how this will be achieved; they have cited Warmer Sussex in their high level plan.

One stakeholder expressed concern, with the county awash with plentiful retrofit funds, about the danger of rogue traders seizing upon this and giving retrofit a bad name. Citizens Advice

[35] Green Deal being cited several times.
[36] *"We usually get about eight or nine leads a week and we can only really do four jobs a year."*
[37] *"If you've got a reliable builder who is doing one job at a time and he's just started his next job, that might take six to eight months."*
[38] There are already tensions on at least one Warmer Sussex project where the customer had already sourced builders and an architect; the latter appears not to be welcoming Warmer Sussex's involvement.

are having a big push on scamming in the building sector and this, in the context of the stakeholder's concerns, is felt to provide an opportunity for Warmer Sussex to promote the value of a trusted organisation coordinating a trustworthy supply chain.

It should be noted that partners do perceive local (and national e.g. Electrification of Heat) funding, often focused upon single or simpler measures, to carry risks as well as opportunities, principally in attracting the pool of appropriate supply chain away from whole house retrofit.

Linked to this is a concern that with some national schemes now requiring retrofit coordinator input, there will be a sharp inflation in coordinator rates, and unwillingness to commit to, or even work freelance for Warmer Sussex. There has already been a backlog in the project in issuing WHP reports due to a lack of coordinators and limited experience (and therefore confidence) of the assessors they do have. In some cases, RetrofitWorks have been picking up the drafting of WHP reports. The project team hope that they are turning a corner on this issue.

London: Ecofurb

Outline customer journey

- Prospective customer finds out about the project (existing Parity Projects and / or community group contacts), enquires and signs up for a Whole House Plan (coordinator visit and follow up report).
- Customer liaises with the retrofit coordinator and chooses a package of measures to progress.
- The coordinator helps to finalise specification and gather prices from several vetted contractors, and puts the agreed contracts in place.
- Measures are delivered under the project's management and the coordinator conducts customer liaison and QA throughout.

Summary

Metric	Number / description
Customers engaged / starting the process	c.20 trial customers
Completed retrofit projects [as of Feb 2020]	0
Customer drop-outs	5 paused / not responding, but it is too early to define them as having 'dropped out'.
Supply chain firms engaged / signed up	c.25
Key successes	• Sophisticated customer user interface for engaging with the project and home assessment nearly ready to go live after user testing. • Website, branding and customer marketing materials now ready, after user testing. There are plans for highly targeted but relatively cheap programmatic marketing. • Strong interest from boroughs that have declared a Climate Emergency.

Key issues / challenges	• Supply chain engagement has been problematic, posing a risk to turn-round time for quotes. There is caution about launching some marketing until this is addressed. • Decision-making by trial customers takes a long time, particularly for major expenditure (some may need external finance). • It is not always clear how well whole house plans can be integrated with customer's other plans for house improvement.
Key adjustments to the project in Year 2	• Customer journey still being finalised; there is the possible introduction of a triage system with potential charges for customers just wanting a retrofit coordinator survey or minor measures, on the basis that some customers are not seeking the full customer journey offering described above. • The 'supplier journey' is also still being finalised based on engagement with suppliers; the project may develop a range of routes and deals for suppliers, from self-referrals to Ecofurb referrals. • Ecofurb is trialling involvement of the retrofit coordinator in conducting surveys for installer quotes as well as initial household assessment.

The project user interface has been built, slower but bigger than anticipated

A substantial amount of Year 2 resource has been devoted to the development of the User Interface (UI). This allows the customer to submit their postcode, look up CROHM data for their own house, choose possible measures, and create and save their own version of a 'whole house plan', which can then be submitted to Ecofurb for follow-up.

The intention was for the UI to 'go live' 4-5 months ago, but initial user testing raised sufficient issues for a complete re-build to be required[39]. Some 'back-end' processes still need to be finished, as does finalisation of the privacy policy, legal conditions and GDPR.

On a positive note, the UI will cover 23 London Borough Councils (LBCs) rather than the originally intended 9. There is strong borough support for the tool. With climate emergencies being declared, LBCs see the project as a valuable source of assistance in meeting carbon targets and growing green jobs in their area.

[39] Several stakeholders noted a lesson here about not over-developing before testing.

As well as the UI, Ecofurb has developed the website and other materials including banners, business cards and a 'contractor pack'. Reviewed as part of the evaluation, these have clear branding, clear messaging and are not text-heavy. However, none of these marketing elements have yet been properly tested / their effectiveness measured.

Customers more of a challenge in London than elsewhere?

Project services (except the UI) are being trialled with around twenty customers; even with this ostensible early adopter group, there are significant challenges with customers concerned at service and measure costs, and some looking for smaller measures that do not fit well with the whole house retrofit approach. The UI, when launched, is seen by the project lead as a good way of easing customers in, separating them into segments and then tailoring the Ecofurb offer accordingly. An example of tailoring being considered is that if (after playing with the UI) customers settle on a significant retrofit package and want to engage further, they may be offered the WHP for free. Another is tiering the level of coordinator offer to different customers, so they aren't trying to sell a full cost service if the customer is looking at a simple, low cost measure set.

Several stakeholders described particular issues for a London scheme; a high % of solid wall properties, a high % of flats, a large number of conservation areas, minimal parking, the Ultra-Low Emission Zone and lower levels of English as a first language. Some of these perceived challenges did chime with the evaluation interviews with existing customers, though, as might be expected for early adopters still participating in the project, responses and customer profile did not vary considerably from those found in other projects:

Customer interviews:

- Unlike other demonstrator projects, Ecofurb customer respondents' properties included terraced properties and flats, and seemed less likely to already have simpler retrofit measures (though those interviewed are seemingly equally ambitious for complex measures). In other ways, customers were similar to those interviewed in other projects: environmental motivations again to the fore, technical backgrounds, a longstanding interest in taking retrofit action (with triggers to act being recently moving house and planned renovation), encountering Ecofurb through word of mouth (sustainability networks) or proactively through web searches. Those interviewed wanted a home energy assessment setting out options, more information about specific technologies, and help in sourcing quotes from reliable contractors.
- The trial customers were all at an early stage of the process. Most had received their WHP, and some had received quotes for certain measures but none had yet accepted quotes or had measures installed via Ecofurb. Decisions were being slowed by the high cost of some recommended measures[40] (some of which, if taken forward, would require external finance), awaiting further discussions with coordinators, planning permission, and the need to liaise with neighbours prior to works. The latter two considerations were perhaps more to the fore amongst London respondents than those from other projects.

[40] One customer had decided to proceed with non-Ecofurb contractors as they had obtained a quote from another firm that came well-recommended and who quoted prices cheaper than the quotes obtained via Ecofurb.

- Customer expectations of the service were generally met or exceeded; fully satisfied by the service, particularly since it was free. Most customers complimented the whole house approach and thought the WHP tailored visit and report useful[41]. Some customers found their report difficult to interpret: "*I'd say that it's probably not as user friendly as it possibly could be."* Some would have liked more dialogue with the retrofit coordinator, either because they didn't understand the recommendations, or to discuss the phasing and prioritisation. Several commented that quotes took quite a long time to come in and some momentum had been lost. A few customers did not want the full service offered by Ecofurb as they were already confident about finding and managing contractors. Several trial customers reported that they would have found it challenging to take forward retrofit without Ecofurb: "*Ultimately what we would end up doing otherwise is probably doing a bit of research online, having a best guess and maybe getting it wrong, or maybe doing nothing because we're concerned about getting it wrong."* Some would have proceeded with certain individual measures that they felt more confident about.

Trialling to buy time for supply chain issues

Active marketing of the offer to customers is delayed to Phase 3, principally because of concerns about the supply chain not being ready to meet significant demand, though partly because large-scale marketing activity will apparently be dependent on Phase 3 funding. Ecofurb's preferred marketing option would cost more than the Phase 3 funding it is expecting. Therefore the 'low budget' plan is to undertake programmatic marketing in targeted areas, once the UI has been launched and Parity Projects and RetrofitWorks are confident that the project has enough installers in London to handle demand (i.e. providing quotes within a week): *"When we think the service is ready, we will take the 'trial' label off."*

Both Parity and RetrofitWorks are based in London and have conducted many successful projects in the city, yet even within this context the supply chain is proving hard to recruit. RetrofitWorks has contacted around 300 supply chain organisations and is pursuing c.50 in particular - 6 have signed up, only one has outright refused. In the absence of reliable contractor data to conduct targeted marketing, Ecofurb have been cold calling, sending out mailshots and, where possible, arranging one to one meetings with interested installers. One partner reiterated that for the quotes system to be meaningful and prompt, there needs to be, for each measure, at least three contractors capable of delivering it. This is not currently the case for some measures.

The standard issues previously discussed also apply: good contractors are busy, used to finding their own customers, some aren't particularly interested in growing, and many of those that might be want to see significant customer demand to get installers interested. A recent supply chain engagement event also highlighted the issue of some supply chain firms not wanting to rely upon coordinator data in the WHP to form quotes.

[41] Trial customers received this service for free, but several said they would have been willing to pay for the plan (figures quoted in the range £150-200).

RetrofitWorks has been in discussions about recalibrating the offer to the supply chain, including invitations for installers to bring clients[42] to Ecofurb for a referral fee, and discounting Trustmark training and accreditation.

Access to a retrofit coordinator pool not a problem. Managing them might be.

Several respondents highlighted that there is no shortage of retrofit coordinator resource in London (attributed by some to the presence of Parity, RetrofitWorks and recent retrofit schemes). Furthermore, LBCs are very supportive of the coordinator role in Ecofurb because of challenges (over-pricing, technical issues, consequent householder loss of confidence) encountered on previous schemes without the role. Ecofurb assigns jobs to suitable coordinators based on their specialisms in certain measures or property types.

One partner commented that it can be a challenge to manage some retrofit coordinators: *"they come with their own biases. And the role attracts some people who may not be as commercially minded as they need to be."* All the London coordinators are freelance, and Ecofurb is considering employing a dedicated full time coordinator so that they have more control and understand how they spend their time. They can then top up with freelancers as needed.

[42] Those interested in retrofit projects beyond what the installer themselves can offer, at least without coordinator support.

Manchester: People-Powered Retrofit

Outline customer journey

- Prospective customer finds out about the project (usually through existing awareness of Carbon Co-op or PPR promotion via social media / radio / Carbon Co-op events), enquires and signs up for an assessment (coordinator visit and follow up report).
- Customer liaises with the coordinator and decides upon a level of coordinator support they require throughout the remainder of the process (from suite of options: support to obtain quotes, sourcing contractors, managing contractors, QA etc.).
- The customer then pays for, and receives, that level of service.

Summary

Metric	Number / description
Customers engaged / starting the process	*Unknown*
Completed retrofit projects [as of Feb 2020]	Unknown but assumed to be 0
Customer drop-outs	Unknown but assumed to be 0 at this point.
Supply chain firms engaged / signed up	c.12
Key successes	• Development of a detailed customer journey based on service design principles. • Development of the My Home Energy Planner software, offering an online assessment of measure options for properties. • Demonstration of latent demand for a paid for retrofit service. • Innovative approach to engagement of customers and suppliers.

Key issues / challenges	• Uncertainty of BEIS funding and concern about market over-reliance on this uncertain funding stream. • Achieving a balanced growth of supply and demand. • Securing the engagement of larger (beyond micro) suppliers.
Key adjustments to the project in Year 2	• None.

An established presence, tech and a flexible offer

Carbon Co-op see the project funding as enabling them to build upon preceding work, they are 'in it for the long haul' and are keen that the project builds on firm foundations and does not raise false hopes. One of the key benefits for them is an existing presence in the area; they are already a recognised and trusted brand for a number of customers and suppliers.

The pilot has trialled some innovative social marketing based approaches but have discontinued marketing as they have found that demand, largely from within their existing networks, has exceeded their ability to respond. To manage demand they have learnt to be more cautious about the amount of resource expended on new enquiries and have introduced a screening mechanism. Customers who are further away from initiating retrofit work are now directed to information on the website, whereas in the past they might have received a visit.

The pilot finance investment has assisted the development of both a bespoke CRM and a new version of their Home Energy Planner tool (similar to London's UI)[43]. They see these as being potentially important investments enabling the organisation to scale up activity more cost effectively in the future e.g. by enabling better systematisation of the process: *"These are the forms we use, this is the referral process, tendering, so it's all systematised. You're not trying to create things on the hoof all the time, trying to typify the client journey basically as much as possible."* Having already engaged with Futureproof regarding the Home Energy Planner tool, both the service design approach and ICT products are outputs that Carbon Co-op anticipates being able to share in some form, perhaps through a social franchise approach.

Another feature of the project seems to be the flexibility of the offer; it isn't trying to sell a fixed PPR offer, it doesn't require a fee from contractors, and it responds to what the customer or

[43] The web-based My Home Energy Planner tool is aligned with PAS2035 not fully compliant. PPR's view is that there is *"lots of really good stuff"* in PAS2035, but the overheads associated with compliance to the standard would be unaffordable if translated into some retrofit projects i.e. it's very helpful for larger, more complex and expensive jobs, but PPR envisage that most of the projects they will be engaging with don't need it.

supply chain contractor wants[44]: *"…you don't end up spending two years developing something that doesn't work."*

Careful customer targeting

PPR charges participants for the cost of undertaking a home energy assessment (£500) and £250 a day for each day of subsequent support provided. In practice, however, most participants are receiving a discounted rate on the assessment (50% at present); it is intended to taper these discounts off over time.

As part of their marketing approach PPR invested considerable upfront time in identifying a set of consumer archetypes. The archetypes identified as being likely most receptive (older, wealthy, environmentally aware homeowners). Whilst many of their customers fit within this profile the pilot has identified a new type of customer , driven by an interest in what they loosely describe as 'green bling', i.e. some of the cutting edge technological aspects, and status, of retrofit.

Customer interviews:

- As for other demonstrator projects, the ease in attracting customers may reflect latent demand: very strong environmental drivers, with a willingness to trade likely poor financial return for carbon reduction, comfort and health outcomes. Interviews found previous consideration (and in some cases undertaking) of retrofit works previously, with moving house and refurbishment projects prominent triggers for exploring this again. In some instances, respondents had been aware of Carbon Co-op for some years and had heard about PPR via newsletters. One referred to having heard someone from Carbon Co-op speak on the radio, whilst another came across them as a speaker at an event. Familiar with the Carbon Co-op, they admired their ethics and saw them as a trusted source of advice to take their project forward.
- Most were in the early stages of the customer journey, though some had progressed past the home energy assessment stage and were looking for more bespoke forms of support from PPR. Interviewees consistently noted that they found the involvement of PPR important in building their confidence, both in terms of helping them to make sense of a complex and confusing topic, and in practical matters such as dealing with contractors. Several interviewees praised what they saw as the flexible and 'non-pushy' nature of the service offered by PPR. Though it should be noted that some had expected, and would have liked, to be able to hand over more of the retrofit project management and decision making to PPR. Most interviewees felt that they would have made some progress without PPR but that their eventual projects might be less ambitious and slower to be realised.

As noted above PPR is keen to filter out those who are unlikely to progress as early as possible in the customer journey. To do this it has created an assessment system when dealing with initial queries. Customers who score highly are offered a discounted rate. The

[44] One example given was some support being sold as a one-off service to a roofing firm that got in touch regarding a challenging retrofit job.

success of this might be shown by the fact that PPR is not aware of anyone who has taken up the paid-for service and then dropped out. Though the high assessment cost, relative to other demonstrator projects, also likely filters out those with only a casual interest. Despite this filtering, PPR is encountering the same issue as other projects in the slower than expected speed of customer decision making, though its model seems less vulnerable to this issue as the home assessor has been better remunerated.

Its target markets, and certainly the profile of its early adopters, has meant no pressing need to develop a finance offer. It has explored finance options with the Ecology Building Society, but has for now concluded that there is already so much cheap finance available commercially that it would not expect to compete with.

Like other projects it has stopped any significant customer marketing drive due to need to balance supply and demand. At present it has more demand than its supply chain can meet.

Commonplace supply chain issues despite a relatively good base

The development of the supplier network is taking more resources and time than hoped, *"though we never expected it to be easy!"* Carbon Co-op has identified, and had some level of contact with, around 100 suitable contractors, but only a small group of dedicated, invested individuals have signed up. This includes firms it already knows, including from a separate fuel poverty retrofit project, and contacts of those firms. Satisfaction amongst this group is high[45]. However, their feeling is that they have largely only reached the already committed eco-firms, and many builders they are currently engaged with are already generally too busy / demand exceeding supply (itself implying a latent customer demand that PPR is tapping into).

PPR knows the challenge is for it to engage more conventional builders, wary of retrofit due to its complexity. This often leads these builders to significantly overprice retrofit jobs (if they go for them at all) in order to de-risk them. PPR is attempting to address this need to reassure the conventional builders through a more flexible approach to training. Currently training is site based, participants are subsidised to attend, expert builders are used as the trainers and conducting training across Friday and Saturday to minimise disruption. Moving forward it hopes to engage larger businesses by moving more of the training to be 'on site' / 'on the job' rather than in a classroom environment. Other work on training includes:

- Talking to the CITB in the North West to investigate how they might get some of their training CPD accredited, and perhaps develop retrofit training pathways.
- Linking with the Manchester Business Growth Hub (BGH) with a view to the BGH being able to provide business planning support to the contractors that they are engaging with.

Carbon Co-op also hopes the CRM will prove valuable not only in matching customers with suitable contractors, but collating contractor performance data which could be used to identify skills needs and issues / performance.

[45] Contractors are posting questions about tools and tricky jobs, and seeking advice from others: *"Retrofit is quite stressful. It is often quite complicated and contractors are concerned about getting it right; they are valuing the sense of community that the pilot is helping to engender."*

Finally, a unique (at least to date) feature of PPR is the hosting of ‘match-making’ events. The rationale is that a key barrier to retrofit is mistrust on all sides; as one respondent noted: *“Some householders have run across cowboy builders, builders have met nightmare clients, both have met inept architects.”* So these events, with all three groups in attendance, aim to build trust and enable early conversations involving all actors.

Oxfordshire: Cosy Homes

Outline customer journey

- Prospective customer finds out about the project (usually through community group networks, including events, Cosy Homes presence at third party events, and / or social media activity), enquires and signs up for a Whole House Plan (coordinator visit and follow up report).
- Customer liaises with the coordinator and chooses a package of measures to progress.
- The Coordinator helps to finalise specification and gather prices from several vetted contractors, and puts the agreed contracts in place.
- Measures are delivered under the project's management and the coordinator conducts customer liaison and QA throughout.

Summary

Metric	Number / description
Customers engaged / starting the process	c.220
Completed retrofit projects [as of Feb 2020]	0
Customer drop-outs	c.25
Key successes	• Strong customer appetite; effective marketing and recruitment through the community groups. • An enthused and growing group of community organisations seeking to promote the scheme.
Key issues / challenges	• Engaging installers, in particular generalist builders; the original project offer did not seem to provide sufficient reward for the perceived risks. • Managing customer demand against this backdrop.
Key adjustments to the project in Year 2	• A reduced focus upon development of finance packages (on the basis of low demand amongst early adopters) and contemplation of creating supply chain capacity (in

	response to the ongoing challenge developing an approach to engaging them that still ensures a sustainable model).

Customer engagement is going well, customer progression less so

Figures as at the end of February were 218 customer referrals, 148 of which have entered the process: 132 of these have had home assessments and 101 have received WHP; 36 have progressed to a Client Service Agreement, setting out agreed measures, pre-surveys needed etc. Referrals per month have been erratic reflecting Summer 2019 slowdown and Christmas, but the 'run rate' since launch has been about 20-30 a month. With agreement from BEIS, and despite enjoying the highest number of referrals across the demonstrator projects, Cosy Homes has reduced what it feels is now an unrealistic customer KPI. One delivery partner summarised the central concern as follows: *"We would have hoped by this point, with WHPs going through as early as last Summer, that we would have had [some] works done."* This chapter explores why this has not yet happened.

The customer journey design assumed about three weeks between paying £75 and getting a home assessment, then about three weeks between assessment and receipt of a WHP, then about 2 weeks before following up. This has not been the reality. Christmas holidays introduced delays, as did enforced absences of key members of the team (which meant a backlog of WHPs to deliver), but certainly in recent months, customers decisions / committing to works has been a principal source of delays.

Few Client Services Agreements have been signed and returned, whilst there has been drop-out. Some of this has been due to misunderstanding of the project offer. It was also noted that some customers had already engaged builders before contacting Cosy Homes[46] and likely never intended to progress works through Cosy Homes; just wanting coordinator reassurance on their plans. In addition, one heat pump company has reported six WHP recipients going direct to them rather than through Cosy Homes.

However, the predominant customer status is non-response / pending. Anecdotally there are deep considerations of money and disruption[47]. Following the WHP, some customers have been surprised by the expense of some more impactful measures.

Customer interviews:

- Similar profiles to the other projects; primarily (though not exclusively) motivated by climate change. All reported thinking about having retrofitting work done for some time (and many have undertaken more simple measures) with reported triggers including replacing an old boiler, moving property, and receipt of a thermal imaging service. In short, Cosy Homes is

[46] This can be an avenue to recruiting supply chain.
[47] One delivery partner cited some *"very nice properties"* with occupants later in life; sufficient funds but no intention of pulling their house apart, when they realise what works might entail.

tapping into (generally) highly motivated customers with some level of disposable income. "*I think I've done as much as I can in terms of raising the comfort level of my house. It is more to try and get off gas and do my bit towards becoming a carbon neutral house*." Interviewees had heard about Cosy Homes through LCH or their own similar networks. Customers were attracted to the home energy assessment, and assistance provided in identifying contractors.

- All but one customer had received a home energy assessment, some have participated in a follow up interview with Cosy Homes staff, to review and discuss the report, others were still waiting to receive their WHP. Recipients found WHPs useful and observed that they were thorough, detailed and professional: "*It's given me a list of choices, but it's also put a price on every single thing, so it's made it possible for me to make decisions very easily."* A number referred to delays; a more widespread criticism than on other demonstrator projects, though a larger throughput: *"I'm…just on the brink of getting started. I think that timescale could be faster really.*" One customer also felt the WHP should set out costs by outcome i.e. x to fix the wall heat losses, x to fix the roof heat losses etc. Overall however, interviewees indicated that they would be happy to recommend the service, and several have already done so. Most respondents felt that, in the absence of Cosy Homes, they would have proceeded with projects with contractors providing advice but would expect slower progress and reduced confidence.

Conversely, for those that have made decisions, a higher than expected proportion are going for complex measure mixes, bringing into sharp focus the challenge of bringing together a supply chain that can deliver such projects. One partner stated that the project had planned for a higher proportion of simpler measures in Year 2 to get things moving, though this would presumably not have properly 'stress-tested' the process. There was also an acceptance of erstwhile customers pursuing single measures outside of Cosy Homes, on the basis that the project could only add limited value in such cases, which seems to challenge the expectation that these customers were to form a high proportion of the Year 2 base.

There is consideration of introducing the online home assessment tool (as developed in the London project) for householders to establish viable measures for their property and what would happen to bills and carbon and what would be the costs if they progressed different combinations of these measures. As described for other projects, this may mean fewer requests for a WHP but amongst those that do seek a WHP, a higher conversion rate to further action. As for Sussex, the possibility of simultaneously increasing the price of the WHP was discussed.

Finance is not currently proving a barrier to action for early adopter customers, and whilst there are some project efforts being invested in the design and trialling of a low interest loan scheme, it is felt to be difficult for any finance offer to match existing commercial offers. Like several other projects, Cosy Homes have talked to the Ecology Building Society, but expect it to be 'about a year' before offers are in place.

Mixed marketing experiences

Cosy Homes have developed substantial marketing collateral, including pop-up stands, leaflets and videos explaining the Cosy Homes process. For content aimed at customers, this seems very comprehensive, with clear explanation of how Cosy Homes will help the householder, calls to action / next steps. Written content is not text heavy and the website carries well-produced videos explaining the offer. Website views have increased steadily since the launch of the blog in October, with Twitter reported to be the most successful platform for website clicks / impressions. There are thorough Cosy Homes guidelines setting out brand logos, icons, straplines, colour palettes, typefaces, fonts, tone of voice, ordering of messages, imagery and photography style guide.

Much of this content is used by the local community groups which remains a principal recruitment channel[48] of trusted advocates. Nine such community groups are now signed up to the project, and with 20+ connected to Low Carbon Hub and more groups in the wider region, there seems scope for this approach to grow with the project. Delivery partners attending group promotions have found them to be good and 'on-message'; not over-selling or over-promising to customers[49].

At least for materials to be distributed through the community groups, Cosy Homes has recently refocused the marketing message to be more focused on the environmental / climate change aspects of retrofit. As well as aligning with the increased media focus on this angle in 2019 (e.g. XR), this was also a change several community groups had been advocating for.

Though there has not been detailed assessment of the relative effectiveness of different methods, the project team is detecting spikes in referrals after events, and is now collecting information on how referrals came to it. Some more specific community group approaches have included:

- Offering (further) discounted WHPs for the first few customers accessing Cosy Homes through them.
- Targeting the participants of a recent, separate thermal imaging project that the group delivered.
- Stands at farmers markets and festivals.

The development of Cosy Homes marketing material is relatively advanced, though there have been challenges:

- Unavoidably, until there is a pool of completed customer journeys, the process as described in the marketing materials is still conceptual, with no case studies cited in leaflets.

[48] And not just for customers; Cosy Homes is encouraging the groups to forward supply chain contacts too.
[49] As noted by one delivery partner, this is unsurprising as to do so would reflect badly on the group. Exemplifying this attitude, one group report having written a *"friendly disclaimer"* on its Cosy Homes promotional material and website, clarifying their independence from the project.

- Until recently at least, there seems to have been less formal content targeted at the supply chain, though Cosy Homes are now conducting local radio adverts targeting the supply chain.
- It is proving harder than expected to engage some of the 'trusted brands' that were hoped to be a significant aspect of the marketing to customer and supplier alike. A project deemed to have great potential was assessment and retrofit of a handful of selected National Trust properties in the region, but this seems to have stalled, with January 2020 meetings cancelled (and an evaluation interview with National Trust indicating confusion as to who would lead efforts to re-engage on this, and low appetite to drive this). In general, approaches to national brands are struggling for traction, with central communications teams moving slowly, and some outright refusals. One delivery partner felt that Cosy Homes isn't currently big enough to be recognised as a valuable proposition for these brands. It has been focusing more locally e.g. engaging the local Co-op, an organic farm shop, and a luxury holiday cottages company.

Coordinators have been a hurdle, but some optimism now

Retrofit coordinator resource to process referrals has been an ongoing issue, with the delays this has caused often noted by interviewed customers. Free coordinator training in 2019 secured a good number of attendees but few completed it or followed it up. The level of difficulty was postulated as a reason for this; one respondent observing that: *"I looked at doing the course myself and the level of expertise expected is daunting, it's a challenging course; perhaps you'd start and then wonder if you're up to it."* Nervousness over another Green Deal was also cited by several respondents. Furthermore, some who did go through the training were not based in Oxfordshire, or planning to work there.

For the latest training, there has been an emphasis upon recruiting people from Oxfordshire with the right technical background and attitude, with recruitment efforts supported by the Retrofit Academy that delivers the training. Most attendees are already established energy or building professionals and would work part-time balancing Cosy Homes with their pre-existing business / activity[50].

The principal barrier to coordinator recruitment was felt to be the remuneration vs. up-front time investment: *"As much as some love what we're doing, it has to work for them financially and it's piecemeal rather than a salaried job, so hard to gauge if one can make a living out of it."* Whilst time required per WHP might reduce slightly with experience, it is a highly tailored service, and there is a general view amongst delivery partners that they may have under-priced the coordinator service and need to charge more, the hurdle to this being customer appetite. Hence a bigger focus on educating its audiences (supply chain and customers) on the extent and importance of the coordinator role and whole house approach. *"It's the customer who loses out if a heat pump goes into a poorly insulated building."* Also emphasising

[50] From Cosy Homes' perspective, a full-time coordinator would be preferable so they can more easily set deadlines and workloads. However, when asked about a full time role, all turned this down.

coordinator trustworthiness: the coordinator is selling a good customer outcome, not a specific measure.

Cosy Homes now feels it has a sufficient bank of coordinators (including specialist measures and property type expertise) to deliver WHPs to those customers currently at the applicable stages, but need more to support any increase in throughput.

The biggest outstanding barrier to progression is the supply chain

As one delivery partner succinctly described, the supply chain is the principal challenge, meaning the project has to be reactive to which projects / measures can be taken forward. The challenge is felt to be worse than envisaged and certainly worse than for Ecofurb, where previous schemes have built up a supplier base.

The contractors the project team want to engage (*"the ones who get it"*) are very busy, and often have no desire to grow, meaning low / no marketing costs and no issues getting work. It was noted that many pay Check-a-trade or similar for leads. On the ostensible benefit of the WHP providing the data to save contractors time and money in formulating quotes, some contractors still want to do their own surveys anyway, overall increasing costs for the customer.

In summary then, for significant parts of the target supply chain, none of the Cosy Homes offer is sufficiently compelling when weighed against the drawbacks i.e. giving away a % of revenue (or having to overcharge the client to avoid that[51]), being monitored and quality assured. A Cosy Homes flyer targeted at the supply chain invites them to be part of the Cosy Homes community / co-operative but doesn't clearly articulate the tangible benefits of doing that.

There are some adjustments taking place to address the issue – appointing a full-time business development manager specifically focused on recruiting contractors, varying the % ask for simple projects (where coordinator resource requirements will be lower), and considering a fixed one-off fee rather than a %. However, as in London and Sussex, a potentially significant change in approach would be the creation of a delivery business for Cosy Homes, engaging colleges and apprenticeships and setting up / helping new entrants set up as co-ops doing general building works: *"We need to make contractors see this is a market that has to happen. We [could] fund the creation of companies and give them the work."*

There are other ways in which the Cosy Homes offer may be adjusting

There is a move towards a more flexible service offer, as deployed in Manchester. Cosy Homes is increasingly encountering customers who have already engaged a designer or architect and want the project team to review those plans. Cosy Homes is currently considering a discrete offer – review by its trained coordinators with a discrete fee.

Another distinct approach discussed by several stakeholders across Year 2 is targeting an offer to homes of a similar type in the same area / street. Whilst retrofitting tends to be highly

[51] It was reported that several contractors are saying they would rather include the Cosy Homes fee as a separate direct charge to the householder outlining the service the project provides and how much it would cost, rather than masking it within their quote.

bespoke (many properties in a given area may have *started out* quite similar but have often been quite heavily customised), this approach would seem to offer opportunities for the same measure being applicable for a number of properties in close proximity, attracting contractors with high volume, potential economies of scale (in labour and materials) and other logistics efficiencies.

Finally, not within the funded project activity, and unlikely within Year 3, Cosy Homes is exploring the potential for services to the private rented sector. Oxford City council is very interested in integrating Cosy Homes within a MEPS programme. However, this would focus more on simple measures, and the council want to see Cosy Homes deliver works first: *"If we were looking purely commercially, it'd be more of a focus."*

Key learnings

As set out in the introduction to this report, at the outset of Year 2, there seemed to be three distinct project types:

- Delivery organisations with a quite 'hands off', customer-led, pick-from-a-menu model (Bristol, Manchester). This enables considerable agility in reacting to customer and supply chain interests / preferences, especially where customers are arriving with some pieces of the retrofit jigsaw already in place (e.g. contractors appointed, measure preferences fixed), Consequently, it enables the projects to add some value to a retrofit project, and receive some revenue, even where a customer may not be interested in a full package of support. The drawback, cited by project representatives, is that this more agile approach can be quite uncertain / chaotic, in terms of customer management and coordination of project resources.
- The RetrofitWorks approach (London, Oxford, Sussex), initially intending a more fixed service[52], though as described this now seems to be becoming more flexible. The pros and cons of this approach would seem to be converse to those for the first group. A fixed process makes it easier to plan / organise resources. However, it can be a harder sell to customers, and mean significant (and under-remunerated) resource input at the front-end of the process ending with the customer deciding not to progress, or doing so outside the project. Separately, a significant benefit of the RetrofitWorks involvement in all three has been the transferability of assets (e.g. CROHM) from one project to the other, creating efficiencies.
- Cornwall, with a journey instigated (to some extent driven by) the tradesperson, rather than being customer-led. The model has yet to be significantly tested. The theoretical benefit is ensuring conversations with householders about exploring retrofit are happening right at the trigger point of other works being considered / carried out on their property. It also represents an attempt to co-opt the generalist supply chain into feeding customer appetite for retrofit, rather than simply delivering on it. As highlighted by some respondents, the potential challenge with this approach is insufficient supply chain interest / incentive to play this role.

Aside from Cornwall, the projects seem to some extent to be converging on a model that responds to many of the issues encountered:

- Initial marketing to householders (especially effective in the early stages via community groups, but recognising the value of engaging councils).
- Utilising an app / online assessment tool[53] to filter out householders less likely to meaningfully engage with the project, saving person time for the project, especially important in the context of tight margins for the provision of assessment services. Linked

[52] The customer journey design across the three is similar; it is the contexts in which is being deployed that differ.
[53] This may risk some exclusion of the digitally illiterate, though all projects intended to retain the offline routes into the projects.

to this was an intention on the part of most projects to increase prices for such services and “get better” at selling the added value of them.

- A more flexible service offer / menu i.e. a core model offer, but acceptance that specific services can be separated and offered on an ad hoc basis according to customer requirements[54].
- Realisation that customer generation and cutting bureaucracy may not be sufficiently attractive to a large enough section of the supply chain. Solutions to this within project designs and offer differ (subsidised training, setting up new companies) but many partners and stakeholders concurred that a cultural shift (ideally instigated through policy) is necessary.

The evaluation is conclusive that customer demand exists, but perhaps more latent than generated by the projects. For most projects, customer marketing is yet to begin in earnest, and it is entirely logical for project teams to be engaging the ‘low hanging fruit’ to get things moving. However, this does mean little evidence as yet as to the size / sustainability of this early adopter group, or the effectiveness of project marketing to engage wider groups if necessary. The marketing materials reviewed in phase 2b appeared to be well-designed with clear messaging, but even where data analytics (reach, clicks etc.) were being collated, there was little evidence from the projects as to how comparatively effective different methods (or individual posts etc. within each method) had been. The only method that the projects were unanimously confident had been impactful was events (typically a presence at a third party event), as specific expressions of interest / referrals could be linked directly to conversations at those events[55]. Several partners also described the importance of the local green community group network in producing referrals, perhaps unsurprisingly given the seeming profile of the phase 2b customer respondent group. The unknown is how effective such groups will prove beyond this early adopter demographic. The potential challenge of engaging beyond this early adopter group is indicated by the finding that even some engaged enthusiasts have baulked at even quite heavily subsidised[56] and in depth services. Retrofit schemes have a history of being supported / subsidised by public funding, and there it may be that there is almost an expectation amongst consumers of support around retrofit being free (or at least very low cost).

On building customer demand, or at least seizing upon opportunities, moving house was cited by a surprising proportion of existing customers as being the trigger point for pursuing retrofit, indicating the potential value of projects working more closely with estate agents, an avenue several pilots are exploring. Another idea arising from both the Manchester and Oxfordshire projects is selling a more collective retrofit approach; offering assessments and measures street by street to similar profiles of housing that might benefit from similar measures. If effective, such an approach could bring economies of scale (on labour and materials), better

[54] There have been discussions within the evaluation team considering how far projects can determine a scalable offer when they are being very flexible in their delivery approaches. It may be that – at least in the current climate - this flexibility is a key component of a scalable offer. Though if this adaptability is key, there is the further question of projects ensuring they have the skills to provide this.
[55] Or, in Oxfordshire for example, figures showed a clear spike in referrals subsequent to a certain event.
[56] Though there would appear to be some room for manoeuvre here, with the three RetrofitWorks schemes offering a £75 Whole House Plan service, whilst Manchester and Bristol charge over £200.

attracting the supply chain with this and customer volume, and could enable the upselling of bespoke additional measures to certain properties.

Finally, focusing upon the core objective of the demonstrator project scheme, and reiterating the point above, there seems to have been an initial overestimate of the value the supply chain would place in the project offers. There was a feeling amongst stakeholders across the projects that a stronger push at a national level is needed to create the conditions for market and supply chain interest. However, despite the common calls for more and sustained funding, stricter standards and enforcement, not all ideas were regulatory. For example, the suggestion from one partner for a national campaign *("a Great British refurb")* that the projects can 'hang their hat on'.

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