

Article

# Exploring Local and Community Capacity to Reduce Fuel Poverty: The Case of Home Energy Advice Visits in the UK

Andrew Reeves

Institute of Energy and Sustainable Development, De Montfort University, Leicester LE1 9BH, UK; areeves@dmu.ac.uk; Tel.: +44-116-250-6569

Academic Editor: Francisco Manzano Agugliaro

Received: 15 December 2015; Accepted: 30 March 2016; Published: 8 April 2016

**Abstract:** Local delivery of support to householders to reduce the exposure to, and impacts of, fuel poverty is attracting increasing policymaker interest, but there is a dearth of empirical research that describes and evaluates local support schemes. Community organisations are viewed as having great potential to aid this delivery, but research on how this could be achieved is scarce. The research presented in this paper responds to these needs through an exploratory study of the delivery of home energy advice visits in the UK. Data were collected through interviews and supporting documents from twelve projects and analysis examined the inter-relationships between the process, delivered outputs and impacts of each project. The research findings suggest that long-term local professional initiatives appear to be most effective at reaching and providing support to fuel poor households across a local area. Community organisations appear to have some potential to fill gaps in local provision and can assist professional initiatives, particularly through signposting, but a lack of volunteer capacity ultimately constrains their impact. Issues identified for further study include: how local support services can be resourced and delivered nationwide; trade-offs between pursuing climate change and fuel poverty agendas; a need for more robust evidence of impacts.

**Keywords:** fuel poverty; household energy efficiency; energy advice; community organisations; local municipalities

---

## 1. Introduction

Despite more than a decade of Governmental initiatives, including commitments by Scotland, and England and Wales to eradicate fuel poverty in all households by 2016, the unaffordability of adequate domestic energy services for significant sections of the population is still a significant social problem in the UK and in many countries across the world [1]. Recent statistics indicate that 12% of households in England and 43% of those in Scotland are in fuel poverty [2], increasing the likelihood of well-documented negative impacts including excess winter deaths, illness and psychological harm [1,3,4].

Fuel poverty has traditionally been framed as relating to three causes: poor energy efficiency of dwellings; high fuel prices; low incomes [5]. With action on the first of these causes being more likely to provide an enduring solution [5], long-term strategies to eliminate fuel poverty in the UK have focussed upon greatly improving energy efficiency within the housing stock [6–8]. The recently published fuel poverty strategy for England takes this approach and sets out a headline goal that “as many fuel poor homes as is reasonably practicable achieve a minimum energy efficiency rating of Band C by 2030” [8]. A focus on pursuing energy efficiency creates a synergy with the agenda of reducing the carbon emissions of housing [9], which has been reflected in fuel poverty research, policy and practice for some years [10,11].

Building upon the three causes of fuel poverty, strategies available to householders to reduce vulnerability to fuel poverty can be categorised as: *financial* (e.g., by switching to a cheaper energy tariff, claiming funding such as the Warm Homes Discount [8]); *physical* (i.e., installing energy efficiency measures such as draught proofing or insulation); *behavioural* (e.g., closing curtains at dusk to retain heat). In contrast, *coping strategies* rely upon the adaptive capacity of householders [12] and may have negative health impacts (e.g., reducing use of heating). Given the slow progress in achieving substantial energy efficiency improvements to UK housing [1], the inability of most fuel poor households to pay for these themselves [5] and a common lack of capacity to arrange non-physical measures [13], there is a case for the provision of support to households vulnerable to fuel poverty to enable action within each of the above categories [8,13,14].

Such support has been frequently delivered on a local basis by local government and staffed voluntary sector agencies. However there is emerging interest reflected in a range of Government policy documents [8,15–17] in the potential for community organisations to contribute to delivery of such services, such as by using their local social networks to signpost householders to delivery partners. This view is backed up by researchers and practitioners, who highlight the challenges of reaching or engaging with fuel poor householders [5,18–20], and point to the opportunities for engagement presented by the role of community organisations and their members as “trusted intermediaries” [21–23]. This Government interest perhaps also relates to a political context where central and local government spending is reducing year on year [24] meaning that more is being asked of the voluntary and community sectors to deliver local services. Regardless of the motivations, the need to better understand the potential role of community organisations in delivery of local support has been highlighted as necessary to support improvements to policy and practice [13], leading to the commissioning of the present research.

Alongside this research need, the present study also responds to the lack of empirical literature that documents and evaluates the local delivery of fuel poverty support initiatives. To address these gaps in knowledge, a small-scale exploratory study was undertaken, drawing upon and analysing evidence from 12 UK projects delivering fuel poverty support. Home energy advice visits were chosen as the focal intervention for the study, due to the pragmatic need to limit the scope of the research to one category of support, and previous evidence of the positive outcomes for householders that such visits can achieve through provision of context-specific, tailored support [13,25–27].

### 1.1. Definitions of Key Terms

This study is concerned with local support for householders through energy advice visits, with a particular interest in the role of community organisations. The *local* scale referred to covers anything from villages to urban neighbourhoods, cities or small counties/districts. *Support* is understood as referring to delivering or promoting a range of interventions (financial, physical, behavioural or otherwise) that could aid a fuel poor household or support energy efficiency. A *community organisation* is defined for the purposes of this paper as a locally operating organisation or group, led and predominantly staffed by volunteers (e.g., Transition Town Initiatives [28]). *Energy advice* is understood, following Green *et al.* (1998), as “advice which is specific to individuals and their circumstances, with the aims of improving energy efficiency, comfort and the ability of a household to achieve affordable warmth” [29]. In relation to the case study initiatives, *process* refers to how services are delivered (e.g., how they are staffed and funded), *outputs* refer to the support services delivered (e.g., advice), and *impacts* refer to the changes these outputs bring about (e.g., fuel bill savings).

### 1.2. Conceptual Framework

Despite the lack of empirical research on the delivery of local fuel poverty support projects, research on related activities may provide theoretical insight into the potential dynamics and impacts of delivery processes. If the role of these projects is framed as contributing to local sustainability transitions within socio-technical systems [30], then they might be viewed, following Seyfang and

Smith, as “grassroots innovations”—test-beds for innovative practices that could be diffused more widely in society [31]. In contrast, framing the delivery of fuel poverty support as local public welfare support delivery would focus attention on the role of voluntary sector organisations as part of the “mixed economy of welfare” alongside the private sector and Government [32]. Organisational capacity and capability to deliver services is a key challenge for staffed voluntary sector organisations highlighted by Cairns *et al.* [32], and this concern aligns with Middlemiss and Parrish’s framing of the potential for volunteer-run community organisations to achieve local sustainability outcomes as being enabled or constrained by their capacity to do so (for example, motivation, skills, knowledge, time or resources) [33]. Issues of capability and personal and organisational capacity have relevance both due to prior evidence of the resources, skills and motivations needed for community groups to deliver projects [17,28,33] and the particular range of personal traits and technical knowledge required to offer effective energy advice [25,29,34].

Building upon these concepts, support provision for the fuel poor could be viewed as being reliant on sufficient organisational capacity within the local community, with a range of local organisations contributing to this (e.g., specialist energy advice organisations [15], local authorities [17], healthcare providers or Citizens Advice [35,36]). Community organisations, within this framework may contribute to local organisational capacity, and at times play a leading role in coordinating local delivery of energy advice. This understanding of the issue is in broad agreement with a recent review of challenges encountered in the delivery of community energy initiatives by the UK government, which highlighted partnerships, capability/capacity and evaluation as the most significant issues [16].

The latter point highlights a further motivation for the present study. Evidence of positive impacts is a key need for government if they are to further support community-led approaches, and this evidence has often been lacking to date [16], due in part to the limited capacity, and sometimes motivation, that community organisations have to conduct evaluation of project impacts [37].

### 1.3. Paper Structure

This article goes on to describe the research aims, objectives, methodology and results of the study, followed by discussion of key emergent themes, and conclusions that link the findings to policy and practice.

## 2. Research Aims and Objectives

The study aimed to identify: (1) how energy advice visits for fuel poor householders can be effectively delivered on a local level; (2) what role community organisations can effectively play in delivering this support. To meet these aims, the study’s objectives were to: (1) capture data from 12 UK case study projects on the outputs, process and impacts of delivery; (2) analyse this data to identify inter-relationships between these issues which influence effective delivery, and the impacts of roles played by community organisations.

## 3. Methodology

A case study approach was chosen due to the exploratory nature of the study [38] and the lack of published research in this area to date, with the aim of identifying patterns, commonalities and differences between the selected cases and establishing an empirical evidence base for future research.

### 3.1. Research Participants

Twelve projects were chosen to represent a diverse range of delivery approaches, contexts and roles of community organisations to aid development of theoretical insight. This aimed to include projects:

- Either led by or involving community organisations
- Run by either paid staff, volunteers or some combination of both
- In urban and rural communities

- In different UK regions
- Demonstrating success or best practice, and those that have struggle or ceased

Participants were sought through purposeful and snowball sampling to meet the above criteria, drawing upon the professional contacts and networks of the researcher. Details of the twelve participant projects are summarised below. Participants were guaranteed anonymity, so each case study is referred to in this paper either by a nickname (e.g., “East Midlands Urban Volunteers”) or the case number in brackets (e.g., “{1, 2}”).

1: *West Midlands Urban Council*: Project started within a local authority in 2011 with a fuel poverty focus, aiming to reduce winter deaths and hospital admissions. Employs energy advice workers from an independent specialist charity to conduct visits each winter and provides a range of other support services for fuel poor households.

2: *Inner London Council*: Project founded within a local authority in 2010. Delivers home energy advice visits through an independent specialist charity and provides a range of other support services to vulnerable local households.

3: *North West Urban Social Housing*: A project to offer home energy advice visits to local social housing tenants in an urban borough over three years, delivered by a social landlord organisation with advice provided by a staff member from an independent specialist charity.

4: *West Midlands Urban Specialists*: A long-running independent charity, set up in the 1980s with a focus on health and social care and delivering home energy advice visits and other services for fuel poor households through its team of staff.

5: *South West Urban Specialists*: A long-running charity focussed predominantly on sustainability in housing energy use, which provides advice and support to householders in its local urban area. The case study project that the interview focussed upon was run from 2010 to 2013 to engage black and minority ethnic (BME) households in energy saving and fuel poverty reduction.

6: *Scotland Rural Specialists*: Set up in 2010 and now an independent charity, with its staff delivering home energy advice and support for fuel poor households in a rural area of Scotland.

7: *Outer London Semi-Pros*: A project delivering home energy advice visits through volunteers within a small environmental charity employing a handful of paid staff. Active for four years, building on previous occasional energy advice work within the charity.

8: *West Midlands Rural Semi-Pros*: Started in 2007 with a community carbon footprint project and went on to deliver over 2000 home energy audits in a small town within a rural area. The project peaked in activity in 2011, employing four staff to support a team of volunteer energy assessors, but now lacks funding and is conducting very few home visits.

9: *East Midlands Urban Volunteers*: A project using a thermal imaging camera to help householders in an East Midlands city to identify insulation needs through a home visit. Was delivered annually for three years from 2011 to 2013, but was not active in 2014/15.

10: *West Midlands Rural Volunteers*: A local sustainability group active since 2008 in a rural district, undertaking a range of projects focussed on sustainable energy. Home energy visits were done over three years in, including with thermal imaging and handyman support, but are now dormant.

11: *Yorkshire Urban Area Volunteers*: This project ran for one winter in 2012 in a Yorkshire city. Two community volunteers were recruited by a local neighbourhood association and trained as energy advisors. They carried out six home visits before the project folded.

12: *East Midlands Rural Volunteers*: A community environmental group which started offering home energy visits delivered by its volunteers within a small rural town in 2011/12. It is still active after four years, although take-up has declined significantly recently.

Within the twelve cases, there were four clusters of project type which emerged during initial analysis and are used in the narrative that follows: A. *Professional project (local authority led)*—Cases

1 and 2; B. *Professional project (charity led)*—Cases 3–6; C. *Semi-professional project*—Cases 7 and 8; 4. *Community project*—Cases 9–12. Clusters C and D, comprising half the cases, are projects led by Community Organisations as defined within this research. Clusters A and B are projects led by professional organisations employing paid staff, with community organisations or volunteers being involved in some way in project delivery.

### 3.2. Data Collection and Analysis

The main research method employed was a semi-structured telephone interview of approximately one hour, which was conducted by the author for each case between December 2014 and April 2015. Interviews were in most cases with a Project Coordinator (PC) who was also a Home Visitor (HV). Exceptions were interviews conducted with a PC only {1, 2}, HV only {11} and a two-person interview with a PC and HV {4}. All interviews were recorded and fully transcribed.

This approach brings some risks to validity in terms of the description of project activities being contested within project teams, and a reliance on self-reported project impacts. To complement interview data, the following additional data were therefore sought: A: Self-completed online surveys to identify key impacts and success factors for other individuals involved in project delivery—completed in Case {5} × 4, Case {7} × 5, Case {9} × 1, Case {12} × 2; B: Self-completed surveys (online or paper-based) for project beneficiaries, asking respondents to evaluate the visit and what action, if any, they took as a result—completed in Case {7} × 15, Case {9} × 7, Case {12} × 2; C: Project evaluation reports, which were available for Cases {1, 2, 3, 5, 12}. A weakness of the present study is that this supplementary data often could not be captured, either through unavailability (e.g., most projects did not have evaluation reports), because respondents did not wish to contact beneficiaries or project team members to complete a further survey or through low response rates.

All interviews and other documents were coded thematically using NVivo software, using a mixture of a priori codes, based upon the interview schedule and pre-existing themes of outputs, process, and impacts, and codes emerging from the data that were relevant for the research question. The interview schedule and surveys used are available as Supplementary Materials.

## 4. Results

Results of the study are described below in three sections, reporting respectively project outputs, process and impacts. Data collection also captured respondents' reflections on each aspect of the process, and these points are integrated in the most relevant section.

### 4.1. Outputs: What Was Delivered

#### 4.1.1. Overview of Interventions

Each project undertook home energy advice visits lasting between 45 min and two hours, with a visit of around one hour being typical. Visits mostly took place in the winter each year. In most cases, visits were one-off, but several projects {2, 4, 6, 10} reported undertaking follow-up visits and activity (e.g., tariff switching support) according to householder need. The interventions carried out during a visit are summarised in Table 1. An "X" indicates an intervention delivered by a project directly and, a "P" is an intervention delivered through a partner organisation.

Table 1 demonstrates that while behavioural interventions and heating system advice were common to nearly all projects, there was a strong split between the professional projects {1-6}, which delivered a range of financial support and offered "crisis support", such as emergency loan of heaters and pre-payment meter top-ups, to help householders in immediate need of warmth at home, and the community organisation projects {7-12} which all made recommendations for physical improvements to homes. Outsourcing delivery to partners was used by several projects to save their own resources where they felt that appropriate expertise was available elsewhere (e.g., tariff switching advice, debt management support).

**Table 1.** Interventions carried out by each project.

Case	Financial			Physical			Behavioural		Other Interventions	
	Tariff Switching Advice	Billing, Metering and Debt Support	Benefits Maximisation	Refer to Warm Homes Discount	Referral for Measures Installed	Small Scale Measures Installed	Measure Recommendations	Heating Controls Advice		Other Behavioural Advice
1	X	X	P		X	X	X	X	X	Health risk enforcement referral; crisis support
2	X	X	X	X		X		X	X	Electricity monitor; crisis support
3	X	X			X		X	X	X	Electricity monitor; standby saver device
4	X	X	X	X	X			X	X	Crisis support
5	X	X	X		X			X	X	Health risk enforcement referral; crisis support
6	P	X	P		X	X		X	X	Crisis support
7						X	X	X	X	Electricity monitor
8	X						X			
9							X	X	X	Thermal Imaging
10						X	X	X	X	Thermal Imaging; Renewables repair
11							X	X	X	
12	X						X	X	X	Thermal Imaging; Electricity monitor

#### 4.1.2. Physical Interventions

Each project engaged with physical home improvements in some way, either installing them directly, referring to a partner organisation for installation or by recommending householder action.

Five of the Cases {1, 2, 6, 7, 10} directly installed small scale measures, either during visits or as a follow-up activity. They overcame concerns cited by several projects around insurance and professional liability by employing a “handyman” to undertake the work. West Midlands Rural Volunteers offered a free day’s handyman labour, funded by £100 of grant funding; this often led to further paid work in the household for the handyman. The specific measures carried out or installed were: draught proofing {1, 2, 6, 7, 10}; window repairs {1}; heating system servicing {1}; reflective radiator panels {2, 6, 7, 10}; thermostatic radiator valves {2}; LED lights {6, 7}; curtains {6}; chimney balloons {6, 10}; top-up insulation {10}. For Outer London Semi-Pros, the installation of small-scale measures was the main aim of the visit, with behavioural advice playing a secondary role. West Midlands Rural Volunteers, delivered a number of tailored non-standard measures including repair of malfunctioning solar thermal and photovoltaic installations and installation of top-up insulation around wall and roof cavities for service fittings (e.g., lighting, ventilation).

Where small scale measures couldn’t be installed or where larger scale measures were needed, professional projects would refer to partner organisations, such as social landlords or home improvement agencies, for work to be done during a subsequent visit. This led to most households being helped for some of the case study projects (e.g., 137 referrals for heating or insulation improvements in Case {5}), although this was only possible for households qualifying for such support. Improvements in social housing were at times delayed for months or years until a programme of works were due, although there was evidence of prioritisation of works {2, 6} for tenants with health conditions that made them vulnerable to under-heated housing.

Physical interventions, ranging in scale from radiator panels to external wall insulation, were recommended for householders by all of the community projects and two of the professional projects {1, 3}, either verbally or in a written report. In some cases, advisors reported frustration that either the householder wouldn’t have the physical ability to carry the recommendation out, or that for poorer households, the cost would be prohibitive unless the work was fully grant-funded.

#### 4.1.3. Financial Interventions

These were primarily carried out by the professional projects and included comparing and switching energy suppliers, advocacy to energy companies to assist with billing problems and advice on managing debt. Telephone discussions with energy companies often took up much of the time during visits delivered by the professional projects. Energy tariff switching was often undertaken during a visit if householders were willing, or by arranging a follow-up meeting to switch later if not.

#### 4.1.4. Behavioural Interventions

The behavioural advice offered fell into three main categories: advice on reducing energy consumption (in four Cases, {2, 3, 7, 12}, coupled with installation of an electricity monitor); advice on effective use of heating systems; and advice on practically coping with a cold home. North West Urban Social Housing advised all householders to take up 20 behavioural interventions, including closing curtains at dusk, efficient appliance use, lowering thermostat settings. West Midlands Rural Volunteers was one of the few groups to offer advice on coping strategies, and reported high satisfaction from householders who were given tailored strategies to minimise heating usage while still keeping warm.

#### 4.1.5. Other Interventions

All but one of the professional projects offered emergency crisis support to householders. For example, West Midlands Urban Council distributed oil radiators (×133), blankets (×364) and hot water bottles (×21). Two of the professional projects {1, 5} made referrals to the local authority to

initiate mandatory action to address damp or cold problems in privately rented houses. West Midlands Urban Council was able to efficiently arrange such referrals through its position within the local authority's Home Improvement Team.

#### 4.2. Process: How Support was Delivered

##### 4.2.1. Staffing and Organisation

Each of the case study projects had a project team of less than ten people. For the community projects, typical numbers would be 3–5, with one or two members providing leadership. For staffed projects a team of three or more part-time staff was typical, with hours increasing in the winter to fit with an increased workload. For the specialist charity organisations and semi-professional projects, respondents reported that staff would continue to work as volunteers to manage shortfalls in funding.

All of the six professional projects were trying to provide a long-term energy advice service to householders in their local area except North West Urban Social Housing, which was offering a one-off service to housing association tenants. The projects providing such a service were focussed on supporting all local community members, while also trying to prioritise uptake amongst the most vulnerable local residents. The two semi-professional projects each aspired to provide a service year-on-year, but had struggled to do so due to lack of funding. The four community projects were shorter term initiatives and had either ceased {9–11} or were delivering far fewer home visits {12}.

##### 4.2.2. Reaching Householders

The main methods used to arrange visits by each of the projects and the number of visits subsequently delivered is shown in Table 2. The scale of take-up differed significantly, with professional projects typically reaching hundreds of households, and community projects usually reaching less than a hundred. An exception to this pattern was West Midlands Semi Pros, which provided hundreds of home visits when they could be provided free of charge through grant-funding, but only 10 in 2014/2015 when householders had to pay a £60 fee. Demand for home visits for the professional projects was reported as high, typically exceeding the available staff resources.

**Table 2.** Methods used to reach householders and households visited.

Case	Methods Used	No. Households Visited
1	Targeted mail-outs, referral network, newspaper adverts	Approx. 600 per year
2	Targeted mail-outs, referral network	8500 in total. Approx. 1000 per year
3	Telemarketing company	295 visits in one year
4	Thermometer card with Freephone number, referral network, targeted mail-outs, referral from its other project activities	500 per year
5	Social network of community volunteers, website, phone line, referral network	375 in one year
6	Referral network, stalls	Low hundreds per year
7	Stalls	Approx. 70
8	Events and Stalls in past. Now website only.	1800 in total. Around 10 expected in 14/15
9	Members network and door knocking	Approx. 50 over 3 years
10	Talks, film showings, through community groups, articles in local magazine. Now dormant	20–150 per year depending on delivery mechanism. Now dormant
11	Leaflets and posters	6 in total
12	Social networks, talks, stalls, through community groups	Approx. 100 in total, now around 6 per year

Strong referral networks appeared to be a key factor enabling both the quantity of home visits arranged by professional projects, and the extent to which they reached those in fuel poverty. Through these networks, up to 130 local members {2} such as health organisations (e.g., doctor surgeries, hospitals) and voluntary sector organisations (such as Age UK, Alzheimer's Society or the Citizens Advice Bureau) would share contact details with each other of individuals that could benefit from a partner organisation's services. For example, Inner London Council reported that they *"get a lot of referrals from the third sector, who are . . . reaching the people that wouldn't necessarily talk to the council."* Several projects [e.g., 2, 4] reported that this referral network needed at least a day of staff time each week to be maintained to prevent referral numbers dropping off, through activities such as outreach visits, newsletters and developing partnership agreements. Some community projects reported seeking to set up similar arrangements [e.g., 8, 12], but had either not received referrals or failed to secure funding to take part.

A wide range of other marketing techniques were used by the case study projects with varying success rates. Mail-outs targeted to social housing residents generated the greatest number of visits for Inner London Council; West Midlands Urban Council found that the elderly were particularly responsive to letters addressed to them by name; West Midlands Rural Semi-Pros reported a 50% success rate at arranging visits by door-knocking in their local small town; and using a telemarketing company generated hundreds of visits to housing association tenants for North West Urban Social Housing. Access to data on households receiving benefits or living in social housing enabled effective targeted marketing in some Cases {1, 2, 3, 4}, especially by local authorities, who did not face the barrier of being unable to access such data due to legal constraints on sharing it with external organisations. The community projects mostly used local face-to-face opportunities, such as high-street stalls, public talks and film showings and word-of-mouth promotion through social networks. All types of project [e.g., 4, 5, 9] used engagement with their other activities (e.g., crisis support to loan space heaters) as a way to generate leads for home visits.

Marketing activity was also supplemented in the projects delivering a local support service {1, 2, 4, 5, 6} by self-referral from householders seeking assistance. This was often triggered by a particular event or change in circumstances at home, such as personal debt or damp problems. A long-term local presence, high profile and trusted reputation for energy advice, whether for the organisation {4} or locally embedded volunteers {5}, were reported as facilitating this.

There was a marked contrast in take-up between the professional projects, which appeared to be reaching significant numbers of fuel poor households {Cases 1–6}, and the remainder, where respondents reported reaching very few or none. The community projects were much stronger at reaching householders who were interested in reducing their domestic energy use, often for reasons of carbon emission reduction, and were looking for support to make changes. The market for this appeared limited, however, with take-up declining in subsequent years in some Cases {8, 12}. The apparent split between projects offering support that was relevant for carbon emission reduction as opposed to fuel poverty alleviation was explored in later interviews with professional projects, with the respondent from Inner London Council recognising the greater carbon reduction benefits of interventions in larger, wealthier households, but stating that *"we don't really want to be doing home visits for the comparatively affluent."* South West Urban Specialists suggested that for wealthier and potentially more empowered householders, they would offer a lower-cost intervention rather than a home visit, such as telephone advice or factsheets.

#### 4.2.3. Knowledge, Traits and Volunteer Roles

Qualifications and knowledge development processes were engaged with in some way in all of the cases. For each of the professional projects, anyone conducting a visit needed to have an energy advice professional qualification, to avoid situations where poor advice was provided. In other Cases {except 11} visits were conducted by unqualified volunteers, although in most of these Cases {except 10, see below} initial training of between 2 and 10 h was provided internally or by a project

support worker. Shadowing of more experienced assessors was used across the full range of projects, supported by discussion after visits between advisors of issues that arose to support on-going learning. Three examples illustrate the range of strategies employed by community projects: advice delivered by retired engineering professionals who were confident of their abilities {10}; basic advice delivered by volunteers with a greater focus on signposting {9}; a volunteer-delivered home visit to collect data for analysis by a professional energy advisor {8}. The limitations of knowledge, even where advisers were professionally trained, were acknowledged in several Cases {e.g., 3, 11}, leading one respondent to advocate specialist technical support for adviser teams to draw upon when needed {1}.

A consistent picture emerged from all respondents of the kind of person who would be well-suited to an energy advice role. Respondents mentioned friendliness, motivation to help, listening skills and empathy with vulnerable people. Building trust during the interaction was highlighted by several people as an important skill to facilitate engagement with fuel poverty issues. Several respondents also stated that a blend of diverse skills and experience across a team was also beneficial.

For both professional and entirely volunteer-run projects, the issue of how volunteers are recruited and retained and which roles they are willing to take on was seen to affect the viability of delivery models. The volunteer-run projects reported high reliance on a small number of key highly motivated individuals {e.g., 9, 10, 12}, and in two Cases {9, 10} changes in personal circumstances {e.g., a volunteer moving away} contributed to the cessation of project activity. Three professional respondents highlighted that securing the commitment of volunteers to go beyond well-defined limited roles of signposting or facilitating visits towards a role of delivering energy advice was very challenging {2, 3, 5}. This was seen as being due to either a lack of confidence or personal commitment.

#### 4.2.4. Funding

The annual quantity and sources of funding for the twelve case study projects is shown in Table 3. Where figures were not stated by respondents {Cases 3, 5, 6, 9, 12}, turnover is estimated based upon staffing levels and the costs of comparable projects.

**Table 3.** Annual turnover and funding sources.

Case	Annual Turnover	Funding Source
1	£100,000	Internal local authority funding & Public Health England
2	£130,000	Internal local authority funding & Public Health England
3	Tens of thousands	Housing association
4	£200,000	Grants and local authority service agreements (18 streams)
5	Tens of thousands	Grants and local authority service agreements
6	Tens of thousands	Grants
7	£10,000	Grants
8	£1000	Grants and visit fees
9	Low hundreds	Extra cost within a broader behaviour change project
10	Inactive	Was grants
11	Inactive	Was grants
12	Low hundreds	Grants

These financial arrangements fit into four main clusters. Firstly, two Cases {1, 2} had a combination of local authority and public sector health funding to employ a team of staff to provide their service. In each case, evidence of positive outcomes had ensured that funding was secure for at least the following year. Secondly, three other cases seeking to offer an on-going local energy advice service {4, 5, 6} drew upon a patchwork of beneficiary-specific grants and other local funding streams, often adding considerable time and complication to their goal of providing a universal service. Housing association funding to improve energy efficiency for its tenants {3} was another funding model observed, although this was a multi-year project rather than a long-term service. Finally, community

groups generally relied on short term grant funding for projects, to cover costs of the equipment used (e.g., thermal imaging camera) or installed (e.g., electricity monitors).

No long-term grant funding was reported in any cases, with most grants being for one year or less, and the longest being for a three year project. In the cases where the project sought to provide an on-going long-term support service, the need for secure funding for core services was stressed by many respondents, such as South West Urban Specialists, who sought *“a long-term . . . financial commitment to fund our advice work . . . without tying it to specific groups so that we can meet demand as necessary.”*

The cost of a home visit was independently reported by two of the professional projects {2, 6} as £120, predominantly to cover staff time. Funding for installed measures would take costs beyond this, such as the average £250 spent by West Midlands Urban Council for each home receiving small scale measures. For visits delivered by volunteers, average costs ranged from £10, to cover thermal imaging camera hire {9}, and £110, split between equipment for installation and back office staff time {7}.

Several projects had actively explored income generation options to reduce their reliance on grant funding. None of them reported success, with fuel poor households reported as unable to pay, and more affluent households often being unwilling (e.g., 8). Some respondents highlighted that they were facing competition for local authority contracts to provide a local energy advice service from installers of energy saving technologies. Installers were able to offer advice at a lower unit cost (and free for householders) with a view to use visits to secure paid work. The respondents that had experienced this expressed concern that this was undermining the availability of independent local advice.

#### 4.2.5. Relationship to Other Activities

For the projects run by community groups, the home energy advice project was typically one of several projects running in parallel related to the themes of sustainable energy or sustainability in general (e.g., 8, 9, 10, 12). In each case, funding shortfalls for home energy advice visits led to volunteer time being diverted elsewhere into their group's other activities. In contrast, the professional projects delivered by charities managed cuts in core funding through workers at times alternating between paid and voluntary roles according to funding availability.

### 4.3. Impacts

#### 4.3.1. Evaluation Methods

The case study projects drew upon a range of evaluation methods. Where direct interventions were delivered (e.g., measures installed, fuel tariffs switched), then the impact was immediately observable to the project team. Feedback on the experience of visits was also a commonly used metric. For professional projects, this was most often through a satisfaction survey or follow-up visit, whilst for community organisations this was most often informally through beneficiaries encountering project team members within the local area. A respondent from East Midlands Rural Volunteers suggested that the personal and informal approach of their project was a key strength, which meant that formal evaluation could undermine the relationship developed with beneficiaries, who were also fellow community members. Most respondents expressed some frustration with the lack of reliable data to evidence the achievements of their projects and reported a desire to improve their evaluation processes, with expert mentoring to do so being reported as highly beneficial in one Case {4}.

#### 4.3.2. Fuel Poverty Impacts

Given the constraints outlined above, evidence of project impacts was largely limited to the opinions of service providers, feedback from beneficiaries and assumed financial benefits from the interventions delivered as described above.

Two professional projects were able to cite survey evidence from householders about impacts. In Case {2}, 65% reported being warmer at home and 46% reported reduced costs. In Case {5}: 67% said their home was warmer and less damp; 84% had a better understanding of how to improve health

through staying warm; and 80% had a better understanding of fuel bills and how to manage energy use. Other projects had either not collected or did not share data of this nature.

Financial savings were the most commonly used method to quantify impacts by all of the projects. These included: registering 91 homes for the Warm Homes Discount, saving householders £57,000 through £45,100 spent on delivering visits {1}; Saving householders £700,000 a year, compared to project cost of £130,000 {2}; saving householders £129 a year through behavioural changes {3}; a visit cost of £55 leading to an estimated £65 per year in householder fuel bill savings {7}; saving households £176,000 over three years, based upon measures installed, Warm Homes Discount and tariff switching {4}. In other cases financial impacts were harder to quantify, such as arranging for fuel debt to be consolidated into a more affordable long-term repayment plan, or as is common when supporting fuel poor households, enabling greater comfort to be achieved through the same spending on fuel by installing energy efficiency measures.

Project team members for virtually all of the cases believed that the home visits they undertook were having a positive impact. In some Cases though {2, 11}, this impact was seen as being heavily constrained by the lack of available funding for physical measures such as solid wall insulation. The Inner London Council respondent suggested that *“A lot of things we’re doing right now like energy doctor, the warm home discount, energy advice is just sticking plasters”*.

Finally, feedback collected from beneficiaries through evaluation questionnaires and informal discussion with service providers provided an overwhelmingly positive view of the delivery and impacts of both professional and community projects. Case {2} beneficiaries gave an average overall satisfaction score of 8 out of 10 and a beneficiary of Case {3} described it as *“an unbelievable service . . . I wouldn’t have been able to sort the issues out on my own”*. The extra data collected for the present study from beneficiaries for three community projects {7, 9, 12} backed up this picture.

#### 4.3.3. Other Impacts

Two respondents had calculated figures for carbon emission savings due to their work: 8100 tonnes {Case 2} and 157 tonnes {Case 3}. For Case {2}, it was highlighted that although this metric had been calculated, it was not used within the local authority to measure project success.

The beneficiary surveys conducted for this study identified the extent to which householders installed measures after receiving a home visit. For Case {7}, there were reports of several site-specific improvements in response to cold spots identified by thermal imaging, through secondary glazing or draught proofing. In contrast, very few physical measures were reported in Case {9}, where most respondents reported being reassured by the visit that they were already doing the right things.

Finally, each of the professional projects participating in mutual referral networks reported impacts in terms of referring vulnerable householders to other agencies for support such as debt advice or care needs. It was also common for these projects to report increased knowledge amongst partner agencies about the fuel poverty and energy efficiency agendas as a result of their influence.

## 5. Discussion

Research findings are discussed below in three stages: on effective local support provision; on the potential roles of community organisations to aid this; and other issues raised by the research.

### 5.1. What Approaches to Local Delivery Work Well?

Reviewing the interventions employed by the twelve case study projects, there appears to be value in offering a wide range of interventions, encompassing financial, behavioural and physical interventions and short-term emergency support, to most effectively assist households in fuel poverty. This picture aligns well with practitioner guidelines produced by National Energy Action [14]. Improving energy efficiency of homes is a key intervention to bring households out of fuel poverty [5], and the projects showed a mixed performance in terms of delivering or enabling this work. Whilst there was some direct delivery of small scale improvements through handyman services, referrals

to social landlords or home improvement agencies for work to be done in some cases and many recommendations made, the lack of funding for energy efficiency measures for households that cannot afford to pay for them [5] was a key observed barrier to progress.

A number of qualities of delivery approaches that enabled access to homes and provision of support were identified: a long-term service with strong local recognition; delivery by or in close partnership with a local authority; using a multi-partner referral network to connect vulnerable households with support; using targeted mail-outs to vulnerable demographic groups. In each of these regards, the professional projects appeared best placed to provide an effective service, due largely to their greater capacity in terms of skills, knowledge, networks and available resources. In contrast, community organisations struggled with issues of capacity, as has been identified in previous research [28,33], such as through a reliance on key individuals to set up and sustain projects. Housing a local fuel poverty support service within a local authority appears to offer many benefits in terms of access to data on local households and linkages with partner organisations. A model of a local authority commissioning this service from a specialist voluntary sector organisation also appears effective, and could bring the benefits of dedicated expertise and a strong independent brand.

### *5.2. What Role for Community Organisations?*

For those projects reviewed in this study that were reaching and supporting significant numbers of householders, the roles played by community organisations included: promoting and facilitating home energy visits through individuals/organisations embedded within local communities; signposting vulnerable people through a local referral network to an energy advice service. Thus a supporting role appears most appropriate for community organisations, unless they have the interest and capacity to professionalise and move towards the role of leading a local support project. This happened historically in three Cases {4, 5, 6}, and two further projects appeared keen to move in that direction {7, 8}, but had struggled to reach the fuel poor and to attract enough funding to sustain their activities.

Where a local fuel poverty support project does not exist, there is a potential role for community organisations to fill that gap by providing an energy advice service. This study points to the impacts and reach being limited in this case, due to the dynamics described above. However there was evidence of innovative activities, such as using thermal imaging to enable optimisation of insulation, which points to at least some traction in the grassroots innovations concept of practices being developed by community organisations that may have potential to be scaled up if successful [31].

### *5.3. Other Issues Raised*

#### *5.3.1. Resourcing Effective Projects*

The findings of this research point to long-term local fuel poverty support services having many benefits, but the five projects seeking to deliver such a service in this study each reported financial challenges, in particular with securing core funding to employ a small team of staff year-on-year. Three potential sources of relatively stable funding were identified: Public Health England (a body that funds health interventions), Local Authorities and Housing Associations. Health-related funding has been highlighted previously as potentially appropriate [22] and may have increased availability due to recently published health agency guidelines of good practice on preventing illnesses due to cold housing for local health agencies [36]. Local authority funding was secured by several of the cases reported here, but wider take-up may be constrained due to the current climate where local authorities are facing heavy budget cuts and are in some cases struggling to provide statutory services [24]. A more strategic approach might see national government providing funding to resource a local support service in every local authority area in the UK. This comprehensive approach has been called for by campaign groups such as Citizens Advice [39] as part of a suggested fuel poverty and energy efficiency strategy for the UK. The key challenge to secure such support would be providing a strong

evidence base of positive impacts, a need which the present study has highlighted, but has been largely unable to address due to limitations on the data available.

### 5.3.2. Area-Based or Individually-Targeted Delivery

The reported benefits of support approaches aimed at individual vulnerable households raises questions of how this would align with a long-term approach to fuel poverty alleviation focussed upon improving energy efficiency of homes on an area-by-area basis, as recommended in a number of reports [5,7,39,40]. A case can be made that the approaches can be highly complementary, with advice visits supporting households in need prior to improvements being undertaken through area-based delivery to meet targets for improved energy efficiency [9]. Home visits could also assist households to effectively live with changed energy systems in their homes, thereby integrating behavioural and technical guidance [34].

### 5.3.3. The Interaction between Climate Change and Fuel Poverty Agendas

Whilst the agendas of fuel poverty alleviation share a focus on energy efficiency as a solution [9] and tailored energy advice as a means to bring about energy efficiency improvements, this research points to practical delivery mechanisms at times being quite distinct for the two agendas, in agreement with previous research on the topic [41]. Firstly, the findings indicated that different activities take place in the two types of visit: for example, those focussed on fuel poverty spent much more time on debt management, tariff switching, and behavioural strategies to keep warm rather than cutting energy consumption. Secondly the interventions are aiming to reach different types of householders, with distinct methodologies for doing so bringing success. Agencies aiming to help the fuel poor showed little appetite to offer visits focussed on energy saving to the relatively affluent, in particular when their services were already in high demand.

This picture raises the question of how energy advice visits for householders to cut carbon emissions can be delivered. It appears that community organisations with an environmental focus could step forward in some areas, as many of the cases reported here have done. This research suggests that local agencies focussed on fuel poverty would require a separate funding stream focussed on carbon reduction to motivate provision of such a service. Other options on the table include low-cost generic advice, as is currently available online or over the phone from the Energy Saving Trust, or commercial organisations offering visits to identify interventions for able-to-pay households. In this case however, the independent support for whole-house refurbishment strategies advocated by Maby [34] and others to support the low-carbon refurbishment of housing would be unavailable.

## 6. Conclusions

This research has sought to identify models for effective local delivery of home energy advice visits to combat fuel poverty, and the contribution that community organisations can make towards this. In so doing it has made a novel contribution to empirical literature on this topic through detailing the processes, outputs and impacts of locally delivered energy advice visits.

A key finding is that long-term, professional projects, either run by or in partnership with local authorities appear be best suited to coordinating local support services for fuel poor householders. Their strengths lie in reaching large numbers of households through marketing and referral networks, delivery of financial support, behavioural advice, small-scale energy efficiency measures (in some cases), and their referral of vulnerable households to other local support services. Their key weakness relates to the current policy context, where funding packages to enable more substantial energy efficiency measures such as solid wall insulation in fuel poor homes are lacking.

Where local support services are in place, as they are in many UK cities, counties and municipal areas, this research highlights that community organisations and volunteers can support this through signposting, using their networks to enable vulnerable community members to access support and aiding the delivery of visits and outreach activity in a “community champions” role. Where a

professional local support service is unavailable, community groups can try to fill the gap and may achieve particular success in sharing knowledge across their own social networks and in supporting householders keen to reduce energy use due to climate change concerns. However the evidence from this study is that a lack of resources, access to local authority data and knowledge of appropriate engagement methods will lead to a low success rate at reaching the fuel poor. Furthermore, such initiatives may struggle to recruit sufficient volunteers and secure funding to offer a sustainable service, and may lack the capacity to effectively evaluate the impact of their work.

A number of opportunities for future research and practice have emerged from this study. The extent of local fuel poverty support services providing home visits across the UK is unknown. Future research could usefully map current practice and identify how a local support service could be delivered in each locality, building upon existing services and networks. The community organisations studied have developed some context-specific approaches to enable householders to save energy, often working in isolation from similar initiatives. Further research to facilitate knowledge sharing and spreading of effective practices mutually between community organisations and with professional projects could lead to stronger delivery to support action on the fuel poverty and climate change agendas. Finally, for all of the projects considered here, support from the research community with effectively evaluating their impacts could play a key role in building a stronger evidence base for what appears to be a worthwhile way of providing meaningful help to households in fuel poverty.

**Supplementary Materials:** The following are available online at [www.mdpi.com/1996-1073/9/4/276/s1](http://www.mdpi.com/1996-1073/9/4/276/s1).

**Acknowledgments:** This research wouldn't have been possible without the support of project team members from twelve household home energy visit projects who gave up their time to take part in interviews, surveys and to assist by sharing other information. Thanks are also due to the Cheshire-Lehmann Fund who generously funded and supported this project and to Mark Lemon and anonymous reviewers from Energies for feedback on early drafts.

**Author Contributions:** Andrew Reeves conceived of, designed and delivered this research and wrote this study.

**Conflicts of Interest:** The author declares no conflict of interest.

## References

1. Sovacool, B. Fuel poverty, affordability and energy justice in England: Policy insights from the Warm Front programme. *Energy* **2015**, *93*, 361–371. [[CrossRef](#)]
2. NEA. *UK Fuel Poverty Monitor*; National Energy Action: Newcastle upon Tyne, UK, 2015.
3. Anderson, W.; White, V.; Finney, A. Coping with low incomes and cold homes. *Energy Policy* **2012**, *49*, 40–52. [[CrossRef](#)]
4. Liddell, C.; Guiney, C. Living in a cold and damp home: Frameworks for understanding impacts on mental well-being. *Public Health* **2007**, *129*, 191–199. [[CrossRef](#)] [[PubMed](#)]
5. Boardman, B. Fuel poverty synthesis: Lessons learnt, actions needed. *Energy Policy* **2012**, *49*, 143–148.
6. Baker, W. Raising standards, cutting bills. In *Healthy Homes: A Costed Proposal to End Fuel Poverty through Higher Standards and Fairer Funding*; Citizens Advice: London, UK, 2014.
7. Labour Party. *An End to Cold Homes: One Nation Labour's Plans for Energy Efficiency*; Labour Party: London, UK, 2015.
8. DECC. *Cutting the Cost of Keeping Warm: A New Fuel Poverty Strategy for England*; Department of Energy and Climate Change: London, UK, 2015.
9. Ürge-Vorsatz, D.; Herrero, S.T. Building synergies between climate change mitigation and energy poverty alleviation. *Energy Policy* **2012**, *49*, 83–90. [[CrossRef](#)]
10. Boardman, B. *Home Truths: A Low-Carbon Strategy to Reduce UK Housing Emissions by 80% by 2050*; Friends of the Earth: London, UK, 2007.
11. DECC. *Energy Efficiency Strategy: 2013 Update*; Department of Energy and Climate Change: London, UK, 2013.
12. Middlemiss, L.; Gillard, R. Fuel poverty from the bottom-up: Characterising household energy vulnerability through the lived experience of the fuel poor. *Energy Res. Soc. Sci.* **2015**, *6*, 146–154. [[CrossRef](#)]
13. CLF. *Report on the Cheshire Lehmann Fund Conference—Research Findings and Debate*; Cheshire Lehmann Fund: London, UK, 2013.

14. NEA. *Fuel Poverty Action Guide*, 12th ed.; National Energy Action: Newcastle upon Tyne, UK, 2014.
15. DECC. *Learnings from the DECC Community Energy Efficiency Outreach Programme*; Department of Energy and Climate Change: London, UK, 2014.
16. DECC. *Community Energy Strategy*; Department of Energy and Climate Change: London, UK, 2014.
17. DECC. *Role of Community Groups in Smart Metering-Related Energy Efficiency Activities*; Department of Energy and Climate Change: London, UK, 2014.
18. Dodds, L.; Dobson, G. *Tackling Barriers to Take-up of Fuel Poverty Alleviation Measures*; Sustainable Cities Research Institute: Newcastle Upon Tyne, UK, 2008.
19. George, M.; Graham, C.; Lennard, L. *Too Many Hurdles: Information and Advice Barriers in the Energy Market*; University of Leicester: Leicester, UK, 2011.
20. Royston, S.; Royston, S.; Guertler, P. *Reaching Fuel Poor Families*; Association for the Conservation of Energy and The Children's Society: London, UK, 2014.
21. Rugkåsa, J.; Shortt, N.K.; Boydell, L. The right tool for the task: "boundary spanners" in a partnership approach to tackle fuel poverty in rural Northern Ireland. *Health Soc. Care Commun.* **2007**, *15*, 221–230. [[CrossRef](#)] [[PubMed](#)]
22. CSE. *Fuel and Poverty Review*; Centre for Sustainable Energy: Bristol, UK, 2014.
23. SE2 Ltd. *Learning from the DECC Local Authority Competition 2012/13: A Case Study Approach*; Department of Energy and Climate Change: London, UK, 2013.
24. Booth, R. Local councils warn of critical funding crisis as £18bn grant is scrapped. *The Guardian*, 26 November 2015, p. 10.
25. Devine-Wright, P.; Devine-Wright, H. *The Green Doctor Project: A Review*; Groundwork Leicester and Leicestershire: Leicester, UK, 2006.
26. Heiskanen, E.; Johnson, M.; Vadovics, E. Learning about and involving users in energy saving on the local level. *J. Clean. Prod.* **2013**, *48*, 241–249. [[CrossRef](#)]
27. Abrahamse, W.; Steg, L.; Vlek, C.; Rothengatter, T. The effect of tailored information, goal setting, and tailored feedback on household energy use, energy-related behaviors, and behavioral antecedents. *J. Environ. Psychol.* **2007**, *27*, 265–276. [[CrossRef](#)]
28. Reeves, A.; Lemon, M.; Cook, D. Jump-starting transition? Catalysing grassroots action on climate change. *Energy Effic.* **2014**, *7*, 115–132. [[CrossRef](#)]
29. Darby, S. Energy advice—What is it worth? In *Proceedings of the ECEEE Summer Study: Energy Efficiency and CO<sub>2</sub> Reduction: The Dimensions of the Social Challenge*, Mandelieu, France, 31 May–4 June 1999; European Council for an Energy Efficient Economy: Stockholm, Sweden, 1999.
30. Markard, J.; Raven, R.; Truffer, B. Sustainability transitions: An emerging field of research and its prospects. *Res. Policy* **2012**, *41*, 955–967. [[CrossRef](#)]
31. Seyfang, G.; Smith, A. Grassroots innovations for sustainable development: Towards a new research and policy agenda. *Environ. Politics* **2007**, *16*, 584–603. [[CrossRef](#)]
32. Cairns, B.; Harris, M.; Young, P. Building the Capacity of the Voluntary Nonprofit Sector: Challenges of Theory and Practice. *Int. J. Public Adm.* **2005**, *28*, 869–885. [[CrossRef](#)]
33. Middlemiss, L.; Parrish, B.D. Building capacity for low-carbon communities: The role of grassroots initiatives. *Energy Policy* **2010**, *38*, 7559–7566. [[CrossRef](#)]
34. Maby, C. *Energy Advice in the UK—Future Needs and Priorities*; Severn Wye Energy: Highnam, Gloucestershire, UK, 2009.
35. Ramsay, L.; Pett, J. Hard to reach and hard to help: Bringing energy efficiency to elusive audiences. In *Proceedings of ECEEE Summer Study*, St Raphael, France, 2–6 June 2003; European Council for an Energy Efficient Economy: Stockholm, Sweden, 2003.
36. NICE. *Excess Winter Deaths and Illness and the Health Risks Associated with Cold Homes*; National Institute for Health and Care Excellence: London, UK, 2015.
37. Hobson, K.; Hamilton, J.; Mayne, R. Monitoring and evaluation in UK low-carbon community groups: Benefits, barriers and the politics of the local. *Local Environ.* **2014**, 1–13. [[CrossRef](#)]
38. Yin, R.K. *Case Study Research: Design and Methods*, 5th ed.; Sage Publications: London, UK, 2013.
39. Citizens Advice. *Closer to Home: Developing a Framework for Greater Locally Led Delivery of Energy Efficiency and Fuel Poverty Services*; Citizens Advice: London, UK, 2015.

40. *A Local Approach to Energy Efficiency: Implementing the Locally-Led, Area-Based Approach with a New Supplier Obligation and Improved Green Deal; Which?:* London, UK, 2015.
41. Revell, K. Estimating the environmental impact of home energy visits and extent of behaviour change. *Energy Policy* **2014**, *73*, 461–470. [[CrossRef](#)]



© 2016 by the author; licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC-BY) license (<http://creativecommons.org/licenses/by/4.0/>).