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**Programme Area:** Buildings

**Project:** Building Supply Chain for Mass Refurbishment of Houses

**Title:** Defining the Customer

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### Abstract:

Please note this report was produced in 2011/2012 and its contents may be out of date. This deliverable is number 1 of 5 in Work Package 5. The aim of work package 5 is to ensure that any mass scale retrofit mechanism designed by the consortium addresses the key needs of the end customer, the building occupant. This deliverable is the first step in this process and is focused on gaining an understanding of what the customer base in the UK looks like. To this end it includes details of the householder types and the output of stakeholder interviews held to develop and understanding of their role, influence and experience of delivering retrofit. In addition a comparison of the findings for the UK with similar information for France and Germany is provided.

### Context:

This project looked at designing a supply chain solution to improve the energy efficiency of the vast majority of the 26 million UK homes which will still be in use by 2050. It looked to identify ways in which the refurbishment and retrofitting of existing residential properties can be accelerated by industrialising the processes of design, supply and implementation, while stimulating demand from householders by exploiting additional opportunities that come with extensive building refurbishment. The project developed a top-to-bottom process, using a method of analysing the most cost-effective package of measures suitable for a particular property, through to how these will be installed with the minimum disruption to the householder. This includes identifying the skills required of the people on the ground as well as the optimum material distribution networks to supply them with exactly what is required and when.

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# Defining the Customer

Optimising Thermal Efficiency of Existing Homes

Deliverable 5.1 Project Report

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## Executive Summary

Deliverable 5.1 of the Optimising Thermal Efficiency of Existing Homes project seeks to develop an early understanding of the customer value environment in retrofit, through insight gained from current retrofit stakeholders. In addition to this research, the deliverable also aims to define the customer variables that will be used to develop further Work Package 5 (WP5) work, including the segmentation model.

To ensure the greatest results for the wider project it was decided and agreed between work package leaders that the variables used in WP5 should match the variables and bandings used by the house and stock models being developed in WP1 and WP2. Further details on the variables chosen are detailed in the deliverable 5.2 report.

For 5.1's primary research, a survey of 32 stakeholder organisations including private (energy companies, architects, retailers, etc.), public (government departments, local authorities, etc.) and third sector groups (consumer groups, NGOs, housing associations, etc.) was carried out by members of the consortium via face-to-face or telephone interviews.

These interviews yielded a large number of consumer value considerations related to retrofit, with the major issues being seen as:

- **Economic value of retrofit** – the initial affordability of the retrofit measures and continued value of the works;
- **Disruption caused by works** – a major concern for customers and a potential barrier to uptake, particularly for measures like internal wall insulation;
- **Increased comfort** – a key motivator for works is the ability to improve thermal and indoor environmental (air, noise, etc.) comfort;
- **Adequate engagement and provision of high quality information** – uncertainty over the benefits and costs of retrofit is a barrier to uptake and to meeting customer expectations;

- **Improved energy performance / increased energy savings** – seeing the benefit of reduced energy bills is an important driver to take up retrofit measures.

The majority of stakeholders noted that retrofit was currently of low importance to UK customers but was nonetheless seen as very important to their organisations, now and into the future. There was, however, a lack of clarity over the future shape of retrofit in terms of who will deliver it (energy companies, local authorities or private companies) and what strategies will be used (street-by-street, on demand or a hybrid of both).

In addition to the stakeholder survey, a review of French and German retrofit was carried out to see what lessons could be learned from the experiences in these two countries.

In France, customers seem to share many similarities with UK counterparts, including low interest in “green issues” and no apparent value link between property price and energy performance. There are a range of French schemes to support retrofit, including tax credits, low VAT and interest-free loans, which have seen varied take-up by French customers.

In Germany, an established programme of low-interest loans through the German federal government investment bank KfW has seen a large and growing take-up of retrofit in Germany. Importantly, though, the KfW loans are not tied to the property, in contrast to the UK’s proposals for the Green Deal. However, crucially, energy efficient homes in Germany typically sell for a higher price – a situation not mirrored in either France or the UK.

Key arising recommendations from the stakeholder surveys and European insight include:

- The need for a major programme of training and skills development;
- Legislation to help bring the private rental sector into retrofit;
- Consolidation of advice, funding and policy streams;
- Focus on developing a link between asset value and energy performance;

- Roles for a project manager or single-point-of-contact liaison officer would help ensure retrofit packages meet customer expectations.

## Introduction

Work Package 5 of the Optimising Thermal Efficiency of Existing Homes Project seeks to focus on the customer experience and requirements of domestic retrofit, developing an understanding of the customer (in most cases, the resident), exploring the different values held by different segments of the UK population and gaining valuable insight into how to design an attractive value proposition that will engage the different segments of the UK population.

Deliverable 5.1, Defining the Customer, seeks to begin this part of the research by providing a solid base for the subsequent Work Package 5 research through the following work areas:

- Identification and description of householder types and variables for input into deliverable 5.2;
- UK stakeholder interviews – identifying and engaging key UK stakeholders to develop an understanding of their role, influence and experience of delivering retrofit, including insight into any regional differences;
- Comparative analysis that describes the customer value environment in France and Germany.

The following report details the findings and outputs from these work areas, highlighting key insights to support the ongoing work of the other work packages in the Optimising Thermal Efficiency of Existing Homes (OTEoEH) project.

### Work Package 5 Deliverable Summary

Work Package 5's exploration of customer value in retrofit is divided into five discrete deliverables:

**5.1 – Defining the Customer:** Stakeholder engagement and desk-based research to establish key aspects of the customer value environment;

**5.2 – Customer Value Methodology:** Development of a segmentation hypothesis to focus future research on key customer groups;

**5.3 – Customer Engagement Exercise 1:** Primary research (face-to-face, structured interviews) with customers who have gone through a retrofit;

**5.4 – Customer Engagement Exercise 2:** Primary research (mass survey, workshops and “virtual retrofits”) with the wider UK public;

**5.5 – Synthesis Report:** A consolidating report summarising key research insights and providing recommendations for exploiting customer value.



## Methodology

### Identification and Description of Householder Types and Variables

To ensure that the work in 5.1 and 5.2 was aligned with the rest of the OTEoEH project, it was agreed that the variables and conventions used in Work Package (WP) 5 would be the same as those used in the WP 1 and WP 2 models being developed by the BRE and UCL.

Through attendance at the scoping workshop for these models and ongoing dialogue with the Energy Zone Consortium (EZC) partners, the WP 5 leader was able to provide input into the development of the metrics used for the models, ensuring that the householder variables would be suitable for WP 5 requirements.

### Stakeholder Identification and Interviews

An EZC workshop was held in September 2010 to identify key stakeholder groups, specific organisations and define their role, importance to the current and future retrofit agenda and suggest key engagement topics to inform development of the stakeholder interviews. Follow up work distilled this list to a number of key stakeholders for which the consortium members then provided contact details.

Based on the workshop output, a draft interview script and methodology was developed and validated by the EZC. In recognition of the broad and diverse range of stakeholders in the list it was decided to use a list of standard questions for all stakeholders, including key questions on regional differences, supplemented by a small number of specific questions tailored to each individual stakeholder. A sample questionnaire is included in Appendix A.

To ensure compliance with the Data Protection Act, a short statement was agreed to by all participants, clarifying that the answers given were considered to be representative of the view of the organisation and not personal opinions.

Furthermore, the statement clarified that all personal contact information would be held securely in accordance with Peabody's Data Management policies and procedures and not shared beyond the EZC.

A series of structured telephone and face-to-face interviews were conducted by representatives from across six of the EZC partners. To ensure the accuracy, reliability and validity of the findings, interviewees were sent the write-up of their interview and asked to make any changes where they felt their views had not been accurately captured. The write-ups were then sent to Peabody and UCL for collation and analysis. By reviewing the responses under key themes led by the questions asked and augmented by some of the specific questions asked in the final section of the interviews, key points, their frequency of comment and valuable individual insights formed the basis of the reported findings in this paper.

### **Comparative Analysis with France and Germany**

With assistance from the EZC's France-based partners in EDF Research and Development, a combination of desk-based research and face-to-face meetings (including a meeting in Paris with a representative of the French Environment and Energy Management Agency, ADEME) were carried out to gain an understanding of the customer value environment in France and Germany.

## Householder Types and Variables

The demographic data to be used in the WP5 segmentation model is to be aligned with the demographic data used in the English Housing Survey (EHS) as it is this dataset that will be used in the development of the WP1 and 2 models. After consultation with the BRE it was clear that demographic variables would not be included until a later draft of the models, but that when included, they would be based on the variables and bandings used by the EHS.

The 5.2 report will detail the specific variables chosen for the segmentation, but for an example of the variables available, see the below:

Variable: **hhtype6** [household type – 6 categories]

Values:

- 1** couple, no dependent child(ren);
- 2** couple with dependent child(ren);
- 3** lone parent with dependent child(ren);
- 4** other multi-person households;
- 5** one person under 60;
- 6** one person aged sixty or over;

Variable: **agehrp4x** [age of household reference person – 4 band]

Values:

- 1** 16-29;
- 2** 30-44;
- 3** 45-64;
- 4** 65 or over.

## Interview Results and Analysis

The final list of 32 key stakeholders interviewed was:

The Council of Mortgage Lenders  
Sustainable Development Capital Ltd.  
British Gas  
EDF Energy  
Scottish Power  
Ofgem  
B&Q  
Marks and Spencer  
Link Housing Association (Scotland)  
Pennaf Housing Association (Wales)  
Northern Ireland Housing Executive  
London Borough of Sutton Council  
Local Authority Building Control  
Local Government Association  
Department of Energy and Climate Change  
Department for Communities and Local Government  
Department for Business, Innovation and Skills  
Energy Saving Trust  
National Energy Action  
Consumer Focus  
Residential Landlords Association  
UK Green Building Council  
Federation of Master Builders  
Construction Skills  
Construction Products Association  
Wates  
Parity Projects  
Kingspan  
Anglian  
Isothane  
Travis Perkins  
PRP Architects

## Stakeholder Value Metrics

Interview participants discussed a wide variety of factors that they considered as main priorities of their customers. The range of value metrics discussed can be summarised as:

- |   |   |
|---|---|
| • Economic value  | • Environmental concerns  |
| • Quality of product – does what intended with no side effects      | • Competing priorities (financial and value priorities –e.g. kitchen)                   |
| • Minimisation of disruption  | • Ease of implementation & installation (not DIY)/hassle free (single point of contact) |
| • Increased quality and thermal comfort                             | • Ease of maintenance and replacement costs   |
| • Improved energy performance/ increased energy savings             | • Financial repercussions and loss of income (landlords)                                |
| • Adequate engagement and the provision of high quality information | • Speed/duration of works   |
| • Usability/convenience of technology installed                     | • Equity  |
| • Standards and accreditation                                       | • Use of local labour   |
| • Control over the works  | • Recourse for complaints and compensation  |
| • Trust in product and brand  | • Social status (green “bling”)   |
| • Competent service with care and respect for customer              | • Change to home – aesthetics and space   |

Of these, the following factors were considered to be of the highest priority (based on frequency of response and weight indicated by respondents).

**Economic value:** Referred to by nearly everybody interviewed, this refers to the economic benefit achieved through the undertaking of retrofit and includes the consideration of two important aspects:

- The **initial affordability and value for money** (VFM) of the retrofit measures for the customer;
- The **continued value of the retrofit** represented in the payback of retrofit measures in the form of either potential energy savings and/or any revenue

such as FIT and RHI. This could also be perceived as insurance against future rises in energy prices.

The impact of economic repercussions regarding the cost of works, loss of income and changes to property value for landlords and owner occupiers was also discussed by many of those interviewed.

**Minimisation of disruption to residents:** The minimisation of the level of disruption brought on by the undertaking of retrofit measures was highlighted both as a main concern of customers and a potential barrier to uptake, this was especially relevant in the case of short and medium term tenancy.

It was recognised that a full retrofit approach in particular would result in a high level of disruption to residents, which may require that the premises be vacated for the duration of works. However, it was noted that the inconvenience could be justified by ensuring customer satisfaction with a favourable end result.

**Increased quality and thermal comfort:** Improvements to the quality of the home in general and the thermal comfort quality of the home in particular were considered as a main motivational factor in encouraging uptake. Interestingly, many interviewees also cited improved air quality and noise quality as being motivators.

**Adequate engagement and the provision of high quality information:** The lack of engagement and knowledge was considered a detrimental factor/barrier to uptake. Therefore the provision of adequate information (both verbally and in written form) is essential in communicating the need for and benefits of retrofit, which is especially relevant to vulnerable customers/ communities.

The provision of adequate information regarding the process of retrofit is also important in allowing residents to fully comprehend their rights (e.g. choice to move out and move back in once retrofit is over) as well as their responsibilities (e.g. things that they may be required to do such as emptying a loft space).

**Improved energy performance/ increased energy savings:** As previously mentioned, energy saving and potential cost savings on energy bills were viewed as important (continued) benefits of undertaking retrofit measures.

Other notable recurring values include:

**Trust in product and brand:** This value was raised predominantly by interviewees in the retail and service delivery sectors but also by those in the advice/interest sector. Whilst there was mixed notions about who the most trusted brands and bodies are, the common thread is that consumers are more likely to take up retrofit if they have an existing positive relationship or positive impression of a delivery body whether for the quality of its product or the quality of its service. Related to this value are *competent service with care and respect for customer* and *recourse for complaints and compensation*.

**Change to home – aesthetics and space:** A particular issue for solid wall insulation - changes to the look of the property for external insulation and a loss of space for internal insulation, may be a major issue for consumers. On a positive note, improvements that improve the aesthetics of a property could be a motivator for some consumers. Related to this value is *social status (green “bling”)*.

**Ease of maintenance and replacement costs:** Thinking beyond the installation stage to living with the retrofit, any costs to maintain or replace measures in the future need to be considered by customers. Related to this value is *Usability and convenience of technology installed*.

It should be noted that environmental concerns were generally regarded as being low priority for the majority of people.

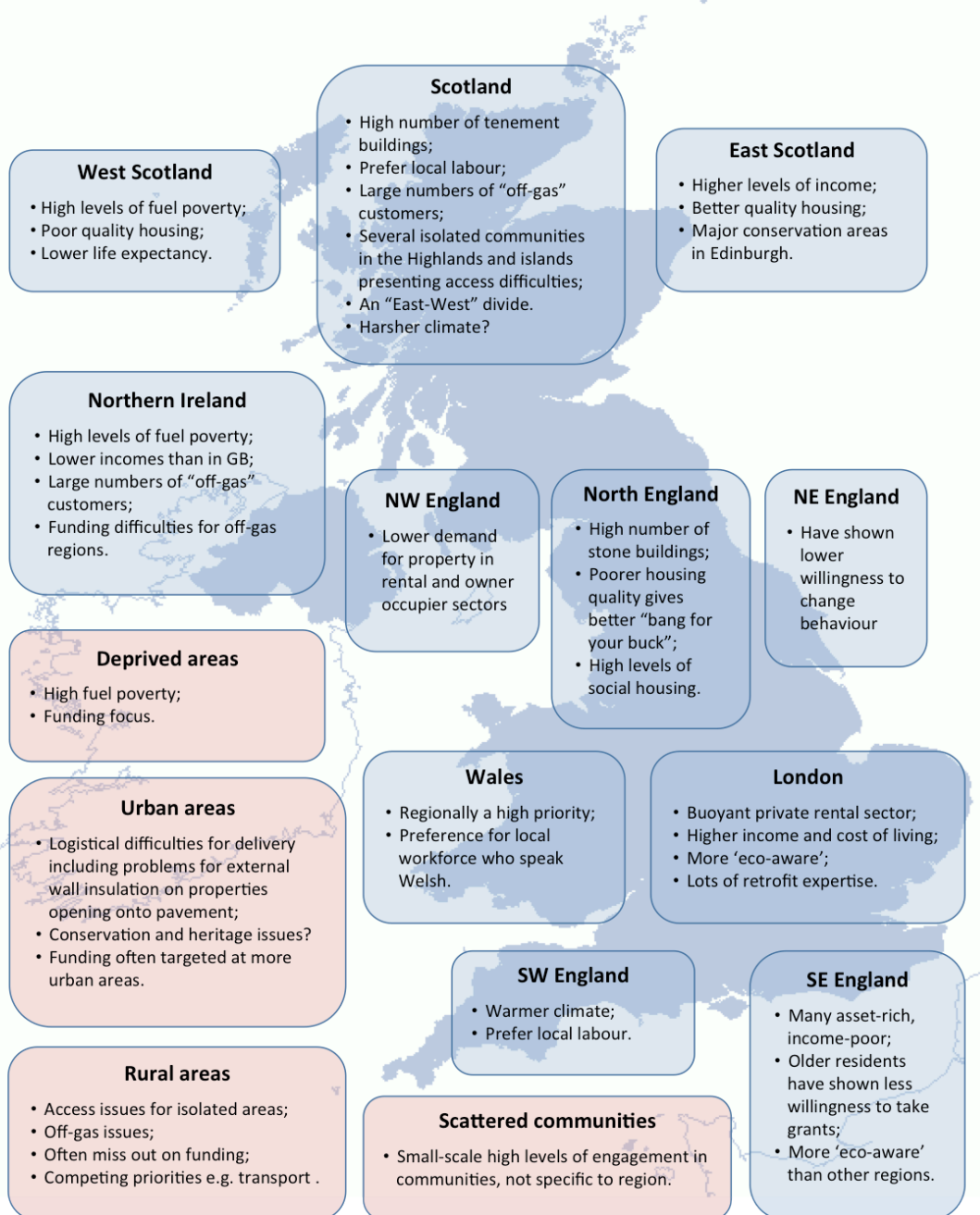
### Regional Variations in Customer Value

Most of those interviewed did not indicate/ or were unsure that there were any regional differences. However, some observations regarding specific regions were mentioned. In most cases these observations are less specific to values but to factors that may impact the values, motivations and limitations from region to region.

The following graphic details the observations provided by interviewees:

### Map of UK Regional Variations that Impact Customer Value

Note – Red boxes indicate variations not necessarily applicable to a specific region.





### Research activities in the field of customer value

The majority of participants indicated that they had not carried out research activities into customer values surrounding retrofit. Those bodies that had carried out research were national and local government bodies (DECC, CLG, LGA), interest groups (EST, UKGBC, Consumer Focus) and energy suppliers (EDF Energy and British Gas). Generally other participants relied on the research of these bodies, notably EST to provide them with research and guidance to direct them in this field. Many of the participants who had not undertaken research in the field of customer value, however, discussed future plans to do so, indicating the growing interest and need for knowledge in this area.

Other organisations not interviewed, but mentioned by participants as undertaking research in this field include Imperial College, UKERC and DEFRA.

### Perceived Value of Retrofit and Energy Efficiency Improvements

Participants were asked three questions to gauge how important retrofit currently was to their customers, how important they felt it was that we prioritise retrofit and how important they felt it was to the future of their organisation.

#### Importance of Retrofit to Customer

The importance of retrofit to customers was viewed to be of varied levels but generally significantly lower than its importance to the future of the organisation and its importance as a UK-wide priority, with a modal score of 3/10. Three important factors that contributed to the significance of retrofit include:

- **Social perspective:** While retrofit was regarded as highly important to customers in social housing, as it dealt with issues such as fuel poverty, its importance was diminished for other sectors;
- **Economic perspective:** The importance of retrofit was considered to be higher for landlords (and home owners) than for tenants (especially

short-term tenants) as they may move on before they can realise the full benefits, especially to offset the drawbacks of any disruption caused from works carried out during their tenure;

- **Degree of engagement:** The importance of retrofit increased with the increased engagement (interest and awareness) of residents in the process. This was noted by some to often be an extreme factor, where customers tended to either be highly engaged or not at all, with very little middle ground.

### Prioritisation of Energy Efficiency Improvements

When asked how important it was that we prioritise energy efficiency improvements to UK domestic properties, there was general consensus among almost all participants that this was a key policy agenda concern and an enabler for developments in the field (19 respondents scored this 10/10). This was especially relevant for government based agencies and organisations, in addition to those involved with them.

The only exception to this consensus was the RLA who gave a score of 5/10. They expressed doubts as to whether retrofit should be prioritised out of concern for how legislation and a national drive for retrofit might impact the business of private landlords by placing difficult obligations on them.

### Importance of Mass Retrofit to Organisation

When asked how important retrofit was likely to be to their organisation over the next 20 years, there also was general consensus among almost all participants that mass energy efficiency retrofit was of high importance to the future of their organisation. The key impacts considered include:

- **Regulatory impact:** Retrofit was not only an essential factor in ensuring that government targets were achieved, but was also considered as a key agenda that would bring about regulatory impacts to several organisations, particularly energy suppliers (through supplier obligations) and housing providers;
- **Economic impact:** Consequent energy savings brought on by retrofit are expected to impact the availability of power, which was viewed as being a

fundamental factor in driving the economy against a backdrop of increasing demand, aging infrastructure and carbon targets. The private sector in particular was keen to develop partnerships to support the undertaking of retrofit and mitigate any associated negative impacts (e.g. the risk that potential negative impacts of the Green Deal on landlords may force many to leave the sector, destabilising the rental market);

- **Business impact:** Similarly most participants viewed retrofit as a rapidly growing business opportunity, particularly private sector respondents. There was recognition of an immature market with potential to forge new and valuable business. The majority of respondents from private sector organisations (retailers, energy suppliers, manufacturers) as well as housing bodies and interest groups indicated that they would want to become leaders in the sector, indicating a significant level of ambition and eagerness from organisations across the board.

The few organisations giving a score of 7/10 or lower include:

- **Ofgem:** as they will continue a facilitation role but unlikely get heavily involved in retrofit;
- **Sustainable Development Capital Ltd (SDCL):** as it is unclear yet what opportunities exist for them to engage with the domestic retrofit market;
- **Scottish Power:** as they expressed some doubt over the longevity of retrofit as a policy, and whether it may be superseded by grid decarbonisation;
- **Marks and Spencer:** as they didn't anticipate it to become business critical, instead they anticipate an advisory and facilitating role working in partnership with installers.

### Current roles and influence in retrofit

A wide variety of roles in the retrofit market were discussed by participants, this indicates the wide scope of involvement. The main categories defined include:

- **Policy development and research:** A wide range of stakeholders are engaged in research and policy development activities. Of greatest influence

is the national government level bodies such as DECC and DCLG in carrying out research and developing policy to encourage energy efficiency and meet national CO<sub>2</sub> reduction targets. However, a number of representative interest groups are also engaged in this field (consumer bodies like Energy Saving Trust (EST), National Energy Action (NEA) and Consumer Focus as well as industry bodies like the Federation of Master Builders (FMB), Construction Products Association and UKGBC) by carrying out their own research to support and influence policy makers. This major level of research activity indicates the immature state of the retrofit market and the perceived opportunities available (and, indeed, regulatory impacts that may arise) as it grows;

- **Advisory/support role:** Similarly a wide range of organisations are engaged in advisory or support roles for customers. This includes supporting certification and enforcement of building works, administering and finding funding for the undertaking of retrofit, the provision of information and advice to various parties (e.g. landlords, residents, consumers). On a national scale, bodies like NEA, Consumer Focus and EST provide advice to customers and policy makers on retrofit. EST appear to be particularly influential as, aside from their front-line customer advice they are working very closely with the widest range of stakeholders and also with DECC on policy areas such as Green Deal. Retailers are also taking on this role, with Marks and Spencer and B&Q also providing consumers with advice on retrofit. Finally there are bodies that are providing advice and support to their member organisations (e.g. Residential Landlord Association (RLA) and Local Authority Building Control (LABC));
- **Representation/lobbying:** This includes representing and championing the rights or various parties involved and proposing policy to ensure the needs of these parties are met by aiming to influence policymakers. Bodies include industry bodies like the Council of Mortgage Lenders, RLA, FMB and LABC as well as consumer bodies like NEA and Ofgem (who view their role as consumer champions);
- **Delivery:** Taking part in projects and delivering retrofit schemes directly, or in partnership, to customers. This includes contractors like Wates; energy

suppliers like British Gas and EDF Energy; groups like Parity Projects, B&Q and Anglian; and the housing sector working in partnership with contractors to deliver retrofit to their housing stock (e.g. Pennaf, Link, Sutton and NIHE);

- **Provision of related services/goods:** Exploiting market opportunity for required services pertaining to retrofit. This includes manufacturers like Kingspan and Isothane; designers and architects like PRP; energy suppliers; providers of training like Construction Skills; and retailers like Travis Perkins;
- **Funding:** Very few organisations are currently involved in provision of funding for retrofit. Of those questioned, only energy suppliers seemed to be fulfilling this role. Investment companies like SDCL don't currently have a significant focus on domestic retrofit and are, instead, focusing on commercial and industrial opportunities. Some bodies are working to help facilitate others (generally housing associations) to access funding (SDCL and Parity) but only London Borough of Sutton seemed to be working to directly help private customers access funding (beyond provision of advice of funding sources).

#### Importance of Residential energy efficiency improvements to organisation

The majority of respondents indicated that retrofit was very important to their organisation, both as a core objective and as an enabler for the development of related services for the private sector.

Of the organisations that didn't feel that retrofit was currently important to their organisation (Consumer Focus, Scottish Power, PRP, FMB and SDCL) there was general recognition that this would change as the market grew and that retrofit would likely grow in importance.

It is important to note that it was mentioned that this had in some cases led to developments within the organisations (e.g. the establishment of a technical committee) to address its requirements and develop technical and practical solutions.

## Carbon Targets

With regard to the determination of suitable carbon targets for the retrofit process, there was a general lack of consensus or even opinion on the matter. Those that did respond ventured anything from 30% to over 80%. Importantly, very few suggested the 80%-or-more target, and suggested much lower targets to be practical.

A number of stakeholders recommended that they should be in line with the various national targets already set or that they would aim to work to whatever targets were specifically set for retrofit by government. In addition, the following suggestions were presented:

- **The need for short term targets:** Annualised targets are required to ensure successful delivery of long-term targets;
- **Establishing a baseline:** Kingspan noted that it is important to accurately identify a baseline of current UK energy efficiency to effectively measure the benefit of measures;
- **Aspirational vs. operational targets:** Current targets were considered to be aspirational. Consequently, the establishment of achievable operational targets was viewed to be a beneficial option;
- **Retrofit method:** The Northern Ireland Housing Executive noted that rather than aspire to a carbon target, they would like to aspire to a PassivHaus standard for retrofit to minimise emissions – i.e. focus on a standardised *method* to achieve improvements rather than a standardised *target*;
- **Practicality of targets:** Respondents suggested that targets should be ambitious but practical (achievable) and economical (affordable) on a dwelling by dwelling basis. They felt it is also important to be mindful of the number of visits required to reach the necessary level of energy efficiency;
- **Absolute vs. reduction targets:** Parity Projects noted that targets should be based on CO<sub>2</sub>/m<sup>2</sup> rather than percentage reductions per property, but take into account the type of property;
- **Consideration of economic aspects:** This is especially relevant in the case of the high costs associated with hard-to-treat homes (costs per savings need

to be considered). Also, some respondents (e.g. Consumer Focus) indicated that focus should be on fuel poor homes;

- **Thermal comfort:** The thermal comfort targets link to carbon savings and are very important in UK homes. However, it was viewed that thermal comfort should not be achieved at the expense of carbon saving. Some respondents suggested minimum SAP targets (81) rather than carbon targets;
- **Energy reduction vs. carbon savings:** Some customers value energy reduction over carbon savings;
- **Competing carbon priorities:** some respondents raised the point that other sectors such as shipping and aviation may struggle to see 80% savings by 2050 and so retrofit should be aiming to exceed the 80% target to balance. Others suggested that grid decarbonisation may be a better way to achieve carbon savings.

It should be noted that activities to set own targets for carbon reduction (through the collation of base data) were also being undertaken by some organisations already involved in the delivery of retrofit (e.g. housing providers).

### The future world of retrofit from the stakeholder perspective

Almost all stakeholders expected to be heavily involved in the retrofit sector in the future. This either included involvement in the business context (private sector) or policy development and delivery/delivery support (government and public sector). The main future roles outlined included:

- **Business development:** Through facilitating the creation of business opportunity within the retrofit market;
- **Policy formulation/support:** e.g. assistance in developing policy, maximising uptake of Green Deal, and ensuring high standards for retrofit works and outcomes;
- **Retrofit delivery:** Delivering wide scale retrofit works utilising policy tools such as the Green Deal and other funding in both social and private housing; Integrating decentralised energy;

- **Advisory:** e.g. as a recognised source of trusted advice and support for what should or should not be done to homes, direct involvement in specifying and shaping intervention, recommendation of accredited and recommended installers, providing trusted advice and support.

In describing the anticipated future of retrofit, stakeholders suggested:

- **DIY would not play a major role:** whilst bodies like B&Q and Parity projects recognised that certain simple measures could be carried out as DIY, the majority of works, such as solid wall insulation would need to be carried out by accredited professionals;
- **Retrofit would not involve architects for the most part:** the solutions required would need to design out cost as much as possible and so the bulk of retrofit work would likely be done without architect input, although architects would be needed to come up with design guidelines and possible room-by-room/whole-house/neighbourhood options for generic sites. High value/high visibility properties and those in conservation areas would most likely still need architectural/designer input, however. Architects may see a development in their sector to take on an assessment role, though (PRP);
- **Disagreement over who will deliver:** whilst energy companies tended to express ambitions to be the main delivery bodies of retrofit, other stakeholders expressed concerns over a retrofit sector dominated by the “big six”. Seen as crucial was the issue of trusted bodies being providers of retrofit, building on existing customer relationships and brand trust to encourage take-up (e.g. Marks and Spencer, B&Q). Also, stakeholders expressed a need for funding to be flexible enough to allow free market forces to act, allowing local enterprise and ESCOs to enter the market;
- **Energy companies will see a move towards provision of ‘energy services’:** in a gradual departure from customer perception of supplying an identical utility (i.e. the gas or electricity product is the same regardless of supplier), energy companies will develop to provide advice, energy efficiency, maintenance and a broader range of services to customers allowing for a greater level of differentiation and competition



between companies (British Gas). Also, both EDF Energy and British Gas anticipate that their role in the roll-out of smart meters by 2020 would be coordinated with an approach to retrofit properties;

- **Green Deal will dominate but only be part of the puzzle:** along with the future supplier obligation, the Green Deal is seen to be a major part of the future of retrofit, but stakeholders (including EST) see a need to look wider than these programmes to engage the public with retrofit and increase its perceived value. It was also noted that providing “free retrofit” would not be enough and additional incentives may be needed to offset the perceived inconvenience that any disruption might cause;
- **A mass development of standards and training will take place:** stakeholders anticipate that nationally recognised standards for retrofit will be developed alongside accredited training for contractors and retrofit professionals. EST anticipate playing a major role in developing these areas. It is anticipated that standards will be developed with self-certification in mind, with Building Regulations changing to help drive retrofit forward. There was a lack of certainty over whether to focus on multi-skilling or upskilling with robust project management;
- **The supply chain will develop rapidly:** the future market will see a more integrated supply chain and the development of products specifically designed and accredited for retrofit;
- **Social housing will be the early adopters:** many stakeholders expressed a view that a focus should be on prioritising fuel-poor residents in social housing. It was also noted by many stakeholders that partnering with social housing has proven effective and beneficial in the past and that these relationships should be built on to develop the retrofit market. It was viewed that Registered Providers could help lead with high standards to drive the rest of the market, similarly to with new-build;
- **The role of the EPC will be improved:** beyond being a key part of the Green Deal assessment, it is anticipated that the EPC will be a driver of linking energy efficiency to property value. It was suggested that houses should be marketed more like white goods, with the energy rating being a core piece of the up-front advertising;

- **Important changes will be needed for the private rental sector:** it was widely stated that the private rental sector is the most challenging group to engage in retrofit and so legislated changes would be needed to bring them into the market in a way that is sensitive to the need to protect the business interests of landlords.

Key organisations identified in delivering retrofit include:

Government and Regulators	Information and Research	Market and NGOs
DECC	ETI	Construction Products Association
CLG	EST	Royal Institute of Chartered Surveyors
The Treasury	Carbon Trust	Trade Associations
EU	BRE	Registered providers (TAHI, BRE)
DEFRA	UKGBC	Technology vendors
DWP		Installers
Local Authorities		Developers/construction sector
BIS		Energy companies/suppliers (CERT/CESP) and ESCOs
Standards Institutes		Housing partnerships/ associations and resident groups
Welsh Assembly		Local third sector and community groups.
Ofgem		Marketing organisations
		Vendors (B&Q, CEN)

Government and Regulators	Information and Research	Market and NGOs
		Decent Homes and other funding mechanisms
		Citizens advice agencies
		Finance companies
		RSLs, Estate/letting agents and representative organisations (e.g. RLA)

## Barriers to Implementation

Several barriers to the implementation of wide-scale retrofit works were discussed. The key issues were outlined by the stakeholders as follows:

- **Lack of engagement and appetite:** All parties (homeowner, landlord and tenant) currently exhibit a lack of engagement or desire to engage in retrofit. A failure to deliver clear positive support from the government on energy efficiency issues will result in a lack of momentum (no sense of need) in uptake of retrofit measures;
- **Lack of knowledge:** There is a lot of ignorance amongst the public about what energy efficiency means and a general lack of knowledge on what to do for their home. Stakeholders also noted that there was a lack of knowledge in government on certain aspects of retrofit, particularly practical and technical application of measures;
- **Lack of skills:** Mass training of contractors is needed in a short space of time to enable the market to deliver quality retrofit. This needs to be widespread and directed at developing local capacity to tap into local knowledge and expertise of working with local property types, challenges and communities;

- **Lack of incentives:** With the emergence of Green Deal, a significant incentive will be provided, but stakeholders suggested further incentives such as tax rebates, council tax bandings being aligned with energy ratings and VAT cuts for retrofit products to stimulate demand;
- **Lack of consumer trust:** Without trusted standards delivered by reputable and competent professionals, customers will be unlikely to invest in retrofit. Developing a trusted positive image of high quality retrofit is key. Also, ensuring equity in retrofit (where everyone gets a fair share) is seen as an important part of developing trust;
- **Confusing advice streams:** The interviews highlighted that a large number of stakeholders consider advice provision as part of their role in retrofit. This was reflected on by stakeholders who acknowledged that with so many bodies providing advice and “putting their own stamp on it”, consumers were confused as to where to go for information and who to listen to. Moving towards a simpler system of signposting to trusted, central, expert, impartial advice may be advised;
- **Lack of market certainty:** Some stakeholders suggested that there is currently an element of uncertainty in the scale, shape and longevity of the retrofit market that is holding back a number of other stakeholders. Clear information and policy direction is needed to overcome this. British Gas also suggested a need to ensure public certainty of the rising nature of energy prices (i.e. certainty that prices will not drop in the future) to help inspire early adoption of retrofit;
- **Lack of a link between asset value and energy performance:** The Council of Mortgage Lenders noted that people often buy with their eyes and their hearts and not with their heads – choosing properties based on the things they see and their personal values rather than on factual information such as energy performance. Encouraging a widespread perceived (or perhaps legislated) link between property value and energy performance is therefore vital in driving take-up of retrofit;
- **Fragmented policy, delivery and funding:** Many stakeholders believe that the necessary products and framework for retrofit exist already, but that integrating funding, support systems and supply chain is the major

hurdle. Achieving joined-up regulation between government departments was also seen as a necessary step to achieve retrofit objectives. Also ensuring an integrated approach across the devolved administrations was noted by stakeholders from these regions as a key priority;

- **Competing priorities:** Different priorities (financial, health...etc.) and life change triggers (e.g. having a child) can change the way people regard their home and their needs and may lead to energy efficiency being rated as “low priority” or “high priority”;
- **Low public perception of green issues/concerns:** It is acknowledged that, currently, only a relatively small proportion of the population is likely to be motivated to take up retrofit for “green” reasons. Letting Agents/Estate Agents in particular were perceived to be out of touch with the energy efficiency agenda;
- **Planning and conservation restrictions:** While it was viewed that planning and conservation restrictions should as a whole not be relaxed or removed in favour of retrofit, however, in specific instances where there is a very good reason, this should be an available option. This process would require the engagement and involvement of planners and English Heritage to ensure that local value is preserved;
- **Barriers specific to remote or rural areas:** There is a potential loss of economies of scale in sparse rural areas. It is also difficult to programme and adds cost to the works. Some off-gas properties add challenges in terms of choice of products that can be used. Also, certain isolated communities (e.g. Scottish Highlands and islands) present significant challenges to achieving cost-effective retrofit;
- **Landlord/tenant conflicts:** In terms of undertaking retrofit, the private rented sector is considered to be the most challenging to deal with, due to conflicting priorities and split benefits between groups (i.e. landlord pays, but tenant benefits). Unless both groups are engaged it will therefore be difficult to drive the retrofit process forward. A similar problem exists for leasehold arrangements, including situations where the freeholder has responsibility for external and communal works, but the leaseholder has responsibility for internal works;

- **Building regulations:** In considering the current status of the building regulations, it was regarded that the development of building regulations and energy efficiency standards were essential factors in driving retrofit forward (The Green Deal was considered as an aid to raising standards). However, it will also be important to consider that setting mandatory minimum standards on efficiency in order to let may result in a backlash of landlords abandoning the market. There were conflicting views regarding EPCs, with some stakeholders considering them a key tool in the retrofit process, while others had the view that a considerable overhaul in EPCs was required to align them with the Green Deal. Strong enforcement of standards was seen as vital to ensure consumer trust and to limit the ability of “rogue traders” to damage public perception of the sector.

Despite the considerable barriers listed, stakeholders acknowledged the risks of not taking action include missing targets, the loss of credibility and business opportunity, negative impact on the economy and, in the long term, energy scarcity.

### Approaches to Delivery

The scale of delivery was not discussed by all stakeholders, however, there was an indication that future policy should aim to create opportunity for the delivery of both on-demand and street-by-street approaches.

- It was noted that without community engagement it would be difficult to achieve mass take up, whatever the scale of implementation;
- Kingspan noted that they plan to leave one room unaffected during retrofits to provide residents a refuge whilst works are being carried out and, on occasion, “take the resident out for the day” to minimise disruption;
- While a street-by-street approach is less chaotic, easier to coordinate and increases system efficiency and economies of scale, this could not be undertaken in isolation, and therefore required the formation of

partnerships with other bodies. EST suggested a “hybrid” model that focused on phased city-wide or locality-wide roll-out in a similar way to the digital television switchover. Parity also advocated a combination of on-demand and street-by-street features. Stakeholders generally viewed that neither approach would work as a model outright;

- Similarly, the Construction Products Association noted that whole-house is not a solution for all and that a room-by-room approach may be more realistic and easy for customers to buy into. Both options should be available;
- The Federation of Master Builders suggested that any extra issues that need tackling, such as asbestos removal, rising damp, rot, etc. should be identified as part of the process and mechanisms to cover these costs made clear at the outset. The contractor should communicate this to the homeowner and seek to find optimal solutions;
- UKGBC and Kingspan suggested exploring Modern Methods of Construction (MMC) or off-site preparation techniques to minimise on-site waste and maximise efficiency;
- British Gas indicated a preference for direct programme management rather than funding third parties to carry out the works. Ease of management and consistent Health and Safety and Quality Control practice were cited as the main reasons for this preference. Scottish Power, however, preferred a more flexible and varied approach;
- DECC do not manage the delivery of retrofit but shape the framework of delivery which provides the means to make it happen. Consequently, it will be down to delivery agents to choose the method and design the schemes.

## Lessons from France and Germany

### France

The Agence de l'Environnement et de la Maîtrise de l'Energie (Environment and Energy Management Agency – ADEME) oversees the retrofit of homes in France. An ADEME representative met with partners from this project to discuss the French experience of retrofit.

France has approximately 30 million dwellings of which 55% are individual dwellings and 45% are collective properties (i.e. multiple dwellings in a single building). The majority of homes were built before 1975 and a large number of properties (32% in 2009) use electric heating, comparable to the number using gas (42%). The French retrofit industry is now nearly ten years old, but has grown in the last five years since the introduction of the tax credit incentive (see below).

French targets for retrofit are based on primary energy use ahead of carbon, due to the new Thermal Regulation (RT2012). The French prevalence of electric heating presents a challenge in achieving these targets, hence the increase of gas systems in new-build homes. French domestic targets are driven by national 2020 targets:

- 20% reduction in energy consumption;
- 20% reduction in CO<sub>2</sub> emissions;
- 20% increase in energy from renewables.

Funding/incentives for retrofit in France comes from three key schemes:

- **Tax credit scheme:** Since 2005 a tax credit has been available on the full purchase price of materials for retrofit including insulation materials (25%), double glazing (15%) and renewable heat technologies like solar thermal (50%) and heat pumps (40% ground source, 25% air and water source) (although these levels are expected to decrease in 2011). The



government sets specific performance standards to define which materials are eligible rather than approving specific products or manufacturers. Whilst the credit is only for materials for the most part, the scheme has been extended, in the case of insulation, to cover the cost of the works as well. The tax credit is available for the primary dwelling of customers and, crucially, is payable even if the credit exceeds the total amount of tax you pay;<sup>1</sup>

- **Reduced VAT rate for retrofit materials and works:** Retrofit attracts a reduced rate of 5.5% VAT instead of the standard rate of 19.6%;
- **Interest-free bank loans:** through an agreement between the French government and high-street banks, French customers can access a 0% loan or mortgage on major retrofit works (l'éco prêt à taux zero). These loans are not subject to any means testing but are generally targeted at the more wealthy members of the French public. Typically a loan of up to €20,000 is available for 2 measures and up to €30,000 is available for 3 or more measures. The loan repayment term is typically 10 years. It should be noted, though, that these loans have not proved overly popular with French customers and have seen low take-up, particularly over the last year.

Beyond these, there is a specific drive for energy efficiency in social housing in France, with the government driving social landlords to retrofit 800,000 dwellings rated E, F or G to A, B or C energy ratings. Specific incentives for social housing are provided such as low interest 1.9% loans for 15 years and subsidies from ADEME, FEDER (European funding) and ANRU (National Agency for Urban Retrofit).

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<sup>1</sup> <http://www.french-property.com/guides/france/building/renovation/energy-conservation/>

### Key insights

Some key similarities between France and the UK include:

- French customers similarly do not seem to place an inflated value on energy efficiency homes (i.e. asset value is not seemingly linked to energy performance);
- Only a small proportion of French customers care about “green issues” or are motivated by these in retrofit;
- France also has a large number of conservation areas that impact retrofit works;
- The main customer values (or considerations) for retrofit are the upfront cost and the benefits in comfort that the works will bring. Another key value is the disruption caused during the works;
- The average fuel bill of a French household and a UK household is roughly the same.

Some key *differences* between France and the UK include:

- Electrical heating makes up a greater proportion of domestic heating systems in France than in the UK;
- Replacement windows are a dominant part of the energy efficiency retrofit market, forming at least 25% of the market;
- There is no centralised enforcement of French building standards for retrofit or other building works;
- Targets of French regulations on retrofit are based primarily on energy savings rather than carbon savings. This has been noted as being easier for customers to understand.

## Germany

Germany has approximately 40 million homes and, as with France and the UK, the majority of these were built before 1975. Of the three countries, Germany is arguably the most advanced in terms of delivering retrofit, currently achieving higher rates of energy efficiency retrofits per year, and growing rapidly.

The majority of retrofits are funded by the German federal government investment bank KfW (Kreditanstalt für Wiederaufbau), who funded 30,199 refurbishments in 2009 to a value of €3.8bn.<sup>2</sup> The bank offers three main incentives:

- **Retrofit grants:** For properties built before 1984, KfW offers grants based on the energy performance of the completed home. KfW has developed a scale of five standards, known as KfW Efficiency House 55, 70, 85, 100 and 115 respectively. These numbers indicate the percentage of primary energy usage compared to the national standards for a new-build dwelling as laid out in the Energy Conservation Ordinance (Energiesparverordnung/EnEV). Therefore, a KfW Efficiency House 55 (the best level) will use 55% of the primary energy of a new-build property built to German energy standards. Each level of Efficiency House attracts a different level of grant, with 17.5% being available for level 55 (up to a value of €13,200) down to 7.5% being available for level 115 (up to a value of €5,625);
- **Retrofit loans:** Low interest (typically less than 2%) loans, with a repayment period of up to 30 years, are available to German homeowners up to a maximum value of €75,000 for approved measures. In addition to the loan, the federal government will reward participants with a repayment bonus based on the level of the loan and the Efficiency House level reached by the retrofit. For instance, a property that meets level 55 will have 12.5% of their loan repaid for them down to 2.5% repaid for a level 115 retrofit;

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<sup>2</sup> [http://www.kfw.de/kfw/en/Domestic\\_Promotion/Our\\_offers/Housing.jsp](http://www.kfw.de/kfw/en/Domestic_Promotion/Our_offers/Housing.jsp)

- **Supervision Grant:** Under a “special promotion”, KfW are offering a grant to cover up to 50% of the cost of a technical expert to supervise the works, up to a value of €2,000.

### Key insights

Crucially, the German KfW loans are not tied to the property in the same way as the UK’s Green Deal. This is seen as a drawback by many German customers.

Another difference between these loans and the Green Deal are that KfW loans are not subject to the “golden rule” where savings must exceed the repayments.

However, a key difference between the UK (and French) market and the German market is that energy efficiency improvements are linked to an increase in asset value, with higher rated homes typically selling for a higher price.

The key motivations for German retrofit customers are:

- Saving money on energy bills;
- A trigger of a necessity to change a heating system or windows;
- Increasing comfort in the dwelling;

Similarly to the UK and France, environmental concerns are not seen as a significant motivator to carry out retrofit.

Another key part of the German system is the role of an independent, professional consultant or “energy doctor” who can recommend, face-to-face, certified installers and products, which are suitable to the property, and help advise on financial subsidies. In Stuttgart, some subsidies are given only if people call certified energy consultants.

There appears to be an issue in the German system of a lack of coordination during works. This is, however, seemingly improving with the government supporting the role of a supervisor (see above, government grants for supervisors).

A widespread concern in Germany is in rented homes (in Germany, 59% of homes are rented) where tenants are concerned that they will see their rents rise as a result of retrofit works – such rental increases are not prevented by

German law. This is, however, somewhat countered by a drop in their energy bills, but remains a major concern in the German market.

## Conclusions and Recommendations

This report has sought to define the retrofit experience for UK customers and, in doing so, help define the customer with key insight from a comprehensive range of UK stakeholders and learning gained from France and Germany.

The following is a summary of some of the key points emerging from the research.

### Key Insights

- The key customer values to consider in retrofit are **economic value, disruption, comfort, accurate advice** and **increased energy savings**. **Environmental concerns** are not a significant and widespread enough motivator to drive retrofit;
- It is unclear at this stage what regional differences exist in terms of consumer values, with respondents displaying a lack of awareness of such differences. However, differences were found between urban and rural regions and deprived and affluent areas;
- The majority of stakeholders suggest that retrofit is currently of low importance to UK customers, but of high importance to their respective organisations, with many aiming to be leading in the field over the next five years;
- Few stakeholders have a view on retrofit carbon targets, but of those that did state a figure, most chose figures that were lower than 80%;
- There is a lack of certainty over who will deliver retrofit to UK customers, with some believing energy companies will dominate and others anticipating that there will be a more open market;
- Green Deal will be part of the solution but not the whole answer;
- Neither a “street-by-street” or an open “on demand” service will deliver a model of retrofit that is efficient and affordable whilst being practical for

consumers. A hybrid system that takes the best parts from both is seen as the preferred option;

- Both the French and German retrofit market have lessons to deliver in terms of delivering retrofit and the efficacy of different incentives and funding measures. Interestingly, whilst many of the French incentives look more attractive than the German equivalents (0% loans vs. low interest loans), take-up of retrofit has been greater in Germany.

### Summary of Recommendations

- A major programme of training and skills is required to deliver the challenge and generate consumer trust and positive attitudes toward retrofit;
- Legislation is needed to help bring the private rental sector into retrofit, but must be carefully designed to not negatively impact landlords' business interests;
- An effort should be made to consolidate advice streams to avoid mixed messages, biased information and consumer confusion (and subsequent mistrust) surrounding retrofit. A single simple message will help demystify retrofit and help to make the investment case;
- Lessons can be learned from the German model of a consultant role and a project manager role to help provide customers with trusted expert advice and management services to ensure works are efficiently progressed. Similarly, a single point of contact for retrofit works would help simplify the process and help engage customers;
- Similarly, funding and policy streams should be consolidated to help make retrofit work smoothly and simply for customers;
- A focus on building a link between energy efficiency and asset value is needed to help drive consumer value in retrofit (as in Germany);
- The French model of tax credits, low VAT retrofit works and interest free loans and the German model of low interest loans with repayment bonuses show varied levels of success but should be investigated further to supplement Green Deal to deliver retrofit beyond this scheme.

### **CDM and Health and Safety Implications of Recommendations**

At this stage there do not appear to be any CDM or Health and Safety implications arising from the recommendations of this report. Any implications arising from future recommendations in future reports will be highlighted to the client and partners in accordance with practise agreed with the project CDM and Health and Safety coordinator.



## APPENDIX A – Sample Stakeholder Questionnaire

### Optimising Thermal Efficiency of Existing Homes – Work Package 5

Stakeholder Questionnaire Pro-forma (Deliverable 5.1)

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Stakeholder Organisation	
Contact Name	
Position	
Interview Date	

#### Stage 1

Set the scene

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- Thank the contact for agreeing to be interviewed
- Explain the structure of the interview:
  - A brief introduction (5 – 10 minutes);
  - Some standard questions being asked of all stakeholders;
  - Some more specific questions to this stakeholder;
  - Whole thing should take 45-60 minutes;
  - Results of this survey will be analysed with all other responses to build a picture of customer value from a stakeholder perspective. Explain that these results will not be made public until 2012 and will likely remain confidential until then as part of the research;
  - Ask if the contact would like their written-up response to be returned to them before being included in the report.

No  Yes

If "Yes", contact email:

- Give an outline summary featuring the following key points **or** use supplementary script:
  - The UK carbon challenge (80% reductions by 2050, by law)
  - 1/3 of emissions from homes which leads to...
  - The retrofit challenge (21m homes retrofitted by 2030, 7m by 2020 = 1.33 homes every minute over the next 10 years – to significant level of energy efficiency)
  - What might retrofit look like? Whole house measures – insulation, airtightness, efficient heating system, etc.
  - Other motivations such as affordable warmth against a backdrop of rising energy prices; energy security, etc.
  - Government funding streams such as Green Deal and supplier obligations to fund some of this work but won't cover all the costs
  - Summary of ETI project, who's involved, what we're doing over 2 years
  - WP5 looking at customer value – surveying key UK stakeholders relevant to UK retrofit present and future
  - Gaining insight from UK stakeholders into what customers value and how these stakeholders will play a role in the development of the UK domestic retrofit market from a customer value experience
  - Develop an understanding of customer values and stakeholder experience of any regional differences

#### Stage 2

Standard questions

**1.0 Customer Base**

<p><b>1.1</b> Does your organisation have a <b>direct</b> relationship with UK retrofit customers? I.e. general public, homeowners, residents, landlords, etc.</p>	<p>(If <b>Yes</b>, continue to <b>1.2</b>; if <b>No</b>, skip to <b>1.5</b>)</p>
	<p><b>Yes / No</b></p>
<p><b>1.2</b> How big is your customer base? (Number – total or per year)</p>	
<p><b>1.3</b> Is your customer base UK-wide or limited to a particular country (England, Wales, Scotland, N. Ireland) or region?</p>	
<p><b>1.4</b> Do you have a key demographic? E.g. gender, age range, income, etc.</p>	
<p><b>1.5</b> Does your organisation have an <b>indirect</b> relationship with UK retrofit customers? I.e. you influence other organisations with a direct customer link?</p>	<p>(If <b>Yes</b>, continue to <b>1.6</b>; if <b>No</b>, skip to <b>2.1</b>)</p>
	<p><b>Yes / No</b></p>
<p><b>1.6</b> Please describe the nature of this relationship and what other organisations are involved.</p>	
<p><b>NOTES</b></p>	

**2.0 – Customer value**

<p><b>2.1</b> Have you conducted any research into how your customers (or the wider UK public) value energy efficiency in the home?</p>	
<p><b>2.2</b> From your research or otherwise from your experience, on a scale of 1-10 how important would you say retrofit is to your customers? (<b>1</b> not at all; <b>10</b> vital)</p>	
<p><b>2.3</b> From a customer perspective, what are the key values to consider for retrofit? Consider the physical change to the home, the process from planning works to delivery and wider external factors.</p>	
<p><b>2.4</b> Are you aware of any regional variations in these customer values. I.e. does one region of the UK value retrofit more highly or are any of the values you described more relevant or important to one region over another?</p>	
<p><b>Notes</b></p>	

### 3.0 – Retrofit Now

<p><b>3.1</b> What role do you currently play in the process of UK domestic energy efficiency improvements?</p>	
<p><b>3.2</b> How important is this role to your current business?</p>	
<p><b>3.3</b> On a scale of 1-10 how important do you and your organisation think it is that we prioritise energy efficiency improvements to the UK existing housing stock? (1 not at all; 10 vital)</p>	
<p><b>3.4</b> Do you have a view on what carbon saving targets we should be aiming for as part of this retrofit process?</p>	
<p><b>Notes</b></p>	

**4.0 – Retrofit Future**

<b>4.1</b> On a scale of 1-10, how important/relevant do you see the mass energy efficiency retrofit of UK homes being to your organisation over the next 20 years?	
<b>4.2</b> Where would you like to see your organisation within the context of delivering this challenge within the next 5 years?	
<b>4.3</b> What needs to change in order for this vision to become a reality? Considering regulation, market forces, support from varying sources, etc.	
<b>4.4</b> Which other organisations are relevant to your future role in retrofit and how?	
<b>Notes</b>	

**Stage 3**Specific questions

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5.0 Specific issues to your organisation

5.1	
5.2	
5.3	
5.4	
5.5	
NOTES	

