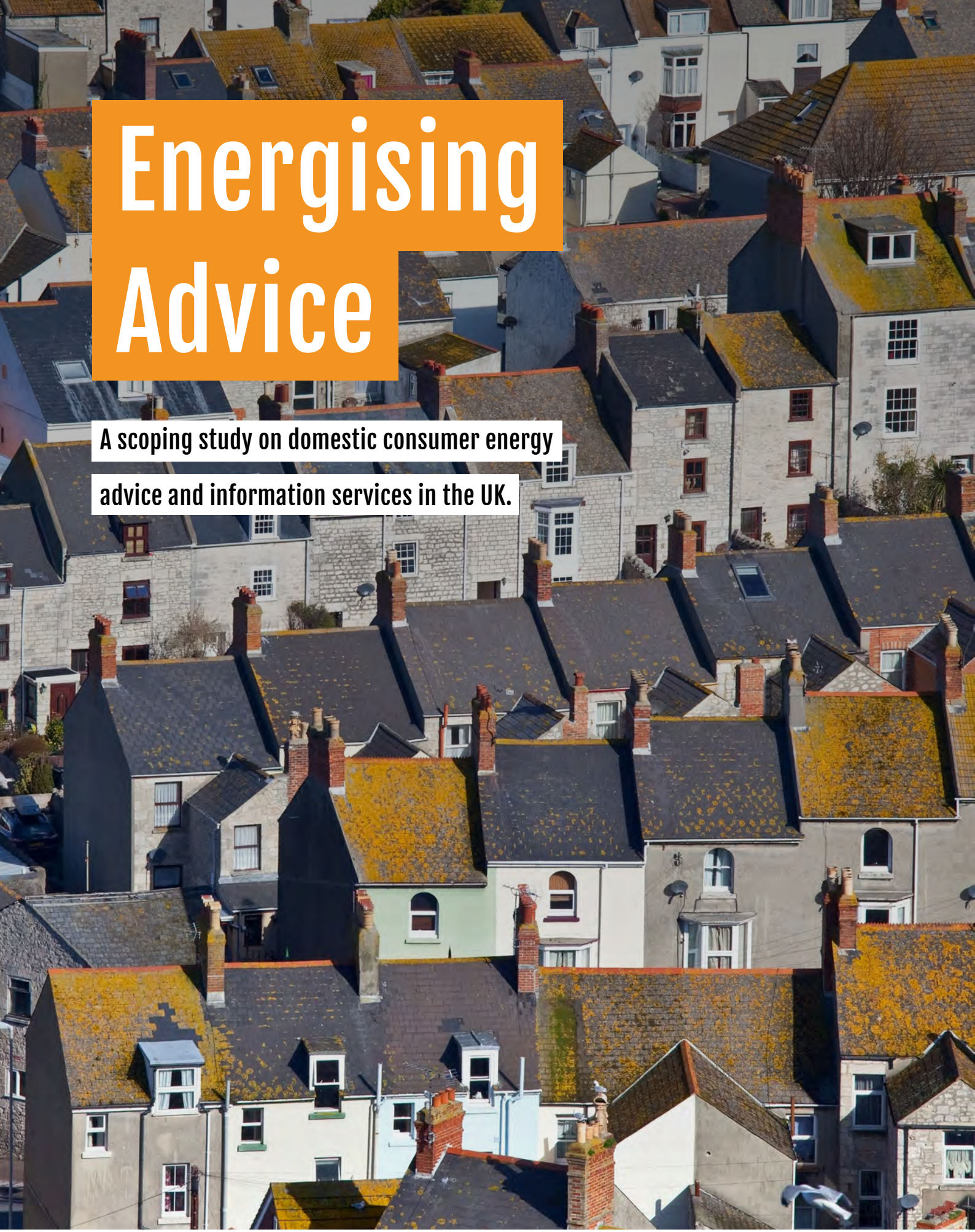

Energising Advice

A scoping study on domestic consumer energy advice and information services in the UK.

MCS CHARITABLE FOUNDATION

Energising Advice

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MCS Charitable Foundation,
December 2020

www.mcscharitablefoundation.org

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A full list is provided in Appendix 1.

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Peter Rickaby: Chair of the BSI Retrofit Standards Task Group

for sharing their in-depth knowledge of the many and complex issues involved.

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This report was produced by Dr Catrin Maby OBE for MCS Charitable Foundation.

About MCS Charitable Foundation

MCS Charitable Foundation is an independent UK-wide charity. Our mission is to accelerate the widespread adoption of renewable energy and low carbon technologies. With growing concern about the climate emergency and energy costs, the need to advance low carbon solutions has never been greater. We want everyone to have access to affordable and reliable renewable energy, so that we can have warm, comfortable homes as part of a resilient, zero carbon future.

The Microgeneration Certification Scheme (MCS) was set up by the UK Government to maintain and promote standards in home-grown renewable energy. Since 2018 the scheme has been run by the independent MCS Service Company. MCS Charitable Foundation, set up by UK Government in 2018, is the sole shareholder of the Company, and uses the Company's business surpluses to fund its charitable work and grant-giving programme.

About the Author

Dr Catrin Maby OBE

Catrin's interest in energy advice began in the 1980s, when she set up an energy advice service for London tenants, and produced handbooks on heating advice, draught-proofing and recycling.

During the 90s she worked with Birmingham City Council to develop energy efficiency aspects of urban renewal programmes, trained over 1,000 people in energy advice, developed energy awareness materials for use in core skills adult education, and assisted several local authorities in producing home energy efficiency and affordable warmth strategies.

In 1999 Catrin helped to establish Severn Wye Energy Agency, leading its development over 16 years to a 50 strong sustainable energy charity, delivering a range of services, including home energy advice and retrofit programmes.

Since 2015, her work has focussed on research and policy, including completing a part time PhD, to complement her BA in Engineering Science, and MSc in Energy Resources Management. In 2012 she was awarded an OBE for services to the environment and social equity.


There is an urgent
need to take action to
decarbonise our society.

Foreword

In the face of the climate emergency there is now an imperative to take urgent action to decarbonise our society. It is clear that an integrated and transparent road map needs developing by the Governments of the UK, with timelines and milestones on how they intend to reach Net Zero in the quickest possible timeframe. At MCS our aim is to accelerate the widespread adoption of renewable energy and low carbon technologies in helping achieve a zero carbon future and we intend to support the Governments across the UK in achieving Net Zero as soon as possible.

A clear priority for all Governments in the UK must be addressing the domestic housing market, as up to 30% of CO2 emissions are generated by our homes and the material used to construct them. To have a low carbon future we need a coherent plan to retrofit every home in the country to reduce emissions as a matter of urgency. It is clear that the current trajectory of retrofits is nowhere near fast or comprehensive enough, and that a new and more radical approach is needed.

The only sensible solution is a systematic whole house approach, where energy efficiency measures are combined with renewable energy generation. The need to provide low carbon solutions has never been greater. We want everyone to have access to affordable and reliable renewable energy, so that we can have warm, comfortable homes as part of a resilient, zero carbon future.

A crucial factor in the route map to net zero homes is the availability of good quality and consistent information and the independent advice given to householders, which is also vital in tackling fuel poverty. As an organisation we have consistently received feedback from the sustainability sector that there are many good practice examples of energy advice and information services, and that the availability and type of provision varies considerably across the UK. As such we commissioned this research to assess the services that are available, how comprehensive and accessible they are as well as any gaps in the types of information being provided.

The intention – which I believe has been well met by the analysis and report recommendations – is to offer the sector and Government suggestions on how we can build on the good practice available and develop the sector in a way that will support the net zero road map.

We look forward to engaging with Governments of the UK and the energy advice sector on how the recommendations in this report can be taken forward to support the substantive work required in retrofitting the 29 million homes across the UK.

We are grateful to our lead researcher on this project, Dr Catrin Maby OBE, for her thorough approach and extensive knowledge – and to all the participants from energy advice and information organisations whose invaluable contributions have made this work possible.

Adrian Ramsay
Chief Executive Officer
MCS Charitable Foundation

Executive Summary

Addressing the energy performance of homes is an important aspect of action on climate change, of matching future energy supply and demand, and reducing the risk and extent of fuel poverty. The slow replacement of the UK housing stock means that achieving a step change in improving existing homes is of paramount importance - although particularly challenging given the age, lack of homogeneity and the high proportion of private ownership. Advice and information to homeowners is a significant element in the suite of enabling mechanisms required to support this objective. The MCS Charitable Foundation commissioned this scoping study to assess the services that are available in the UK, the robustness and accessibility of information provided, gaps in the types of information and demographics of households that are covered.

The study concluded that there is a clear need not only for generalised energy information but also for advice, specific to each home and household, both on energy supply matters and reducing energy use, costs and carbon emissions. In designing services, it is important to differentiate between information and advice in this respect.

The geographical coverage and stability of current energy advice provision varies across the four countries of the UK, and is more consistently available on markets and supply issues than on energy efficiency and retrofit. Provision for the latter is broadly inadequate to the needs of complex retrofit, with the notable exception of Scotland, where the Home Energy Scotland programme offers a good practice example that might beneficially be built upon for the rest of the UK. Set against this, there is a wide range of expertise, innovation and capacity to draw upon, mainly within organisations working at local and regional level, and much of it (though not exclusively) in the third sector, with Citizens Advice, the Energy Saving Trust, and NEA at national level.

While advice can raise awareness, and motivate action through showing what is possible and the benefits to be accrued, the main drivers are external to advice provision. These drivers may be to make the home more comfortable (and healthy) to live in, to reduce the cost of energy bills, to reduce negative impacts on the environment, to make a home more attractive to prospective buyers or tenants, or to comply with regulations or financial incentives. The latter two areas are likely to need to be strengthened considerably, if we are to achieve carbon emission targets, not only through low interest loans and grants, but also through taxes, and the application of minimum energy performance standards for existing homes. This will bring a specific requirement for high quality energy advisory services, the need for which is likely to increase substantially, in scope, depth and scale, along with the urgency for action on climate change (reflected in political commitments at all levels). Such services should be tailored to meet the specific needs of landlords and tenants as well as owner-occupiers.

Energy information and advice are a major part of the essential enabling framework to achieve low carbon homes and to reduce the risk of fuel poverty, and must be designed to respond to the relevant drivers in order to be effective. Future advice provision needs to take account of the path to net zero for each home, and to support homeowners towards this goal, whether in one renovation or step by step. The accuracy, relevance and accessibility of energy assessments and reports are an essential part of this, and personalised advice will be needed more than ever, to interpret assessment reports and advise homeowners on next steps. Technical expertise in advice delivery will need to keep abreast of technical and policy developments, with new areas growing in significance such as: the mixture of home generation and external supply, and understanding how best to balance this; home generation with storage; electric vehicle charging; linking to local heat networks; and demand response and flexible tariffs.

Energy advice is best delivered at as local a level as possible, for accessibility, relevance, integration with local services, and links to community networks. The complexities of low carbon renovation require in-depth support at multiple stages, where advice is ideally part of a supported retrofit journey for homeowners, through the kind of one-stop-shop approach that has been developed in some localities by innovative providers.

This should be backed up by clear professional standards, and information and technical resources, free from commercial bias, providing consistency, regardless of the point of access to such information. These core information resources and standards should be developed as a national resource, and available across the advice networks and other communication points relevant to trigger points to action on home energy improvements.

While the details and degree of help needed vary between building types, and household characteristics, the core areas of expertise are the same, and there is considerable overlap (such as between advice on energy supply and energy efficiency, or advice to those in fuel poverty or not). It makes sense, therefore to develop a full programme that covers all these aspects, and does so consistently.

Recommendations

For government, at UK and country level

Work with the energy advice industry to develop an integrated and coherent strategy, and long-term programme, for domestic consumer energy information and advice provision, with full coverage of the UK, of all tenures, and of the two key strands of energy advice, to:

- Support and enable homeowners to make appropriate energy improvements to their homes, to reduce the risk of fuel poverty, and to work towards net zero carbon emissions;
- Help domestic consumers through energy supply/market problems and barriers, and related financial difficulties.

This programme should include:

- A national information resource providing expert and regularly updated information resources, covering all relevant technologies and user behaviour: to enable consistency in advice, whoever it is delivered by. This should be:
  - Commercially independent and unbiased, with public funding to ensure, and to signal to consumers and the industry that this is the case;
  - Tailored to the differing requirements of owner-occupiers, landlords, tenants, advisers and building professionals and tradespeople;
  - Accessible at multiple contact points, maximising trigger point opportunities, such as those offered by house moves, and home repairs and improvements.
- A framework for local or regional one-stop-shop contact hubs, to support homeowners through the retrofit process.
- A clear and consistent system of contact points, such that any consumer, anywhere in the UK, is able to clearly identify relevant advice and information services, and access them online, by telephone or face-to-face, according to their specific needs.
- A whole house assessment methodology and report, delivering a medium-term (20 to 30 year) energy renovation plan, identifying the measures required and updatable as measures are installed.
- A single online and accessible repository for holding the above plans, Energy Performance Certificates (EPCs) and records of works carried out.
- Investigation of the feasibility for including in the above repository:
  - Details of other notifiable or certificated works done, such as damp proofing, or works requiring building permit or planning permission;
  - Other relevant practical information about each home, such as details of services connected to the home and location of cut-off points (e.g. water, electricity, gas);
  - Linkage of this to the digitalisation of property registers.

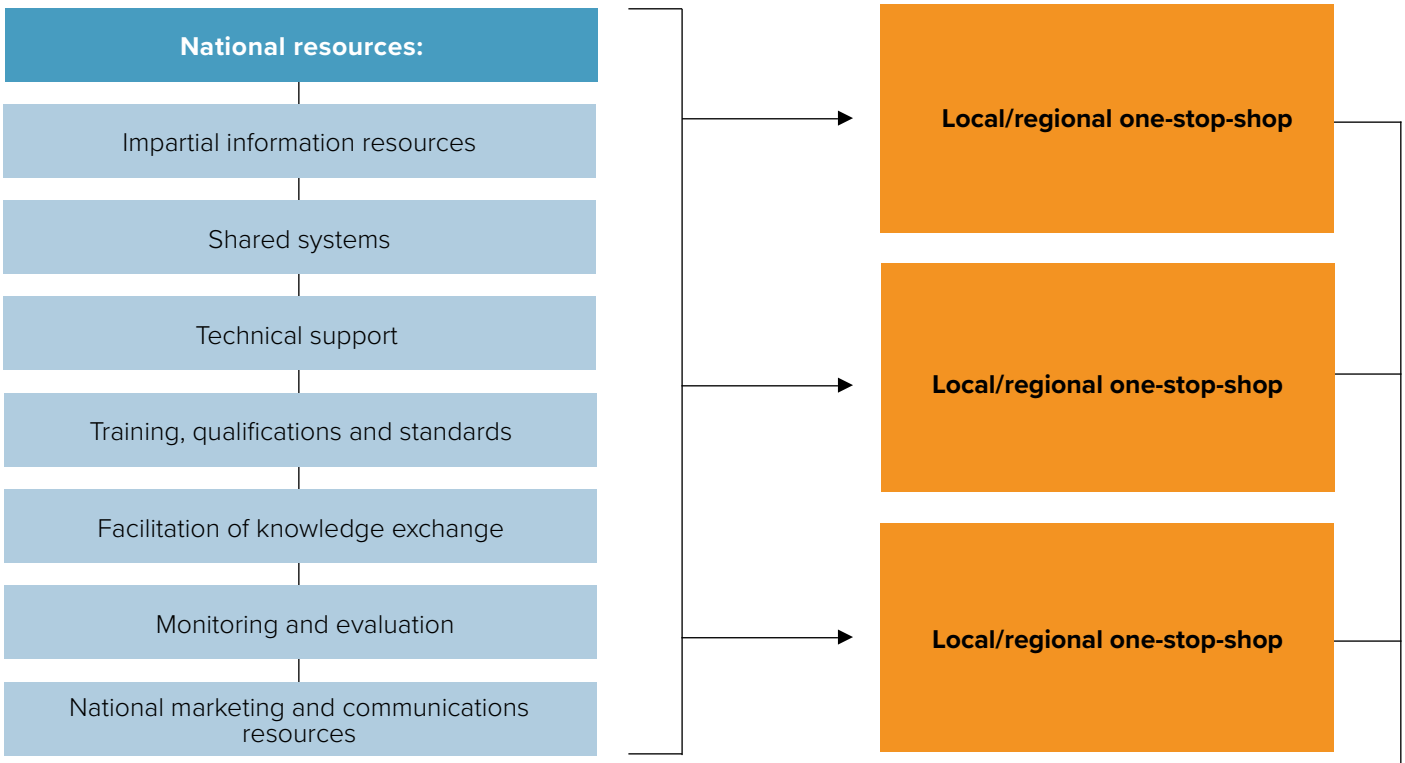
For the energy advice industry

- Collaborate to develop a new energy advice qualification, building on what exists already, in particular the NEA Energy Awareness course.
- Develop a new advice standard or code of practice, complementary to PAS 2035, in collaboration with the BSI Retrofit Standards Task Group, and ensuring that such a standard is made publicly available and fully accessible across all sectors.
- Establish a new community of practice for energy advice, to enable information exchange, a forum for discussion, and a platform for communication with government and other parts of the industry, with an independent chair to ensure effective representation across the industry.
- Collaborate to develop common methodology for monitoring and evaluation, to enable a body of knowledge on good practice, accessible within the public domain.

Next steps – for immediate action

- Government to work with the energy advice industry to develop the programme above, including costings and business models for delivery, ensuring that the financing at each stage of advice is transparent, with commercial independence maintained at the relevant stages.

A national programme for energy information and advice



Contents

1. Introduction

Home energy advice is essential to enabling action on climate change.

The aim of this study was to assess the services that are available in the UK.

The MCS Charitable Foundation has a particular interest in consumer confidence and consumer information on renewable energy and energy efficiency. This scoping study was commissioned following feedback from stakeholders addressing concerns around the availability of appropriate and effective advice for domestic consumers, with many organisations having cut back on such services due to changes in funding arrangements in recent years.

Addressing the energy performance of homes is an important aspect of action on climate change, of matching future energy supply and demand, and reducing the risk and extent of fuel poverty. The slow replacement of the housing stock in the UK means that achieving a step change in improving existing homes is of paramount importance. This is particularly challenging, given the age, lack of homogeneity and the high proportion of private ownership. Advice and information to homeowners is a significant element in the suite of enabling mechanisms required to support this objective.

The aim of this study was to assess the services that are available in the UK, the robustness and accessibility of information provided, and gaps in the types of information and demographics of households that are covered. The main focus of the study was on the retrofit of existing domestic properties.


Improving the energy
efficiency of homes is key
to reducing fuel poverty.

2. Context

The urgency for action on climate change is reflected in the 2008 Climate Change Act (HM Government, 2008), which committed the UK to achieving 80% cuts in greenhouse gas emissions against 1990 levels by 2050, a target increased to 100% last year, on the advice of the Committee on Climate Change (Committee on Climate Change, 2019). Buildings are noted as an area in which adequate progress is not being made, and where a clear direction of travel is needed for the next 30 years – for both new and existing buildings (ibid). Residential buildings account for around 22% of the UK's greenhouse gas emissions (Department for Business, Energy and Industrial Strategy, 2019a) and 30% of final energy use (Department for Business, Energy and Industrial Strategy, 2019b).

At the same time, there are serious ongoing concerns about fuel poverty, and the impact on the health and well-being of households that may be vulnerable due to age or ill-health. Improving the energy efficiency of homes is the key factor in reducing the risk of fuel poverty (Committee on Fuel Poverty, 2020; Williams et al, 2015), with building disrepair a further difficulty faced by households struggling with energy costs.

While the energy performance of new homes can be controlled through Building Regulations, the impact is severely limited by the very slow replacement of the housing stock, with fewer than 200,000 new homes built per year over the past decade (Ministry of Housing, Communities and Local Government, 2019a). Even homes built recently will need retrofitted improvements to meet the 2050 targets, and the progressive tightening of Building Regulations has been further delayed since interim targets towards 'near zero energy' new buildings were dropped in 2015 (HM Treasury, 2015).

Achieving the necessary improvements to existing homes is a particular challenge in that the majority of homes are in private ownership. Data for 2017 (since when such statistics have been developed at devolved country level) indicated that 63% of UK homes were owner-occupied, and 19% rented from private landlords (Ministry of Housing, Communities and Local Government, 2019b). This means that the decisions, and the majority of the investment, in making homes more energy efficient are the responsibility of several million individual homeowners. The changes that are needed to achieve the necessary level of improvement are significant, potentially disruptive, and will in many cases require an adjustment in behaviour to realise the full benefits.

There are likely to be several different measures and technologies required in each home, ranging from thermal insulation of the walls, roof and floor, and energy efficient windows and doors, to low carbon heating and microgeneration. The choices to be made are far from simple: what to install, how and when to do it, who to get to do the work, how to pay for it, and how best to use new and different systems. For those struggling to afford energy costs, more immediate concerns may be around keeping warm enough in winter, supplier and tariff decisions, and managing debt repayments alongside day-to-day household needs, balancing ventilation and warmth and avoiding damp from condensation.

These multiple and complex issues that surround home energy use highlight the importance of adequate advice and information for domestic energy consumers, and set the context for this study.

The study reviewed existing services and sought the views of advice providers.

3. Approach

The study was carried out between April and July 2020. The first phase of the work consisted of collecting data about energy information and advice services, through a review of websites, e-mail exchanges and semi-structured interviews with advice providers. Relevant services were identified through a review of literature, discussion with energy and fuel poverty organisations and networks, and requests for information via local authority networks.

Interviewees were asked about the aims, subject matter, target audience and geographical coverage of their services, how they reached their service users, the advice methods and processes used, and how their services were funded. Where possible, this information was obtained in the first instance from websites, such that interviews were confirmatory and allowed for more detailed discussion.

Advice providers were also asked about training and qualifications for advisers, and whether any specific standards were applied. Evaluation studies and reports were requested, where available. A further area of interest explored was whether they collaborated in any relevant networks or shared learning with other providers. The final part of the interview focused on gaining the views of advice providers on improvements they would like to see in the provision of energy advice in the UK.

The commencement of the study in spring 2020 coincided with an internal review by Citizens Advice of energy advice delivery in England and Wales. As such, the results were discussed with the key contact at national level, rather than contacting local Citizens Advice organisations again through this study. Citizens Advice operates as a group of umbrella bodies in England, Wales, Scotland and Northern Ireland, which support and resource local Citizens Advice organisations. These local groups are independent organisations, so that delivery of local advice services is not homogeneous across the network.

A second phase of the study consisted of a literature review, and a limited consumer test of the interactive websites available, in order to assess what these provide in practice. The literature review aimed (on the one hand) to find evidence of what advice homeowners need to retrofit their homes, and (on the other) to identify descriptions and analysis of advice delivery in practice. A bibliography is provided in Section 6 at the end of this report, and specific references are cited within the text. Three recent references identified as of particular relevance to this study are: a review of energy advice and redress (Klein, 2015), the final report of the 'Hardest to Reach' project (Ambrose et al, 2019) and an energy advice literature review for the Energy Saving Trust (EST) (Warren and Foulds, 2020).

A qualitative research technique of memo-writing was employed to capture ideas and insights during the course of the work, and the results of the different study activities are integrated into the following section, together with a discussion of the implications.

A full list of the organisations consulted for this study is provided in Appendix 1.

4. Results and discussion

The role of energy information and advice in the UK is better understood with a degree of historical context. A brief history is presented below, followed by a description of current provision, considering the scope, geographical coverage, and different approaches to advice delivery. The latter section draws upon insights from this study and from literature, about advice needs and effective delivery in practice, leading on to suggestions as to future requirements.

The geographical coverage of energy information and advice services in the UK is patchy and incomplete.

4.1 The past – a brief history of home energy advice in the UK

Fuel supply issues in the 1970s, linked to OPEC on the one hand and coal industry disputes on the other, stimulated interest in energy efficiency at a strategic level, and among other measures (many of them focused on industry and commerce) the 'Save it' campaign was launched, as well as a Home Insulation Scheme (Mallaburn and Eyre, 2013), the latter only for loft insulation. Single payments were available for welfare benefits claimants for draught-proofing and hot water tank insulation materials – innovatively matched during the 1980s with government training programmes to provide installation capacity, so that eligible households could get the work done free of charge.

During the 1980s, the particular problems faced by lower income households living in homes that were energy inefficient and/or had heating systems that were expensive to run, were brought to the attention of policy makers by campaigners and third sector support services, such as Neighbourhood Energy Action (NEA – subsequently renamed National Energy Action, alongside sister organisation Energy Action Scotland), Age Concern, the Child Poverty Action Group and the National Right to Fuel Campaign. Seminal work by Brenda Boardman presented the concept of 'fuel poverty' (Boardman, 1991), and awareness grew of the impacts for vulnerable households in terms of discomfort, health and debt. As such groups looked for ways to alleviate these problems, they learned that the solutions involved both finance for practical improvement measures and support in the form of information and advice, looking to address multiple needs, from technical to social, financial and behavioural issues. Environmental groups in several cities teamed up with Citizen's Advice and Law Centres to support households struggling with fuel debt and the threat of disconnection, poor housing conditions and problems with condensation damp and mould growth. This type of support, and the body of knowledge that emerged from the sharing of technical and consumer rights expertise, grew into the concept of 'energy advice' for domestic consumers.

Also noted during this phase of development was the relevance of energy advice to Local Authorities and Housing Associations, with their responsibilities as social housing providers and enablers. This was further enhanced by the 1995 Home Energy Conservation Act, which gave Local Authorities a strategic role in the energy efficiency of housing across all income groups. Meanwhile, privatisation of the gas and electricity supply industry introduced licence conditions for suppliers, and made them answerable to regulatory bodies – including some requirements for consumer information. Another significant development during the 1990s was the introduction of obligations on energy suppliers to the domestic sector to achieve energy savings (Rosenow, 2012). This approach has been continued and developed over time, through a series of subsequent programmes, with different targets for energy saving, carbon emission reduction and reducing heating costs for lower income households.

Collaboration between the third sector, Local Authorities and energy suppliers increased the quality of mutual understanding of the issues, and the consistency of advice and information. NEA took a leading role in raising awareness, with fuel poverty the driving agenda during this time, and a national Fuel Poverty Strategy was published in 2001 (Department for Trade and Industry, 2001).

The establishment of the Energy Saving Trust (EST) in 1992, following the United Nations Earth Summit in Rio de Janeiro, heralded their local Energy Efficiency Advice Centres (EEACs) initiative from 1993, first as a pilot, and ultimately as a network with national coverage. Initially managed for EST by the National Energy Foundation (NEF), advice was delivered under contract, mainly by local or regional third sector organisations, and in some cases Local Authorities. The network developed and matured over time, and was enhanced by additional programmes, such as strategic support to Local Authorities, and energy advice to small and medium businesses (SMEs). With significant funding coming from government, there was a strong emphasis on quantitative results, such as numbers of households reached with advice, and potential energy and carbon savings achieved. The 2008 Climate Change Act focused attention more specifically on carbon. The EST introduced a more direct management structure to the energy advice centres network at this time, replacing the local EEACs with regional EST Advice Centres in England and Wales, and Energy Saving Scotland Advice Centres in Scotland.

Changes in UK government funding for the service resulted in the England and Wales parts of the network being disbanded in 2012, and replaced with a central phone line and e-mail advice service. From 2012 until 2018, EST provided a web and phone-based Energy Saving Advice Service only, geared mainly to signposting homeowners to the (unsuccessful) Green Deal initiative, and schemes for the installation of measures, such as those run by energy suppliers to meet energy and carbon obligations. In 2018 this was replaced by a website-only service run directly by government.

In Northern Ireland the advice service was continued, funded by the Department for Communities and managed by the Northern Ireland Housing Executive.

In Scotland the network of advice centres not only continued, with the support of Scottish Government, but expanded in scope, most notably to deliver the Scottish Government's fuel poverty programme, and was subsequently renamed the 'Home Energy Scotland' advice network in 2013. This is described in more detail in section 4.2 below.

Many of the local and regional organisations that delivered EEACs for EST in England and Wales had enhanced their EEAC work through partnerships and funding agreements with local authorities, energy suppliers, District Network Operators, and charities, and have continued to provide some services, but generally with shorter-term and less secure funding.

Another significant programme managed by the EST during this period was The Energy Efficiency Partnership for Homes, which consisted of cross-sectorial working groups, each with their own work programme, including an Energy Advice Providers Group. The latter produced, amongst other things, a Code of Practice for domestic energy efficiency advice (Energy Efficiency Partnership for Homes, 2003).

A number of new local and regional 'energy agencies' were established during the late 90s and early 2000s with initial support from the EU SAVE (or similar) programmes – with a mission to work with local and regional organisations in all sectors to initiate action on sustainable energy. They all engaged with advice delivery to a greater or lesser extent, either as EEACs or in developing other approaches – and were actively involved in sharing of knowledge and expertise with other EU countries. Some of these agencies have continued to develop and deliver services, such as the Energy Agency in south west Scotland, MEA in the Midlands and Severn Wye Energy Agency in Gloucestershire and Wales.

A specific energy information tool which has grown in significance in recent years is that of a technical energy assessment, involving a review of the thermal characteristics of a building, together with details of the main energy consuming technologies installed (heating and hot water systems as a minimum), and a quantification of energy consumption, associated carbon emissions and/or running costs. By using standardised occupancy and weather data, this can form the basis for a comparable system for rating the energy performance of different buildings. In the UK, the Building Research Establishment (BRE) developed modelling for such an approach for homes, the BRE Domestic Energy Model (Kelly et al, 2012), and in the 1980s the National Energy Foundation built on this to provide the National Home Energy Rating scheme (NHER). Other commercial developments of this model were MVM Starpoint and Elmhurst. Although initially intended as an information tool for buyers in the private homes market, in practice it was taken up more at this stage by energy advice organisations and social housing providers, and in the form of stock profile assessments for the early Local Authority Home Energy Conservation Act reports. The use of home energy assessments for private housing expanded with the introduction, in 2008, of a simplified assessment in the form of Energy Performance Certificates as a mandatory requirement when a home is sold or rented – a requirement of the European Union Energy Performance of Building Directive (European Commission, 2002).

Energy advice, particularly in relation to lower income and otherwise vulnerable households, has also been a theme running through the work of consumer advisory bodies, through the many changes in these in recent decades, from the work of the Gas and Electricity Consumers' Councils in the '70s and '80s to Citizens Advice today. This has tended to focus more on issues for consumers in relation to suppliers of energy, than on energy efficiency and retrofit, but in practice there is not a clear dividing line between these issues. The question of scope and subject matter is detailed further in the next section.

Advice on the choice and use of specific technologies has generally also been provided to some extent by relevant trade bodies – the Solid Fuel Advisory Service was a good example, and a valuable source of information for households and advisers in the past. The services provided by these bodies are more typically industry rather than consumer-facing, and the support to consumers tends to be reactive, rather than proactive, and not geared up to large numbers of enquiries. They are also by their nature limited in the range of technologies covered.

4.2 The present – current energy advice provision in the UK

The review of current energy advice provision in the UK carried out in this study reveals a severely diminished situation in comparison to a decade ago, in spite of the increasing urgency of action on climate change. The picture is different, however, in each of the four devolved countries, and where national provision is lacking, there are nevertheless a number of local and regional services of note. The latter tend to be working on relatively short-term funding agreements, and with limited scope and geographical coverage, so that a detailed mapping of provision would be difficult to achieve with any precision, and would soon be out of date. In order to describe these services, therefore, this section considers the scope of current advice services, followed by an overview of geographical coverage and the various providers. The detail of approach and methodology is then covered in a more analytical section, drawing on insights from literature and highlighting the significant differences between different types of information, and advice services. The final part of this section is a summary typology of current energy advice provision.

4.2.1 Scope of energy information and advice provision

Various definitions of energy advice have been developed by earlier studies, and it is not the intention of this study to define a narrow scope, rather to take account of the full range of advice needs of households in relation to energy. A review in 2007 of energy advice across Europe highlighted the wide range of interpretations of 'advice', from detailed technical support for retrofit through to one-off promotional events (Maby et al, 2007). There is a risk in such a broad definition that policy makers assume that advice needs are adequately catered for, for example by the provision of basic awareness raising campaigns of limited time-frame. The difference between raising awareness, generalised information, and advice tailored to the needs of a specific household is highly relevant to the design of services and what they can achieve, and as such an attempt to define these differences is worth some consideration.

Table 1: Working definitions of terms used in relation to energy advisory services

Activity	Working definition	Examples
Awareness-raising	Generating interest and imparting a generalised level of knowledge of the benefits of, and potential for, improved energy efficiency through behaviour change and technical measures.	Media campaigns, shows and events, competitions, direct mailing, advertisements, referrals by intermediaries and from other services.
Information	Explanation of problems with regard to energy use and energy efficiency, and relevant actions with general applicability to any situation and consumer.	Leaflets, websites, fact-sheets, guidebooks
Advice	Guidance on actions to improve energy efficiency tailored to the needs of specific building, consumer and/or situation, and requiring some level of interaction between advisor and consumer.	Dialogue by telephone, e-mail, interactive website, interview in advice centre or on site, advice stands in public places, written reports with specific tailored recommendations.
Education and training	Raising level of knowledge of energy efficiency with a longer-term perspective – not necessarily to stimulate immediate action.	Inclusion in school or further education curricula, professional or vocational training, community-based adult education.

Maby, C. Janssen, R., & Sunderland, L. Shaping consumer energy advice to achieve energy and climate targets. European Council for an Energy Efficient Economy Summer Study 2017.

The categorisation in Table 1 offers a relatively superficial analysis of the range of activities that might be listed as energy information and advice. A more detailed analysis is necessary to assess whether advice needs are being met by existing services. This is attempted below, based both on literature and the details of provision identified in this study.

In terms of subject matter, energy advice services in the UK at present generally focus on two distinct areas:

- **Energy supply/consumer/market matters,** such as:
  - Choice of suppliers and tariffs, and issues around switching;
  - Metering and billing, and paying fuel debt;
  - Ensuring vulnerable consumers are receiving all the help they are entitled to – such as by being on the suppliers' Priority Services Register, or obtaining the Warm Homes Discount.
- **Energy efficiency and carbon emission reduction**, whether this is driven by the aim to make the home more comfortable, reduce energy costs or to reduce negative impacts on the environment. This can cover for example:
  - Ways to reduce heat loss through thermal insulation;
  - Improvements to heating and hot water systems, and controls;
  - Household-scale renewable heat and power, sometimes referred to as 'microgeneration';
  - More efficient lighting and other electrical appliances;
  - Costs of installation, and the potential energy (and energy cost) and carbon emission savings from different measures or packages of measures;
  - Understanding the Energy Performance Certificate (EPC), and what to do to improve the rating;
  - Finance for making improvements;
  - How to find and choose installers;
  - Behavioural adjustments, and how to operate and adapt to new technologies.

Services focusing on energy supply markets were found to be tailored in particular to vulnerable consumers, and linked either to broader consumer information and rights, or fuel poverty and health. Both formal and informal links are made to health promotion and preventative health care, mainly in relation to respiratory and cardiovascular health in connection to adequate warmth and ventilation, and to condensation damp and mould growth. These services tend to cover energy efficiency only to a limited extent: mainly in ways that are available to lower income households, such as low cost practical measures, user behaviour (sometimes referred to as 'no-cost' measures) and grants available for more major works. Another closely linked issue is money advice, and in particular around welfare benefits – both to maximise the incomes of such households and because receipt of key benefits tends to be used as a 'passport' to eligibility for grants. The subject matter of these services are broadly applicable across tenures, relevant both to tenants and homeowners.

Advisory services focused on making energy (and carbon) improvements to existing homes are generally aimed at homeowners, and range across the practical elements listed above: identifying the appropriate measures and priorities for each home and household; finding installers to do the work; identifying and accessing any financial support that might be available; adjustments in behaviour after improvements, and the best use of new technologies.

4.2.2 Geographical coverage of provision

An outline of the services identified as currently operational is provided below, followed by an analysis of the different approaches and methods in the next section. These services operate on different timescales, such that the picture will not remain the same year on year.

4.2.2.1 National services

UK-wide

The Energy Saving Trust (EST) is a dedicated national organisation, for which the energy retrofit of homes is a core aim. It provides a wide range of energy saving information and advice through its website and online tools and webinars, available across the UK. Delivery of advice specific to each household varies across the four countries of the UK:

- In Northern Ireland EST supports the Northern Ireland Energy Advice service, delivered by the Northern Ireland Housing Executive;
- In Wales EST provides telephone energy advice focused on those struggling to afford to heat their homes as part of the Welsh Government's fuel poverty programme, Nest;
- In Scotland EST manages a much more complete programme of work, funded by Scottish Government, and described below.

Citizens Advice (CA) are the main UK provider of energy advice in relation to energy supply issues, with a focus on consumer protection and fuel poverty, rather than carbon and climate change. Even within CA there are variations across the UK, with CA Scotland as a separate organisation to that which serves the rest of the UK. Local CAs are independent organisations, and not all of them engage with all CA programmes. National coverage is provided with the following programmes:

- The Consumer Service: provides help through a dedicated helpline, in each of the four countries of the UK, on a range of consumer issues including energy supply;
- The Extra Help Unit (https://ehu.org.uk/), managed by CA Scotland: 'supporting you to resolve problems with your energy supplier, and working to raise standards across the industry';
- The Big Energy Saving Network: a network of third-sector organisations providing outreach and a basic level of advice to vulnerable consumers in their communities, mainly through volunteers, backed up by professional advisers when needed. In practice, although there were 120 local groups involved last year, there is not comprehensive geographical coverage, as it depends on which groups bid to join the programme each year. Linked to this is the Big Energy Saving Week, an annual week of awareness-raising activities;
- The Energy Advice Programme: run through the winter months only, and offering advice on supply issues to people in or at risk of fuel poverty, through an advice phone line, advice appointments in the local offices and home visits if people have access problems.

There are a wide range of examples of web-based information, with national relevance. Trade associations, certification bodies and standards organisations typically provide information on their websites, and limited enquiry services with national coverage with respect to their specific technologies. For example, the Microgeneration Certification Scheme (MCS) Service Company helpdesk provides national coverage (by telephone and e-mail) for queries about microgeneration installations and certification, and requires installers to provide a basic level of advice: an estimate of output at quotation stage and information about use and maintenance of equipment at handover. An analysis of MCS Helpdesk traffic over the 12-month period October 2019 to September 2020, showed that 37% of enquiries in the form of calls and emails, were received from consumers (as opposed to installers), and that 27% of these, the largest single category, were in relation to government and market incentives and how these might be applicable to an individual consumer's circumstances and property. Other major categories of enquiries received were those related to repairs and maintenance (24%), specific technology related questions (8%) and concerns about market 'scams' (5%). It is worth noting that only 5% of such calls received by the MCS Helpdesk were specifically in relation to the operation of MCS and how an installed or planned system complies with the Scheme's Standards.

There are a few websites that enable a degree of interaction, such as Friends of the Earth https://friendsoftheearth.uk/climate-change/saving-energy-home-heating-and-insulation, which covers thermal insulation and low carbon heating, and includes a solar electricity and a solar hot water calculator. Another is the Centre for Alternative Technology (CAT) resource (https://www.cat.org.uk/), to 'explore sustainable solutions from your home or garden', with a very detailed set of information, and the ability to contact the organisation with questions. CAT also run a programme of training courses for both professionals and DIY-ers, including Masters courses in Sustainable Building and Architecture, and is open as a visitor centre (in North Wales) where the public can see various aspects of sustainable living for themselves.

A different type of web-based provision is the National Energy Foundation's 'SuperHomes' network of homes where renovations have been carried out to achieve a specified target for reduction in carbon emissions, providing examples for other households to learn from.

England

Simple Energy Advice (https://www.simpleenergyadvice.org.uk/) is an interactive website provided by the Department for Business, Energy and Industrial Strategy (BEIS) for owner-occupiers and tenants of homes in England and Wales. It takes you through a questionnaire about tenure, size and age of property, floor area, wall and roof construction and insulation, heating system and settings, occupants and hot water usage. It then offers you recommendations and a 'plan' to download. It is understood that this website is relatively new and is to be further developed, and improved.

Northern Ireland

In Northern Ireland, the Consumer Council provide advice on energy supply issues. Energy efficiency and renewable energy advice is provided by the Northern Ireland Housing Executive (NIHE), through a website and an e-mail and freephone advice service, covering energy efficiency grants, renewable energy, insulation, switching supplier, and oil buying clubs.

Energy advice in Northern Ireland is also provided by the charity Bryson House, focused on fuel poverty, and offering home visits to advise on energy efficiency, using heating controls, fuel bills and switching supplier, budgeting and debt. They also provide benefits entitlement checks, and a handyperson scheme for minor repairs and maintenance for people over 65 in areas where the Local Authority supports this programme.

Scotland

Provision in Scotland is markedly different from the rest of the UK, with substantial support from the Scottish Government for energy advice, with both climate change and fuel poverty objectives, and integrated with a programme of grants and loans for energy improvements, through the Home Energy Scotland programme (HES). The programme is free to households (both owner-occupiers and tenants) and private landlords, and is provided through a single national service delivered by a regional network of advice centres which provide advice in the home or at events, by email and by telephone. It covers home energy and water use, including energy storage and electric vehicle charging.

HES provides in-depth support, both remotely and through home visit, where this is needed, such as for very vulnerable households, where no other local service can provide this, or for households wanting to install more complex measures. The latter – Home Renewables Specialist Advice Service – caters, for example, for people seeking more detailed advice on home renewables, energy storage or solid wall insulation. It promotes a 'whole house' approach, with the option of a detailed home energy survey and report (not an EPC).

HES is managed by EST and delivered through five regional hubs, by four independent organisations, each of which run other linked programmes and bring both local knowledge and extensive experience to the programme: Changeworks, the Energy Agency, Scarf and the Wise Group. These organisations emphasise that they themselves also provide energy advice and advocacy services funded through other routes. They also work with community groups with an even more local focus, which is seen as an important aspect of outreach.

Energy Saving Trust also manages the Scottish Government Green Homes network of exemplar low energy/low carbon homes – connecting people who are considering making energy improvements to their homes with those who have already done it, so that they can learn from their experience. EST also provides other tools for Scottish Government such as the Renewables Installer Finder which helps Scottish households find MCS certified installers and enables them to read reviews of installers written by other customers.

The Scottish Government also fund area-based schemes, through Local Authorities, which can include advice as well as measures.

The programme is also supported by the EST online Home Energy Check, available for all homes in Scotland: https://energysavingtrust.org.uk/resources/tools-calculators/home-energy-check.

Wales

The Simple Energy Advice website, described above, is also available In Wales. The other main energy advice service is the Nest programme, run by British Gas and EST for the Welsh Government. It acts as a central contact point and energy advice point, providing heating and insulation to eligible households, and benefit checks, and making referrals out to other services. While the main focus is on fuel poverty, for which actual retrofit measures are available for eligible households, the advice element is for all homes, and includes water as well as energy saving and tariff advice.

Another fuel poverty energy advice programme in Wales is Warmer Wales run by Citizens Advice Cymru, funded by British Gas Energy Trust to provide 'holistic advice and purposeful intervention' in fourteen delivery areas across Wales. A different project, with a confusingly similar name, is the Warm and Safe Homes project, run by an organisation called Warm Wales, through a partnership of Wales and West Utilities and local authorities, and delivered by Community Energy Champions who visit vulnerable households to provide face-to-face advice, support and referrals to ensure residents have a warm and safe home.

4.2.2.2 Regional and local services

In additional to the national services described above, a number of specialist third sector organisations provide energy advice services, not only as part of national programmes, where the structure and funding arrangements allow for this, but also through their own initiatives. These programmes are typically geographically limited, and delivered by organisations with a mission to serve a particular area, with an approach that builds on local partnerships and outreach through community networks. These more localised services are generally more able to provide a personalised approach than national programmes, whether through home visits or drop-in appointments

for vulnerable households, or home energy surveys and assessments for homeowners starting down the path of renovations and energy improvements. Of critical importance to the low carbon homes agenda is that such services provide some examples of the kind of in-depth support that may be needed in practice: on the one hand for complex and deep energy and carbon emission savings, and on the other, to support vulnerable households and those in or at risk of fuel poverty.

Many of these services are project-based with relatively short-term funding, so the overall picture is not a stable one. Funding may come from Local Authorities, charities, through health promotion partnerships, energy suppliers, the Redress Scheme (managed by EST), or even a District Network Operator (DNO) to meet their social obligations (such as the Western Power Distribution Power-Up projects). In some cases Local Authorities, such as Islington Council, have developed in-house energy advice teams. Similarly, some housing associations have in-house energy advisers or advice teams.

A further category to note is the range of community energy groups, many of which focus on local renewable energy projects, but which may also carry out activities to support individual households in improving energy efficiency, or install microgeneration. Local groups that are part of the Transition Network are also active at local level across a range of sustainability issues.
Some examples of different approaches are described below, but it should be noted that this is not intended to be a comprehensive list, nor intended to suggest that these are the only providers in every case.

Groundwork's Energy Doctors programme is a service delivered in several locations around the country, through funding agreements with Local Authorities. It is a home visit service, mainly focused on lower income or otherwise vulnerable households, and providing energy advice on a range of issues, from meters and bills and switching suppliers to user behaviour and heating controls. Some local and regional agencies have developed approaches to support particular groups at risk of fuel poverty, such as Cornwall's Community Energy Plus work with the private rented sector, and with the occupants of Park Homes.

Severn Wye Energy Agency's Warm and Well programme was launched in 2001 as a delivery vehicle for the Gloucestershire and South Gloucestershire Affordable Warmth Strategy, and has been delivering advice and energy efficiency measures now for nineteen years: unusual in its partnership of two Health and eight Local Authorities, the programme has been flexible enough to draw in funding from a variety of sources. The trust and working relationships between the partners have provided a sound basis for other innovative approaches, such as the trialling of deep retrofit support, through detailed energy surveys and reports, local case studies, a local installer group and a Pay As You Save loans pilot. Advice is free to the user and free of commercial bias under this programme.

The Carbon Co-op in Manchester has developed a service called People Powered Retrofit, which consists of a five-stage process, essentially helping homeowners through a complex retrofit. It starts with a free telephone advice session with a focus on understanding the needs of the client. Stage 2 is an energy survey and report, which carries a fee. Stage 3 is the design of the retrofit work and advice and assistance in procuring the contractors. Stage 4 is the on-site work, not managed by the Coop although they remain available to advise if needed, and Stage 5 is post works evaluation.
An example of an approach which takes this a step further into actual delivery of measures and managing of works is the Brighton and Hove Energy Services Cooperative (BHESCo). Targeting landlords and owner-occupiers of older (pre-1940) homes in Sussex, the process starts with a tailor-made survey and report, which leads into recommendations for works and a financing offer, and finally management of the actual works. The service is paid for by the customer, but they can choose how many of these stages they take up. The finance offer can cover everything, so that they don't have to pay anything up front.

Another example is London-based RetrofitWorks, a cooperative which links together two membership strands: Retrofit Practitioners, offering assessments, design and installation on the one hand, and Advocates, representing potential customers – such as community groups and local authorities. The process takes customers through a home energy assessment, which generates quotations for work through a portal, with advice on any finance available as part of the package. The RetrofitWorks approach is designed to be relatively localised, but can be replicated and adapted for other locations. One example is Cosy Homes Oxfordshire, a partnership between RetrofitWorks, National Energy Foundation and the Low Carbon Hub. Another is Warmer Sussex, a partnership between RetrofitWorks, BHESCo, Hastings Borough Council and Citizens Advice.

A new initiative starting up in London, as a purely commercial enterprise is Homeproved Solutions, which uses an interactive website as the front end of the advisory service, generating a Green Renovation Plan,

indicating the measures they can take and the potential energy, carbon and cost savings. The website describes and explains each of the technologies. This stage is free of charge, and you have the option to go on and ask for installer quotes. If works go ahead the installers pay a commission back to the company, so the advice is given free of risk.

A further category of advice provider is commercial organisations that offer services to support delivery of ECO funding for energy suppliers. This is the current energy (and carbon emission) saving programme, established as an obligation upon energy suppliers to the domestic market (https://www.ofgem.gov.uk/environmental-programmes/eco). An element of initial advice is a necessary part of this process, and this is now becoming formalised through the PAS 2035 process which will be fully integrated into the delivery of ECO from June 2021.

4.2.2.3 Summary of geographical coverage

The geographical coverage of energy information and advice services in the UK is patchy and incomplete, in particular as regards energy efficiency and retrofit.

The recent review by Citizens Advice of energy advice provision in England and Wales (for internal planning purposes, unpublished), covering both local Citizens Advice and other organisations, supported the view that coverage is variable across these two countries, and noted in particular a lack of provision in Eastern England. Provision is more widely available, however, as regards advice on energy supply issues and switching suppliers, and in general there appears at present to be considerably more energy advice provision in relation to fuel poverty across the whole spectrum of households. This would appear to be closely linked to the way in which advice services are funded, and whether they help to fulfil statutory obligations, with much of the energy supply and market advice supported through market mechanisms such as levies and redress funds, rather than government funding. The Consumer Direct and Extra Help Unit services described above are statutory services, legally required, and funded by a levy on all energy consumers (rather than taxpayer funded).

Energy suppliers have particular obligations to vulnerable consumers, including provision of energy efficiency information to those in payment difficulty, as well as a range of payment options (Ofgem, 2019). Medium and larger suppliers are also obliged to offer the Warm Home Discount on energy bills for people at risk of fuel poverty. UK Government provide additional support through Winter Fuel Payments and Cold Weather Payments, and the devolved governments have their own fuel poverty policies and programmes (described below).

A specific requirement on suppliers is to provide energy efficiency information to customers when a smart meter is installed, and energy suppliers also have an obligation (as a condition of the Supply Licence) more generally to provide information about energy efficiency to all customers, including any financial assistance available from the government towards the costs of improvements (Ofgem, 2019). A review of supplier websites indicates that this is generally provided through generalised energy saving 'tips' and signposting to other services.

One of the relevant current sources of funds for advisory services is the Energy Industry Voluntary Redress Scheme, which is run by the Energy Saving Trust on behalf of Ofgem to distribute payments from energy companies who may have breached rules. The funds target vulnerable households and those at risk of fuel poverty, and can pay for anything from making a home more energy efficient, to providing advice that helps consumers keep on top of their bills. As the funding is provided on the basis of applications from charities, for projects lasting up to two years, this is not designed to fund a long-term established advisory service with national coverage.

4.2.3 Method, medium and process

The effectiveness of energy advice and information depends not only on the scope of the subject matter and the completeness of geographical coverage, but also on the details of delivery. This includes both the methods and media used, and the processes. This section draws upon insights from this study and from literature, about advice needs and effective delivery in practice, leading on to suggestions as to future requirements.

4.2.3.1 Medium, method and location

Advice providers use a variety of media to make themselves accessible to service users. While in the past a mixture of drop in centres and telephone lines might have been the norm, websites are increasingly used as an initial contact point. Services catering for vulnerable households are more likely to offer a range of access options, including telephone and e-mail as well as websites. Those with town centre locations may have a drop-in centre facility, or the ability to make appointments for advice. Another way to make services more widely accessible is to run 'surgeries' at community centres or other busy sites within a community.

Websites

Most of the websites reviewed for this study provide generalised information, across a range of useful topics, while only a few build upon this to provide a more tailored approach, by enabling the consumer to enter details about their home and household, to generate advice about measures that could be implemented to improve energy efficiency, reduce carbon emissions or reduce running costs.

The Simple Energy Advice website is provided by the Department for Business, Energy and Industrial Strategy, as their main delivery vehicle for energy advice for domestic consumers in England and Wales. The website was tested for this study on a small sample of properties, and users with no specific expertise in energy efficiency reported it to be clear and easy to use. The author of this report also tested the website for three properties, and noted a number of limitations, such as:

- It is not possible to select insulation or double glazing for some parts of the home: you can only choose all or nothing;
- There is no opportunity to input information about installed microgeneration, so that it can appear as a recommendation, even if already present;
- The recommendations and plan are not yet fully developed: for example a detached stone cottage with oil central heating, no wall insulation and PV panels was returned with just two recommendations: to apply for Winter Fuel Payments and to install PV panels;
- The 'next steps' are useful information, but leave the initiative very much to the homeowner to take forward, step by step, with no support on putting together a complex mix of measures;
- For homes which have not had an EPC done, there was no indication of what the energy rating might be, even provisionally, even after providing all the data requested;
- There is no option for landlords – which is an odd omission given that this is the sector where there is already in place the driver of a legal Minimum Energy Efficiency Standard.

A similar consumer test was applied to the EST website for Scotland. This website is more detailed than the Simple Energy Advice one, and has the advantage of providing a provisional energy rating, even if you have never had an Energy Performance Certificate done for the home. There are limitations, however, to the efficacy of the standard EPC approach as a retrofit advice tool (described under energy assessments below), which then come into play – such as:

- There are limited options to input building details such as a room in the roof, an extension, or different wall types – leading to relatively limited recommendations;
- There is no apparent change to the rating for some improvements.

This website is clear and easy to use, and gives the user options about the level of detail they wish to enter. Another (significant) advantage of this website is that it can lead into the fuller range of support available in Scotland, rather than leaving the service user uncertain or confused about the next steps they might take. As such, it can be seen as a first step, leading in to more detailed advice.

Homeowner networks and open homes

Another approach to energy advice and information worthy of note is the facilitation of information sharing through a network of homeowners who have had energy improvements carried out, connecting them with those who are embarking on this journey. There are many examples of where this has been done at local level as an 'open homes' event, so that people can visit and see technologies in situ, with the added benefit of providing a platform for local builders and installers to show their work, and to be on hand to talk to potential customers. Home Energy Scotland provide a Green Homes Network in tandem with their other programmes. The National Energy Foundation's SuperHomes network goes a step further and provides an online network of homes where renovations are aiming to reach a specified target for reduction in carbon emissions.

These events and networks have generally been found to be motivational and informative for people considering retrofit (Berry et al, 2014), and are a useful addition to the energy information and advice toolbox.
Another way in which people can see technologies in use and ask questions about them is through trade fairs, exhibitions or permanent demonstration centres. These may, for example, be linked to training or educational establishments, retail outlets or installers. The Centre for Alternative Technology has a permanent exhibition of sustainable living technologies and practice at its premises, from which it also runs residential courses. The Self-Build Centre in Swindon caters for people wanting to manage their own build or renovation project, and the Building Centre in London is also open to the public although targeted more to the built environment industry.

Advice in person and home visits

It is recognised that being able to deliver advice in person is the most effective approach, and an evaluation of energy advice for lower income households carried out twenty years ago concluded that such households were more likely to benefit from direct contact with an adviser, and personalised support, as they may experience a complex mix of problems, unlikely to be solved by generalised information (Boardman et al, 1998). This is borne out by this study, with some experienced providers (such as the WISE group in Scotland) highlighting the in-depth case-work and mentoring aspects of their work. Those working on supply issues also emphasised their role as advocates – trusted by both the service users and the energy suppliers, so that they could solve seemingly intransigent problems very quickly.

Some aspects of energy advice are more effective through a home visit, for practical reasons, as well as in response to access barriers. An example would be to advise on the use of heating controls, or to investigate why some parts of the home are particularly difficult to heat. In the case of retrofit advice, a technical home energy assessment is an important tool to ascertain the details of a particular home and to identify suitable improvement measures and priorities.

Energy assessments

An energy assessment typically involves scrutiny of the building dimensions, thermal properties, and energy-related services, so that energy consumption and costs, and related carbon emissions can be quantified for the specific building, and the potential impact of different improvements estimated. Energy Performance Certificates (EPCs) have dominated the market for energy assessments, since they were introduced as a mandatory requirement for sale or rental. They are based on standardised occupancy (with assumptions about the number of people, heating pattern, hot water usage and other energy using behaviour) and so do not fully reflect any specific household, which can be confusing for service users and limits its efficacy as an advisory tool.

There are other limitation to the usefulness of the EPC as an advice tool for retrofit, at least in its present form (Alembic et al, 2019; Palmer, 2020). It has been designed as an 'asset rating', as part of the information for consumers looking to buy or rent a home, and the data input has been simplified to reduce the time (and therefore cost) of this mandatory process. It does not allow for many variations in the details of standard building types – such as extensions, different wall types or a mixture of heating systems – and if these details are not input to the model, they cannot be treated in the recommendations. This is particularly unsuited to a housing stock as old as that in the UK, where housing is far from homogeneous, and so many individual homes will have been changed and added to over time and through changes of ownership and occupancy.

The information presented on the EPC has also been designed to be as simple as possible, and the emphasis is on the Energy Efficiency Rating, which is an indication of energy costs, rather than energy consumption or carbon emissions (Kelly et al, 2012). Unfortunately, an improvement in one of these elements does not always correlate with an improvement in the other two – one example being that a change to a lower carbon but more-expensive-to-run heating system, can have a negative impact on the Energy Efficiency Rating while still reducing carbon emissions. An environmental rating indicating carbon emissions is also given on the EPC, but is given less prominence, and is rarely quoted in discussion of minimum standards (Palmer, 2020). Another issue in using the EPC as an advisory tool in relation to the transition to low carbon is the challenge in keeping the carbon emissions for mains electricity supply up to date: at the time of writing the EPC tends to encourage gas heating, while strategically the country needs to move away as quickly as possible from dependence on fossil fuels.

A further limitation to the usefulness, as an advisory tool, of the EPC in its current form is the lack of granularity of the bandings used. For example, a Band C goes from a SAP (Standard Assessment Procedure, a calculation which underpins the EPC and has a range from 1 to 100) of 69 to 80. Some other EU countries, notably Ireland, have subdivided EPC bands (A1, A2, A3, B1, B2, B3, etc.) to make them more useful for advice and for setting standards.

Considering the two key drivers for energy advice: alleviation of fuel poverty, and reducing carbon emissions from homes, it is arguable that the basic EPC is not an ideal advice tool for either of these purposes, needing as it does to include more building details to be useful for retrofit, and adjustments for actual occupancy to advise on managing energy costs. It is unsurprising to discover that a number of specialist services have developed their own assessment approaches and reports to support retrofit – such as the Carbon Co-op, BHESCo, Retrofit Works, Cosy Homes Oxfordshire, and the EST Home Renewables Specialist Advice Service in Scotland.

Route-maps to zero carbon for individual buildings – medium-term plans

With an eye on the 2050 target for zero carbon homes, a more sophisticated energy assessment and report is needed, to take fuller account of the existing building details, and set out a 'route-map' to zero (or very low) carbon for the individual building (Pearson & Jaksch, 2016). This should include energy, carbon and running cost elements, clearly differentiated – and updatable if different steps are taken over time, rather than in a single renovation (Fawcett, 2014). This approach has been developed in pilots in other countries such as Belgium (Flanders), France and Germany, and is described as the 'Building Renovation Passport' (Fabbri et al, 2016 and 2018; Fabbri, 2017; Maia & Kranzl, 2019).

A useful practical addition to the 'route-map to zero' aspect of the Building Renovation Passport would be to have a single repository of information about works carried out on a building, with certification where relevant. It is understood that this latter facility is currently being developed in the UK by Trustmark (referred to as a 'data warehouse'), although not as yet linked directly to the database for EPCs. Such a repository should include details of insulation that has been retrofitted, changes to relevant building services and installations registered by the Microgeneration Certification Scheme (MCS).

Ideally, this might go further than just energy efficiency, and include information such as the position of utility connections, certificates for damp-proofing, timber treatment, gas and electrical safety and so on. For further consumer streamlining, it might also perhaps be linked to digitalisation of property registers. Ease of access to this kind of information is critically important, for advisers and installers as well as homeowners and tenants.

Steps towards this type of approach are under way in the development of the role of the energy assessor to produce a 'medium-term plan', where 'medium-term' is considered to be 20 to 30 years, for the renovation of a building, as required by the new Publicly Available Specification for Retrofitting Dwellings for Improved Energy Efficiency – PAS 2035 (BSI, 2019). Currently in a two-year transition phase, to allow the industry time for the appropriate certification and accreditations, this will become a requirement of work done under the energy supplier Energy Efficiency Obligation, (present scheme known as ECO), as from July 2021.

PAS 2035 provides a specification and best practice guidance for domestic retrofit projects, and is one of the outcomes of a recent review of consumer advice, protection, standards and enforcement for energy efficiency and renewable energy (Bonfield, 2016).
PAS 2035 requires that advice is given to the homeowner at four points in the retrofit process (with a simplification for the least complex or risky projects):

- on initial engagement;
- on completion of evaluation of options;
- on completion of design;
- on handover.

The technical energy assessment (survey and report) is carried out between the first and second stage, and the actual works done between the third and fourth stage. Looking at advice on retrofit at several stages in this way highlights that it is not generally a single event, but likely to be multi-staged. In practice, some homeowners may need more than four contacts, and the four stages identified above might be seen as a minimum offer, or as stages at which to check whether advice is required. The process may also not follow such a linear path, and the stage at which options are evaluated, in particular, can involve an extended dialogue between homeowner and retrofit designer, coordinator or installer, as cost and other implications are assessed.

This leads to deeper consideration of the place of energy information and advice (and of the providers of these services) in the retrofit process and supply chain, which is developed further below.
PAS 2035 also requires the involvement of a 'Retrofit Coordinator' to take responsibility for overseeing the assessment of dwellings as well as the subsequent specification, monitoring, and evaluation of energy efficiency measures.

4.2.3.2 Process

The study of energy advice to lower income households, mentioned above in relation to the medium of advice delivery, found that advice was more likely to be effective if opportunistic (at a time of change, such as a house move), or client-led – as opposed to unsolicited (Boardman et al, 1998). This is important in terms of the process that advice takes: it was endorsed by comments from providers interviewed in this study, who considered that advice that followed too strict a process (such as a set questionnaire) was not ideal – and that the first step in the process should be to listen and understand the needs and wishes of the service user. The diagnostic nature of the first advice contact is emphasised.

One-stop-shops

The experience of energy advisers interviewed indicated that neither generalised information about energy saving, nor an energy assessment (however sophisticated) are generally enough on their own to help a homeowner through a complex energy renovation, and that expert advice is required to help people to understand the options, prioritise next steps, and implement works. The assessment report itself may need to be explained, and where there are grants or loans for energy improvements, these are likely to need support and explanation too.

The need for effective follow-up to recommendations is noted in previous studies (Palmer et al, 2013; Sussman et al, 2019). An important consideration is to ensure that the customer is not passed on from one service provider to another, risking losing them along the way – hence the concept of the 'one-stop-shop', where they can be supported through the whole 'journey' from awareness-raising through initial enquiry to installation and post-installation user behaviour (Maby, Janssen & Sunderland, 2017).

Experience gained in Energy Efficiency Scotland transition projects highlights the value of bespoke advice and 'handholding support' through complex renovations, and need for tailored approach for communities based on local housing archetypes (Changeworks, 2019; Energy Agency, 2019). The benefits of community links and a trusted installer list are also highlighted. These pilots are illustrations of the one-stop-shop approach. These experienced advice providers also emphasise the importance of continuity of service, in that it takes time to become well-known and build trust within a community, and for referral systems to develop. This means that it is important to resource advice provision consistently over the long term, building upon the expertise that has developed within the local and regional advice networks.

Action research to develop community scale models for low energy/low carbon retrofit of homes, such as People Powered Retrofit and Countdown to low Carbon Homes, endorse both the multiple stages of advice needs, and support through the retrofit process, as well as the benefits of a localised model (Atkinson et al, 2019; Charalambous et al, 2014).

Business models

These insights lead to further consideration of energy information and advice within a localised retrofit supply chain, how a one-stop-shop can be provided in practice, beyond the pilot stage, and what effective business models for delivery might look like.

Earlier studies focusing on single family homes in northern Europe looked at the one-stop-shop concept for home energy improvements, in response to concerns that firms tended to market single technologies, rather than 'whole-house' solutions, and that there were barriers to direct collaboration between the businesses that offered individual technologies. Reliable information and guidance are noted as an essential part of overcoming these barriers, and the single contact point offered by the one-stop-shop is identified as the missing link between these businesses and the homeowners (Cré et al, 2012; Haavik et al, 2011). The need for a more holistic approach to achieving good quality low carbon renovation has become part of mainstream debate in the UK in recent years (Bonfield, 2016; Griffiths & Heath, 2018), and is the basis for the development of the PAS 2035 approach (BSI, 2019). This is both to achieve the desired energy, carbon and running cost outcomes, and to avoid creating problems in terms of ventilation, moisture management, interstitial damp or overheating.

A study of business models for residential retrofit in the UK analyses the different components of a business model, including the 'customer interface', in which category energy advice and information best fits, and develops five archetypes, ranging from the 'atomised market model' providing single measures at one end of the scale to managed energy services at the other (Brown, 2017). This analysis provides useful context to the nature of the advice and information that would be required, depending on the business model employed. It is noted that the atomised market model (which is how much of the energy efficiency industry currently operates – with each company offering single technologies) effectively leaves the homeowner themselves to project manage a complex retrofit. A logical response to this would be that information and advice needs to be designed to enable them to do so – a good example of this is the range of events and training for homeowners provided by the Carbon Co-op (https://carbon.coop/). The 'market intermediation model' provides a single point of contact and support from an intermediary who does not have a direct role in the retrofit works themselves, while a one-stop-shop goes a step further by offering the whole retrofit package, from enquiry through to completion and handover.

The BHESCo, Carbon Co-op, Cosy Homes Oxfordshire, RetrofitWorks, Homeproved Solutions and Severn Wye Energy Agency initiatives, described above in the section on regional advisory services, are all examples of market-intermediation or one-stop-shop approaches, in that they combine different aspects of the services needed

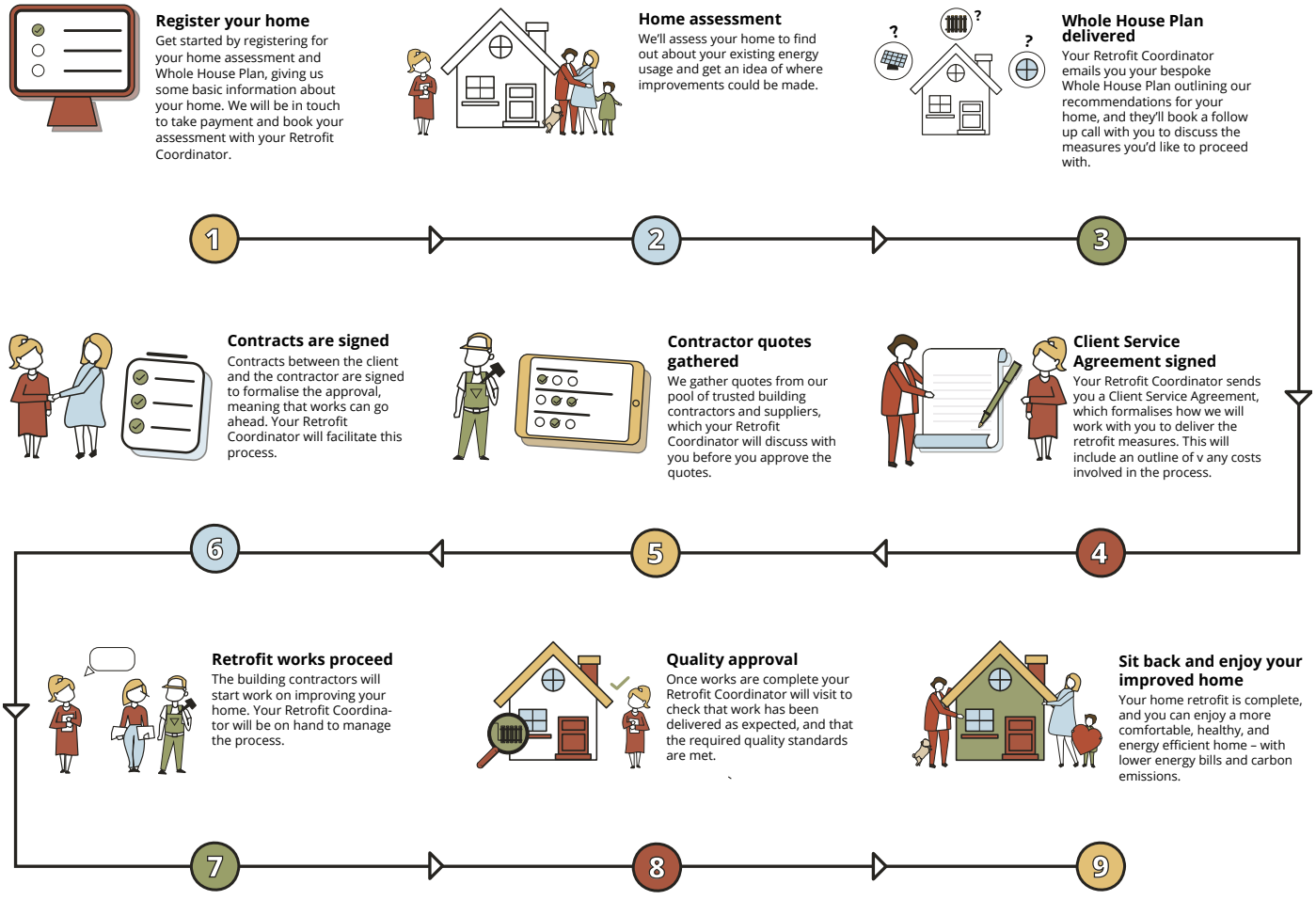
by homeowners to retrofit their homes, essentially consisting of: information and advice; technical survey and assessment; finance; design and specification of the work to be done; and installation. They are all delivered at a relatively local level, for several practical reasons: the installers and assessors (who need to visit the home to carry out their survey) on their lists are those who are active in the locality; relationships can be developed with local groups and local authorities for referrals; and the advisory body itself can have a local presence and visibility. The RetrofitWorks cooperative in London offers replication in other areas as part of its business model.

Other examples of one-stop-shop approaches have also been shared within EU and international networks (Erwin et al, 2016). One example is the BetterHome service in Denmark, which is a partnership of four manufacturers, Danfoss, Grundfoss, Rockwool and Velux (BPIE, 2018).

The Picardie Pass Rénovation is another example, a public-private partnership, using funds from the regional government and the European Investment Bank to provide low interest loans. Tipperary Energy Agency in Ireland provide a different model, as an NGO (and SAVE energy agency), providing a one-stop-shop low carbon renovation service, drawing in funds from the national energy agency SEAI and Local Authorities.

The graphic in Figure 1 is an example of the process that might be applied in a one-stop-shop retrofit process, illustrating the several stages of support that may be needed by a homeowner going through a complex retrofit. In practice, some of these steps may in themselves involve several stage of discussion – in particular to move from Step 5 to Step 6.

Figure 1: The one-stop-shop retrofit process by Cosy Homes Oxfordshire



These different business models for home retrofit offer a useful context for consideration of some key issues for the provision of information and advice: trust, expertise, commercial bias and how advice is to be paid for. It is arguable that the question of commercial independence is most critical at the early stages of advice, so that the decision as to the measures that will be adopted is not influenced by commercial interests. Some of the ways this is treated in the different business models considered are:

- Public funding for initial advice, fees charged per each subsequent stage;
- Public funding for initial advice, and for the assessment stage for lower income households;
- Free advice and support throughout the process, paid for through a fee charged to the contractor(s) on the basis of a percentage of completed works (in a range of 10–15% suggested by providers);
- Manufacturer sponsorship of advice, enabling it to be free of charge or for subsidised fees, with no direct return related to individual works.

Referring back to the four stages for advice set out in PAS 2035, and filling in the gaps to build this linear picture of the retrofit process, this might be described in simplified form as follows, with the potential need for support and advice at each of the nine stages, and commercial independence a significant quality issue through the first six stages:

1. Outreach and marketing, referrals in from other services;
2. Initial enquiry, diagnosis of customer requirements, and generalised information about options;
3. Technical assessment of home, with survey and report;
4. Review of options and decisions on next steps;
5. Design and specification of the work to be done (this may in practice come after stage 6 and be carried out by the installation contractors);
6. Identification of contractors for installation, costs and how the work will be financed;
7. On site: ongoing questions may arise and decisions may be needed;
8. Snagging and post installation issues for resolution;
9. Handover, including advice on user behaviour and maintenance of any new equipment.

4.2.4 A typology of existing energy advice services and providers

In order to summarise the description above of the advisory services found in the UK, an attempt at a typology of existing providers is given below. This is not intended to be a comprehensive or exclusive list, but to give an idea of the range of provision.

Table 2: A typology of existing energy advice services and example providers

Category	Examples
Online information about retrofit technologies	Trade Associations Energy Saving Trust MCS Centre for Alternative Technology
Interactive website generating recommendations	Simple Energy Advice (England and Wales) Energy Saving Trust (Scotland only) Homeproved Solutions
Online calculators for specific technologies	Friends of the Earth solar thermal and PV calculators EST renewables tools (Scotland)
National web and telephone advice service, signposting to other services according to need	Nest (Wales) Consumer Council (Northern Ireland) Northern Ireland Housing Executive Citizens Advice Home Energy Scotland advice network
National advice service on energy supply issues	Citizens Advice Consumer Service and Extra Help Unit
National programme of advice and related services addressing both fuel poverty and carbon aims	Home Energy Scotland
Local /regional home visit advice services for vulnerable households	Groundwork Energy Doctors Bryson House (Northern Ireland) SELCE (SE London) SHINE (London, Hastings, Brighton and Hove) Western Power Distribution 'Power Up' projects Warm Wales Community Energy Champions Numerous local groups and many of the regional organisations listed overleaf

Category	Examples
Regional organisations acting as advice hubs, offering a range of services, linking in to other national and local organisations, resources and services	Centre for Sustainable Energy Changeworks Community Energy Plus Energy Agency Low Carbon Hub Marches Energy Agency National Energy Foundation Nottingham Energy Partnership Scarf Severn Wye Energy Agency Tighean Innse Gall Wise Group
ECO delivery organisations	Agility ECO Happy Energy
One-stop-shop advice and support through retrofit process	Brighton and Hove Energy Services Co-operative Carbon Co-op Cosy Homes Oxfordshire Retrofit Works
Information sharing networks of homeowners who have done or want to retrofit	Green Homes Network (Scotland) SuperHomes
Demonstration and exhibition centres	Centre for Alternative Technology National Self Build and Renovation Centre
Home energy assessors	Individuals registered with certification bodies, such as: ECMK Elmhurst Energy Quidos Stirling Accreditation Stroma

4.3 The future – what needs to change?

Looking to the future, it is necessary to consider both what is missing in current provision and what may change in terms of consumer need for energy information and advice. Research literature about energy advice tends to focus on user behaviour or on consumer decision-making, and provides some useful insights, in addition to the views expressed by the advice providers contacted for this study.

4.3.1 Scope of energy information and advice provision

There is a clear need, not only for generalised energy information but also for advice, specific to each home and household, both on energy supply matters and reducing energy use, costs and carbon emissions.

An observation from a review of relevant literature is that advice on retrofit and reducing energy use is sometimes understood as persuasion, and assumed to be key to driving action on making energy improvements to the home. The experience reported by advisers indicates that while advice can raise awareness, and motivate action through showing what is possible and the benefits to be accrued, the main drivers are external to advice provision.

> ***Energy information and advice are a major part of the essential enabling framework, rather than the driver, but must be designed to respond to these drivers in order to be effective.***

The drivers to action in question may be, for example, to make the home more comfortable (and healthy to live in), to reduce the cost of energy bills, to reduce negative impacts on the environment, to make a home more attractive to prospective buyers or tenants, to comply with regulations or to respond to financial incentives. The latter two areas are likely to need to be strengthened considerably as soon as possible and for the foreseeable future if we are to achieve carbon emission targets, not only low interest loans and grants, but also through taxes, and the application of **minimum energy performance standards** for existing homes (Brown et al, 2020; Pearson & Jaksch, 2016) – and this will bring a specific requirement for energy advisory services. A minimum standard has already been introduced for the private rented sector, albeit at a relatively low level to date.

> ***The need for energy advice is likely to increase substantially, in scope, depth and scale, along with the urgency for action on climate change (reflected in political commitments at all levels), and the anticipated application of minimum energy performance standards for existing homes.***

A further element to consider with respect to what drives the take-up of home energy improvements is the life events that may trigger it, in order to ensure that advice and information are signposted and accessible at relevant trigger points (Energy Saving Trust, 2011). This could, for example, be when preparing to sell a home, when buying or moving into a new home, or when other major changes happen in the life of the household or the home. Several studies emphasise the importance of drivers other than anticipated fuel bill savings in designing energy efficiency policy and programmes (Galvin, 2014; Rosenow & Eyre, 2016; Tjørring & Gausset, 2019). In relation to trigger points, opportunities also arise on a daily basis for the inclusion of energy improvements in general home repairs, maintenance and improvements, which is a significant and demand-led market in the UK (Killip, 2012; Maby & Owen, 2015). The building tradespeople engaged in such work may be able to influence the decisions of homeowners, although they are not perceived as commercially unbiased – so making relevant independent information and advice available to them, or through them to homeowners, is another route to dissemination.

> ***Energy advice and information should be signposted and accessible at all relevant trigger points, such as buying or moving into a new home, and carrying out home repairs, maintenance and improvements.***

The standard EPC is not an adequate tool for energy advice for retrofit. In terms of technical content, future advice provision needs to take account of the path to net zero for each home, as noted in 4.2.3.1 with regard to assessments, and to support homeowners towards this goal, whether in one renovation or step by step. The accuracy, relevance and accessibility of energy assessments and the associated reports will be even more crucial, as they will be required to provide (a part of) this advisory function as well as evidence of compliance, as stricter standards are introduced over time.

Energy assessments and reports need to provide a clear route-map for each home to achieve near zero carbon emissions, whether in several steps over time, or in a single renovation. These assessments should be updatable as changes are made, and clearly indicate and differentiate the energy, carbon and running costs elements for consumers.

Even with the most accessible reports and written advice materials, homeowners will need support to understand the options open to them and to decide on what to do, in what order, and how to go about it, not least as the improvements required will require significant investment on the part of homeowners.

Personalised advice is needed to interpret assessment reports and advise homeowners on next steps, and this need will increase as the path to low carbon requires more substantial and complex renovations.

Technical expertise in advice delivery will need to keep abreast of technical and policy developments, with new areas growing in significance, such as the mixture of home generation and external supply, and understanding how best to balance this; home generation with storage; electric vehicle charging; linking to local heat networks; and demand response and flexible tariffs. Figure 2 illustrates the range of topics that have been identified as relevant to energy information and advice, in discussion with providers, setting these out as a core set of topics related to retrofit, with the other relevant issues arranged around the edge.

Technical expertise in advice delivery must expand to meet new requirements and technological developments, as well as keeping up to date with social, regulatory and financial matters.

Figure 2: The scope of energy advice for the 2020s

4.3.2 Geographical coverage and delivery approach

As noted in 4.2, provision of advice on energy efficiency and retrofit is not consistent across the four nations of the UK. In England, national provision is limited to an interactive website, which is not adequate in detail to the needs of low carbon retrofit, nor is it effectively integrated into a next level of support to enable homeowners to easily progress from interest to action. While Wales and Northern Ireland benefit from single contact points for online and telephone advice, this is still lacking the in-depth, multi-stage support required for complex retrofit.

Only in Scotland is anything approaching a comprehensive programme of advice delivery for retrofit identifiable, through the Scottish Government's Home Energy Scotland programme, managed by the Energy Saving Trust and delivered through five regional hubs, with associated Scottish Government loans and grants, the Scottish Home Renewables Specialist Advice Service, and Green Homes Network. Home Energy Scotland, and the regional delivery organisations work closely with Local Authorities, who have access to funds for area-based schemes for retrofit. The interactive website provided by EST in Scotland is more fully developed than the one for England and Wales, and is able to link consumer to the other relevant programmes to support them in taking the next steps.

The core national telephone services provided by Citizens Advice, Nest in Wales, and the Consumer Council in Northern Ireland provide the benefits of a single point of contact and coverage of advice on energy markets and supply issues, together with information on energy efficiency. In terms of detailed advice, it is understood that the latter tends to be relatively limited, with a focus on grants and signposting to relevant services. As such, the link to a more in-depth support service for retrofit is missing. There is also a general understanding that the most vulnerable households often need advice in person, either at an accessible local location, or in the home, and some will have multiple needs requiring extended support. There are a plethora of organisations striving to provide this kind of help at local or regional level, but with the exception of Scotland provision is patchy and local services often have insecure funding, so that these organisations are forced to expend scarce resources (that could be spent on advice delivery) on looking for funds.

> ***There is clear need for a comprehensive strategy for energy information and advice provision going forward, to ensure full geographical coverage across the UK and the full scope of subject matter, for the full range of household and tenure types.***

While the details and degree of help needed vary between building types, and household characteristics, the core areas of expertise are the same, and there is considerable overlap (such as between advice on energy supply and energy efficiency, or advice to those in fuel poverty or not). It makes sense, therefore to develop a full programme that covers all these aspects, and does so consistently.

Klein (2015) notes the recommendation of the Energy and Climate Change Select Committee in 2012 for a 'single impartial dedicated service that consumers can trust as a port of call with any query about energy matters'. An independent provider is recommended, in the light of evidence that consumers do not know who to trust to give them the right advice. The question of trust is raised frequently in literature about low carbon renovation and advice (Citizens Advice, 2016; Wilson et al, 2014; Warren & Foulds, 2020).

De Wilde (2019) breaks this down into interpersonal, impersonal and professional trust, and all three of these elements are worth bearing in mind in the design of advisory services. Interpersonal trust is built with social networks: people seek information and reassurance about getting works done on their home, and who to ask, from people they know. This highlights one of the many benefits of providing advice through local organisations, endorsed by regional providers who stress the importance of working with intermediaries in the community. Impersonal trust is enhanced through commercial independence (or at least transparency), and clearly communicated standards. Professional trust depends on the perceived expertise and capabilities of those involved.

Bearing these different aspects of trust in mind, an ideal structure for the delivery of advice and information is one where the frontline communication and support services are provided at as local a level as possible, backed up by clear professional standards, and information and technical resources from a non-commercial source and consistent across the country. These resources should be accessible, in appropriate formats and levels of detail, to the full range of key actors in home energy retrofit, not only advisers, but also assessors, builder and installers, building control and local authority personnel, builders merchants, DIY stores, and so on – so that the messages and information are consistent, and that consumers are alerted to them at all the potential trigger points.

The complexities of low carbon renovation require in-depth support at multiple stages, as represented by the local or regional one-stop-shop approach, for which a few innovative examples exist in the UK. This will need to be expanded for full coverage, and scaled up to meet demand if retrofit targets are to be met. Table 3 sets out the many stages at which advice may be needed through the retrofit process, set against the relative sensitivity of the status of the advice at each stage, and (inextricably linked to this) suggestions as to the ways in which it might be financed.

Table 3: The multiple stages of energy advice and support through home retrofit

Stage	Advice and support	Status	Finance options
1	Outreach and marketing, referrals in from other services	As many routes as possible	Multiple
2	Initial enquiry, diagnosis of customer requirements, and generalised information about options	Commercially independent and free of charge to consumer	Public funding
3	Technical assessment of home, with survey and report	Qualified assessor, independent of installer industry	Fees chargeable Subsidy for low income households
4	Review of options and decisions on next steps	Commercially independent and free of charge to consumer	Public funding
5	Design and specification: review of options for materials, dimensions etc. (this stage could come after stage 6 and be provided by the installation contractors)	Commercially independent if carried out before stage 6	Fees chargeable or included as part of installation costs
6	Identification of contractors, costs and how the work will be financed	Commercially independent and free of charge to the consumer	Public funding
7	On site: ongoing questions may arise and decisions may be needed	Either one-stop-shop facilitator or provided by installer, according to agreed standard	Public funding, industry sponsorship or through fees paid by contractors based on percentage of value of works
8	Snagging and post installation issues for resolution	Either one-stop-shop facilitator or provided by installer, according to agreed standard	Public funding, industry sponsorship or through fees paid by contractors based on percentage of value of works
9	Handover, including advice on user behaviour and maintenance of any new equipment	Either one-stop-shop facilitator or provided by installer, according to agreed standard	Public funding, industry sponsorship or through fees paid by contractors based on percentage of value of works

A national strategy for energy advice should consist of accessible local or regional one-stop-shop support services, that can help homeowners through the multiple stages of a retrofit process, backed up by national information and technical resources, consistent across the country, and from a non-commercial source.

Access to assistance for the most vulnerable households would ideally be through the same single contact point, free of the stigma that can be associated with services dedicated only to those 'in poverty', and coupled with an awareness that (and resources for) in-depth support required in some cases, engaging other agencies and across multiple needs.

Finally, long-term stability of these services is essential – for them to establish, develop expertise and systems, become known and build effective partnerships, especially within local communities.

4.3.3 Training, qualifications and standards

4.3.3.1 Training for energy advice delivery

The range of homeowner needs for information and advice described above highlights the range of knowledge and skills that advisers may require to cater for the full range of situations. It is clear that there are many levels of provision, ranging from simple information and signposting to different services or lists of providers through to in-depth casework with vulnerable households or support through a complex energy renovation project. The knowledge and skills required range across technical and buildings knowledge; finance around grants, loans and debt; consumer rights; health and social issues; and a variety of communications methods.

The popular NEA Energy Awareness qualification has created a basic standard for advisers across the sectors for the past 30 years, and remains relevant today. Taught over three days, followed by a one-day examination (and a City and Guilds qualification, at Level 3). It covers the causes of fuel poverty, understanding fuel bills and meters, payment methods and fuel debt, comparative running costs for heating, hot water and electrical appliances, heating and hot water controls, fabric and ventilation heat loss and ways to reduce these, grants and energy efficiency schemes, understanding the EPC, and the causes and avoidance of condensation damp. Given the complexity of needs, the Energy Awareness qualification is not enough on its own as training for energy advice delivery, but serves as a valuable introduction. NEA also offer a course and Level 3 qualification in Renewable Energy, a course and Level 2 qualification in fuel debt advice in the community, and CPD certified short courses on related matters.

EST in Scotland have developed a more detailed in-house training programme, with an associated Vocational Qualification, which includes training on customer service, internal organisational systems, the range of local services and financial support available, and the additional topic areas of water and transport that Home Energy Scotland cover with their advice. This type of approach could beneficially be developed into a standard qualification for energy advisers in general, and this might include several of the various short courses mentioned along with delivery, process and communications skills.

An energy advice qualification might be set at different levels, and could also include energy assessments, for which various providers exist at present, linked to specific UKAS approved certification bodies. A higher level still might incorporate the Retrofit Coordination and Risk Management qualification, which is at Level 5, and is provided by the Retrofit Academy (https://www.retrofitacademy.org/).

> ***A new energy advice qualification is needed, building upon and updating relevant existing qualifications.***

4.3.3.2 A formal standard for energy advice

During the period in which the network of Energy Efficiency Advice Centres provided national coverage in the UK, a Code of Practice was developed to establish a basic standard for energy advice delivery for the domestic sector (Energy Efficiency Partnership for Homes, 2003). This is out of print and out of date, and leaves a gap in terms of a formal standard for advice delivery.

As noted in 4.2.3.1, the PAS 2035 (BSI, 2019) sets a framework for the assessment, identification, design, specification and monitoring of energy efficiency measures (alongside the PAS 2030 which covers installation, commissioning and handover of retrofit projects), and work is underway to develop accompanying standards for related areas, such as energy assessments, monitoring and evaluation. While PAS 2035 is still in its pilot phase, and some adaptations may yet be required for the smaller scale individual domestic renovation, this could be a good stage at which to develop a new formal energy advice standard for this sector, taking account of the scope of advice needs going forward: both for retrofitting homes to achieve low carbon emissions and to support households, particularly those on low incomes or otherwise vulnerable, with energy supply market matters. Discussion with providers indicated concerns about the cost implications of such a standard, and consideration must be given to the most appropriate arrangements for it status and accessibility, to ensure widespread take-up, across non-profit and public bodies as well as the commercial sector.

> ***A new, widely accessible, energy advice standard should be developed to ensure consistency of quality in future delivery.***

Energy advice is best delivered at as local a level as possible, for accessibility, relevance, integration with local services, and links to community networks.

5. Conclusions and Recommendations

There is a clear need, not only for generalised energy information but also for advice, specific to each home and household, both on energy supply matters and reducing energy use, costs and carbon emissions. In designing services, it is important to differentiate between information and advice in this respect.

The geographical coverage and stability of current energy advice provision varies across the four countries of the UK, and is more consistently available on markets and supply issues than on energy efficiency and retrofit. Provision for the latter is broadly inadequate to the needs of complex retrofit, with the notable exception of Scotland, where the Home Energy Scotland programme offers a good practice example that might beneficially be built upon for the rest of the UK. Set against this, there is a wide range of expertise, innovation and capacity to draw upon, mainly within organisations working at local and regional level, and much of it (though not exclusively) in the third sector, with Citizens Advice, the Energy Saving Trust, and NEA at national level.

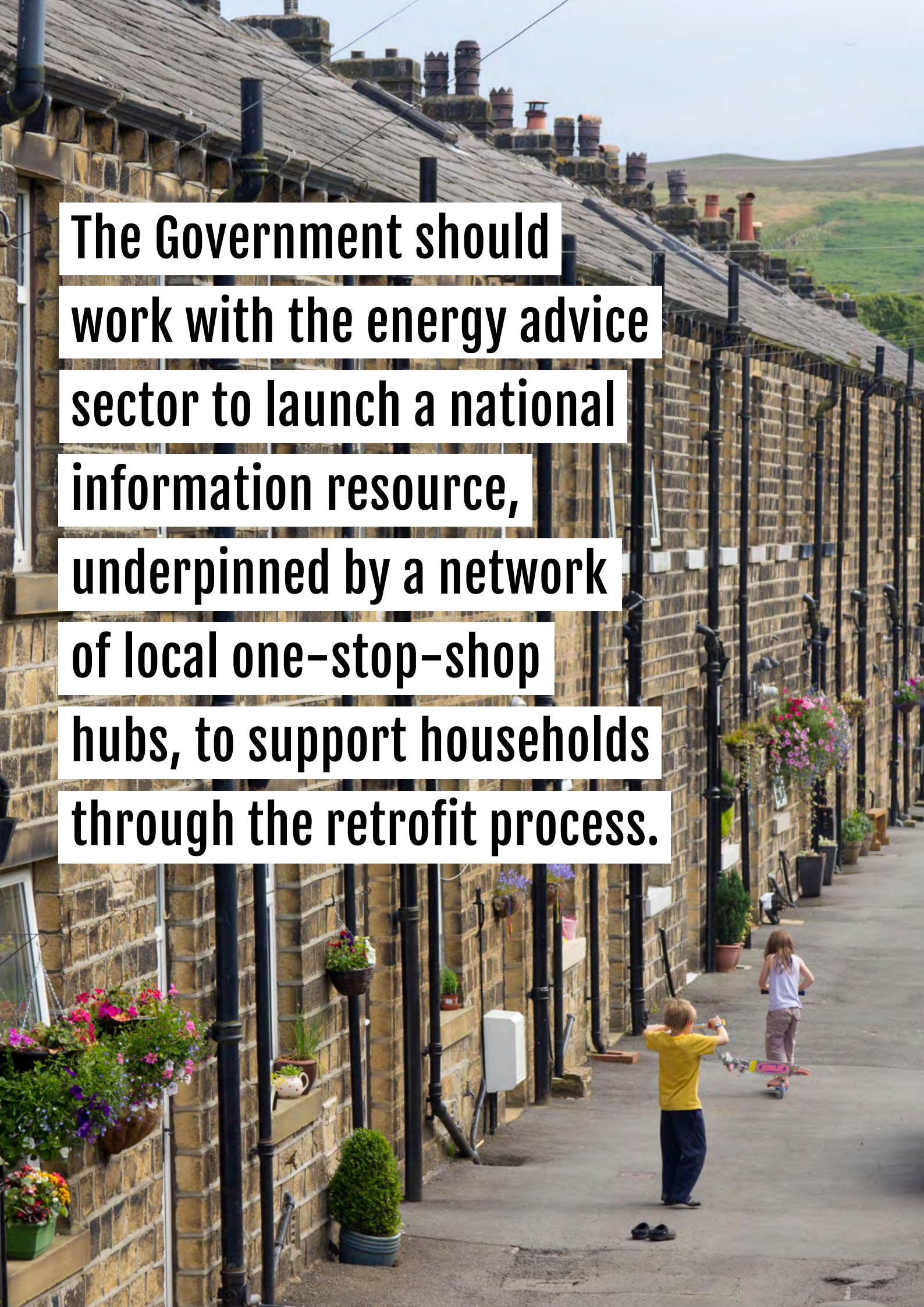
While advice can raise awareness, and motivate action through showing what is possible and the benefits to be accrued, the main drivers are external to advice provision. These drivers may be to make the home more comfortable (and healthy to live in), to reduce the cost of energy bills, to reduce negative impacts on the environment, to make a home more attractive to prospective buyers or tenants, or to comply with regulations or financial incentives. The latter two areas are likely to need to be strengthened considerably, if we are to achieve carbon emission targets, not only through low interest loans and grants, but also through taxes, and the application of minimum energy performance standards for existing homes, and this will bring a specific requirement for high quality energy advisory services.

The need for this support is likely to increase substantially, in scope, depth and scale, along with the urgency for action on climate change (reflected in political commitments at all level). Such services should be tailored to meet the specific needs of landlords and tenants, as well as owner-occupiers.

Energy information and advice are a major part of the essential enabling framework to achieve low carbon homes and to reduce the risk of fuel poverty, and must be designed to respond to the relevant drivers in order to be effective. Future advice provision needs to take account of the path to net zero for each home, and to support homeowners towards this goal, whether in one renovation or step by step. The accuracy, relevance and accessibility of energy assessments and reports are an essential part of this, and personalised advice will be needed more than ever to interpret assessment reports and advise homeowners on next steps. Technical expertise in advice delivery will need to keep abreast of technical and policy developments, with new areas growing in significance such as the mixture of home generation and external supply, and understanding how best to balance this; home generation with storage; electric vehicle charging; linking to local heat networks; and demand response and flexible tariffs.

Energy advice is best delivered at as local a level as possible, for accessibility, relevance, integration with local services, and links to community networks. The complexities of low carbon renovation require in-depth support at multiple stages, and advice is ideally part of a supported retrofit journey for homeowners, through the kind of one-stop-shop approach that has been developed in some localities by innovative providers. This should be backed up by clear professional standards, and information and technical resources free from commercial bias, providing consistency, regardless of the point of access to such information. These core information resources and standards should be developed as a national resource, and available across the advice networks and other communication points relevant to trigger points to action on home energy improvements.

While the details and degree of help needed vary between building types, and household characteristics, the core areas of expertise are the same, and there is considerable overlap (such as between advice on energy supply and energy efficiency, or advice to those in fuel poverty or not). It makes sense, therefore to develop a full programme that covers all these aspects, and does so consistently.



The Government should work with the energy advice sector to launch a national information resource, underpinned by a network of local one-stop-shop hubs, to support households through the retrofit process.

Recommendations

For government, at UK and country level

Work with the energy advice industry to develop an integrated and coherent strategy, and long-term programme, for domestic consumer energy information and advice provision, with full coverage of the UK, of all tenures, and of the two key strands of energy advice, to:

- Support and enable homeowners to make appropriate energy improvements to their homes, to reduce the risk of fuel poverty, and to work towards net zero carbon emissions;
- Help domestic consumers through energy supply/market problems and barriers, and related financial difficulties.

This programme should include:

- A national information resource providing expert and regularly updated information resources, covering all relevant technologies and user behaviour: to enable consistency in advice, whoever it is delivered by. This should be:
  - Commercially independent and unbiased, with public funding to ensure, and to signal to consumers and the industry that this is the case;
  - Tailored to the differing requirements of owner-occupiers, landlords, tenants, advisers and building professionals and tradespeople;
  - Accessible at multiple contact points, maximising trigger point opportunities, such as those offered by house moves, and home repairs and improvements.
- A framework for local or regional one-stop-shop contact hubs, to support homeowners through the retrofit process.
- A clear and consistent system of contact points, such that any consumer, anywhere in the UK, is able to clearly identify relevant advice and information services, and access them online, by telephone or face-to-face, according to their specific needs.
- A whole house assessment methodology and report, delivering a medium-term (20 to 30 year) energy renovation plan, identifying the measures required and updatable as measures are installed.
- A single online and accessible repository for holding the above plans, Energy Performance Certificates (EPCs) and records of works carried out.
- Investigation of the feasibility for including in the above repository:
  - Details of other notifiable or certificated works done, such as damp proofing, or works requiring building permit or planning permission;
  - Other relevant practical information about each home, such as details of services connected to the home and location of cut-off points (e.g. water, electricity, gas);
  - Linkage of this to the digitalisation of property registers.

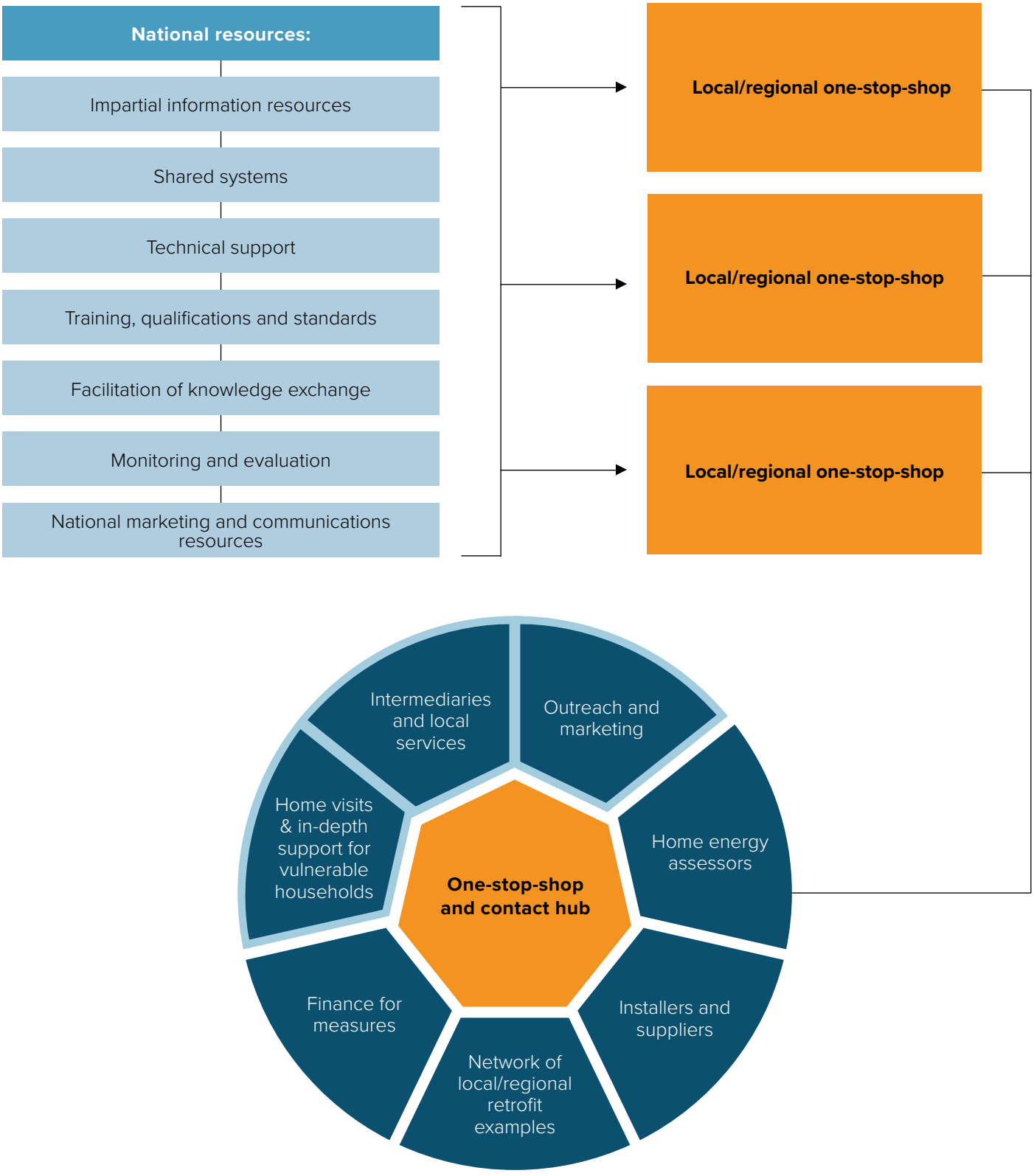
For the energy advice industry

- Collaborate to develop a new energy advice qualification, building on what exists already, in particular the NEA Energy Awareness course.
- Develop a new advice standard or code of practice, complementary to PAS 2035, in collaboration with the BSI Retrofit Standards Task Group, and ensuring that such a standard is made publicly available and fully accessible across all sectors.
- Establish a new community of practice for energy advice, to enable information exchange, a forum for discussion, and a platform for communication with government and other parts of the industry, with an independent chair to ensure effective representation across the industry.
- Collaborate to develop common methodology for monitoring and evaluation, to enable a body of knowledge on good practice, accessible within the public domain.

Next steps – for immediate action

- Government to work with the energy advice industry to develop the programme above, including costings and business models for delivery, ensuring that the financing at each stage of advice is transparent, with commercial independence maintained at the relevant stages.

Figure 3: A national programme for energy information and advice



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Appendix 1: Organisations and groups consulted

ADE: Association for Decentralised Energy
ALEO: Association for Local Energy Officers
BHESCo: Brighton and Hove Energy Services Cooperative
BSI Retrofit Standards Task Group
Carbon Coop
Citizens Advice
CSE: Centre for Sustainable Energy
Certsure
Community Energy Plus
CIPHE
Cosy Homes Oxfordshire
Department for Business, Energy and Industrial Strategy
Elmhurst Energy
Energy Agency
Energy Systems Catapult
Ealing Council
Energy Saving Trust
Friends of the Earth
Happy Energy
Ground Source Heat Pump Association/Heat Pump Federation
Homeproved Solutions
Islington Council
Marches Energy Agency
MCS: Microgeneration Certification Scheme Service Company
NEA: National Energy Action
Nest
NEA: National Energy Foundation
Ofgem
Parity Projects
Scarf
SELCE: South East London Community Energy
Se-2
Severn Wye Energy Agency
Trustmark
Wise Group

In addition to the direct consultations above, the following websites were reviewed:

Act On Energy
Agility ECO
Auriga Services
British Gas
Bryson House
Bulb
CAT: Centre for Alternative Technology
Ecotricity
Electricity Safety Council
EDF Energy
E.ON Energy
Good Energy
Groundwork London
Low Carbon Hub
Northern Ireland Housing Executive
Nottingham Energy Partnership
N-Power
Octopus Energy
OFTEC
OVO Energy
RetrofitWorks
Robin Hood Energy
Scottish Power
Scottish and Southern Energy
Solar Trade association
Solid Fuel Association
South East Wales Energy Agency
Sustainable Energy Association
Scottish Government
Tighean Innse Gall
Warm Wales
Welsh Government
YES Energy Solutions

MCS
CHARITABLE
FOUNDATION