



Community Energy in the UK: A review of the evidence

Interim Report

Undertaken by Databuild Research & Solutions Ltd, supported by the Energy Saving Trust.

The views expressed in this report are those of the authors, not necessarily those of the Department of Energy & Climate Change (nor do they reflect government policy).

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Executive summary

In June 2012, the Department of Energy and Climate Change (DECC) Minister Greg Barker announced that the Government would launch a Community Energy Strategy in the autumn of 2013.

The Government recognises that community energy projects offer a number of potential benefits. However, as the sector is relatively young and rapidly developing, the existing and potential scale of community energy activity in the UK is not well understood.

In response, DECC and Consumer Futures have therefore commissioned research to ensure the forthcoming Strategy is underpinned by a strong evidence base.

This report summarises the findings of the first stage of the research – a review of existing evidence relating to the role and impact of community energy activity in the UK. The report is being published alongside the Government Community Energy Call for Evidence¹ which will also inform the Strategy.

Introduction

DECC and Consumer Futures commissioned Databuild Research and Solutions Ltd and the Energy Saving Trust (EST) in March 2013 to undertake research to inform the forthcoming Community Energy Strategy.

The first stage of the work was to conduct a rigorous and methodological review of existing evidence concerning the delivery and impact of community energy projects. The objective of the review was to draw together existing knowledge about the drivers, barriers and benefits of community energy and to identify gaps in the evidence. Subsequent stages of the work will seek to fill some of the evidence gaps highlighted in this review, and establish the scale of current community energy activity in the UK.

‘Community Energy’ was defined for the purpose of the research as **any UK energy project completed in the last five years that was led by a community group for the benefit of their community**. The definitions of ‘energy project’, ‘community group’ and ‘community benefit’ can be found in Figure 1.

¹ <http://www.gov.uk/government/consultations/community-energy-call-for-evidence>

Figure 1: Definitions used in the review

Term	Definition used for the review
Energy project	Any project involving collective action to buy, manage, save or generate energy
Community group	Any citizen group or third sector body with a representative voice. To meet the criteria for the review the community group must be responsible and/or accountable for the delivery of an energy project in the UK.
Community benefit	Energy projects included in the review must generate a benefit for the community in the form of income or profits alongside other economic or social benefits.

This interim report summarises the current evidence about the role and impact of community energy, drawing on a review of 25 studies of UK community energy projects which meet the above definition.

The majority of the studies included in the review were identified through consultation with representatives from the Community Energy Contact Group (CECG) and Professor Jim Watson from the UK Energy Research Centre (UKERC). Supplementary studies were identified through a systematic search of academic literature. Further details about the methodology used in the review can be found in the appendix of this report.

Overview of key findings

The key findings of the review are as follows:

- 1. The evidence base for community energy is limited and does not provide a complete picture of current activity in the UK.**
- 2. Much of the evidence that does exist does not meet the standards ideally required for policy making.**
- 3. In spite of the limitations of the evidence base, there is evidence which implies that community energy projects can reduce energy consumption and increase capacity in the UK for renewable energy generation.**

What can be concluded from the evidence?

Whilst the available evidence is limited in scope and quality, it does provide useful insights that can be used to inform the Strategy. The key conclusions of the review are summarised below against each of the research questions that were explored.

Why do some communities engage in community energy?

Communities who have engaged in community energy projects have principally done so for environmental and economic reasons. Other motivations include social benefits and becoming more self-reliant.

How does the involvement of partner organisations, including Local Authorities and Energy Providers impact on the development of projects?

It is not possible to conclude from the available evidence precisely how the involvement of different partner organisations impacts on the development of projects. However, the evidence does provide an indication of the roles that different types of partner organisation play in the development of community energy projects.

Community energy project partners and their stated roles include:

- Central Government and delivery bodies, which provide funding for projects and advice to inform project design/delivery.
- Local energy professionals² – professional organisations that support community energy projects by providing skills and capacity for design and delivery of community energy projects (i.e. delivery of feasibility studies).
- Local Authorities and housing associations, providing local partnerships e.g. to improve reach and capacity.
- Energy suppliers, which provide subsidy support³ and technical advice.

What action has been taken to encourage or incentivise community or collaborative initiatives regarding energy supply, products and services?

Key initiatives taken to encourage or incentivise community initiatives to date include

- Challenges or competitions

² Local energy professionals are defined broadly as a range of organisation types, from commercial companies providing specific solutions (e.g. energy audits) to charities and not for profit organisations working to improve energy use locally through supporting delivery of advice and other support (e.g. funding for measures).

³ As a result of Government policies, such as CERT.

- Funding support – e.g. for renewables, energy efficiency measures or whole projects
- Advisory support to encourage community projects

What are the factors that catalyse community energy projects and when is the best time in the development process to offer different kinds of support?

The key factors which catalyse community energy projects appear to be committed facilitators and volunteers within the community, access to support (e.g. funding) and responding to community needs and awareness.

It is not possible to determine from the available evidence the best time in the development of community energy projects to offer different kinds of support.

What are the main factors in the success of community energy projects?

The key factors to the success of community energy projects include funding, organisational skills and capacity, and having support and good relationships with stakeholders (e.g. energy professionals, Local Authorities, funders) and the wider community.

What approaches have been successfully employed to build the capacity and capability of community energy projects?

Factors which appear to be important in building community group capacity and capabilities include:

- Partnering with local organisations, such as energy professionals to increase resources available and skills.
- Influencing local stakeholders, such as Local Authorities to provide support.

Is there any evidence about what leads to community energy projects being successfully replicated?

The Transition Towns movement provides some evidence of factors which encourage replication, such as quality control and protecting reputation, networking and learning from other groups.

What are the main barriers to the development of community energy projects? What mechanisms/approaches have been successfully employed to overcome these barriers?

The available evidence suggests that the key barriers to the development of community energy projects are access to funding, restrictions imposed by policy/regulations, problems encountered in community group development, technical issues and local resistance to change.

What are the added value benefits of community energy projects?

A key objective of the review was to explore to what extent it is possible to draw conclusions about whether energy projects that are community led provide additional benefits compared with equivalent projects that are led by other parties. The evidence in this area is limited and mainly qualitative in nature, and it is not possible to draw robust conclusions from the available evidence; however, it does **indicate** that community-leadership of projects can provide the following benefits:

1. Raising awareness of energy issues and changing attitudes/ mobilising.
2. Providing a sense of ownership and responsibility for the project.
3. Involving people with local knowledge of the needs of a community in an energy project can lead to the development of locally relevant energy projects.
4. Existing, successful community energy groups build confidence both within the group and in the community.
5. Community-led projects are reported to be more likely to be self-sustaining.
6. Community energy projects encourage local people to work together to achieve something for their community.
7. A variety of local economic benefits are also reported. These include instances of job creation, skills development, reduced energy costs and financial gains from electricity generation.

What are the gaps in the evidence and how might they be filled?

The current evidence base does not allow conclusions to be drawn about the drivers, barriers and benefits of community energy projects. Table 1 summarises the key gaps in the available evidence, the implications in terms of the conclusions that can be drawn about community energy projects, and how these gaps might be filled.

Table 1: Knowledge gaps, implications and how they might be filled

Knowledge gap	Implication	How knowledge gap might be filled
Lack of evidence about community energy projects not funded by the public sector	It is not possible to draw conclusions about the scale of UK community energy activity, or to be confident that the drivers, barriers and benefits indicated by the evidence base are fully representative of community energy projects across the UK	Submission of evidence in response to the Call for Evidence Through identification of projects not covered by the evidence base for inclusion in the second stage of this research project
Lack of evidence relating to new areas of activity such as projects involving collective switching and purchasing or those undertaken by geographically dispersed community groups	The available evidence does not enable conclusions to be drawn about the scale of community energy activity in the UK. It may also present a misleading picture of the scale of community energy activity, as the drivers, barriers and benefits are likely to differ from those identified in the existing evidence base.	Submission of evidence in response to the Call for Evidence Bespoke research to identify and evaluate these projects
Lack of empirical impact evidence	It is not possible to draw robust conclusions about the impact or added value benefits of community energy projects	Unlikely to be resolved at this time without further empirical research. Submission of evidence in response to the Call for Evidence may help to fill some knowledge gaps but is unlikely to provide a complete picture. Some impacts may not be possible to quantify (e.g. social benefits), so a combination of quantitative and qualitative approaches may be needed.

Knowledge gap	Implication	How knowledge gap might be filled
<p>Lack of detail in the available evidence about the drivers, barriers and benefits of individual community energy projects</p>	<p>There is insufficient detail available to inform the Strategy. For example, it is not possible to draw conclusions about:</p> <ul style="list-style-type: none"> • The relative importance of factors that catalyse or influence the success of community energy projects • The prevalence of particular barriers to community energy projects and extent to which these are overcome • What support would be most effective at each stage of community energy project development 	<p>Submission of evidence in response to the Call for Evidence, particularly the sharing of unpublished evidence.</p> <p>By including detailed questions in the online survey of community energy project representatives to be undertaken in the second stage of this research</p>

On the basis of the findings of the evidence review, the recommendations for further research include:

- **Funders of community energy projects undertake or encourage more in-depth studies of process and impacts of community energy projects at the project level.**
- **Funders of community energy projects should explore whether and how community energy projects that are not covered well in the evidence base might be evaluated.** It is likely that bespoke primary research will be required to fill evidence gaps relating to particular types of community energy project.

Introduction

Databuild Research and Solutions Ltd, working in partnership with the Energy Saving Trust (EST), were commissioned by Consumer Futures and the Department of Energy and Climate Change (DECC) to undertake a research project to inform the development of DECC's Community Energy Strategy, which will be published in the autumn of 2013.

The objectives of the project are to:

- Review the existing evidence regarding the delivery and impact of community energy projects to draw out knowledge on barriers and opportunities and identify evidence gaps.
- Establish the scale of current community energy activity in the UK.

The work required to address the first objective is now complete; the second objective will be explored in a subsequent package of work that will be undertaken following the publication of this report and the Government Community Energy Call for Evidence. This report summarises the current evidence about the role and impact of community energy, drawing on the results of the evidence review.

1.1 Policy background

The Government recognises that there are a number of potential benefits of community energy. In June 2012, DECC Minister Greg Barker announced that the Government would launch a Community Energy Strategy in the autumn of 2013. This interim report is being published alongside the Government Community Energy Call for Evidence which will also inform the Strategy.

DECC has partnered with Consumer Futures to commission this research to ensure the forthcoming Strategy is underpinned by a strong understanding of the evidence base. Consumer Futures also wishes to explore the best practice of community energy projects, what potential there is in the future and how this will benefit consumers.

The current scale, barriers to delivery and evidence for success of community energy projects is not well understood. The purpose of the overall research project is to:

- Capture and explore the types and spread of community energy projects in the UK.
- Assess and compare their cost effectiveness and other benefits.
- Identify success factors and barriers.
- Categorise or describe the current range of community energy projects active in the UK.

The evidence review described in this report is the first stage of the research. Further work will be required in subsequent stages of the research to build on the existing evidence base to enable conclusions to be drawn about the scale of community energy activity in the UK .

1.2 Objectives of the evidence review

The core objective of the evidence review was to explore the extent to which it was possible to answer the research questions outlined in Table 2 using the available evidence base:

Table 2: Research questions explored in the evidence review

What factors facilitate the development of community energy projects?	
1.	Why do some communities engage in community energy?
2.	How does the involvement of partner organisations, including Local Authorities and Energy Providers impact on the development of projects?
3.	What action has been taken to encourage or incentivise community or collaborative initiatives regarding energy supply, products and services ⁴ ?
4.	What are the factors that catalyse community energy projects and when is the best time in the development process to offer different kinds of support?
What are the main factors in the success of community energy projects?⁵	
1.	What levels of funding have been made available and from what sources?
2.	What approaches have been successfully employed to build the capacity and capability of community energy projects?
3.	What leads to community energy projects being successfully replicated?
What are the main barriers to the development of community energy projects?	
1.	What are the main barriers to the development of community energy projects?

⁵ For the purposes of this research, success is defined in public policy terms - i.e. delivering energy and carbon savings.

2.	What approaches have been successfully employed to overcome these barriers?
What are the added value benefits of community energy projects?	
	For example, how much additional investment can the community energy sector leverage from share offers, what's the value of programmes that develop community capacity in terms of an increasing community capability to act on energy issues, etc.?
What are the evidence gaps and how might they be filled?	
1.	Where are the gaps in the evidence required to answer the research questions above?
2.	How can these gaps be filled?

1.3 Structure of this interim report

This report is split into five principal sections:

1. **Introduction** – this section summarises the policy context for the research and the research questions explored in the evidence review.
2. **Methodology** – this section describes the approach adopted in establishing and reviewing the evidence base including definitions used and scope.
3. **Evidence assessed** – this section describes the evidence assessed in the review, and provides an assessment of the quality of these studies in line with the methodology agreed with DECC and the project steering group.
4. **Key findings** – this section discusses what can be concluded from the evidence in response to each of the research questions agreed for the review.
5. **Summary and gaps in the evidence base.**

2 Overall methodology

2.1 Introduction

The approach for the evidence review was developed following an inception meeting with the project steering group⁶ where key definitions were discussed and the project scope agreed. The suggested approach was initially drafted for agreement with DECC, Consumer Futures and the CECG. It was then separately peer reviewed by Professor Jim Watson of the UK Energy Research Centre (UKERC)⁷.

The evidence review was undertaken in line with the principles of a Rapid Evidence Assessment (REA)⁸. The majority of the studies included in the review were identified through consultation with representatives from the Community Energy Contact Group⁹ (CECG) and Professor Jim Watson from the UK Energy Research Centre (UKERC). Supplementary studies were identified through a systematic search of academic literature. Full details of the methodology used in the review can be found in Appendix 3: Project methodology summary.

The overarching research question set for the review was **“what are the impacts of community-led energy projects?”**. The review then sought to draw conclusions about the research questions outlined in the introduction.

2.2 Defining Community Energy

Community Energy was defined for the purpose of the review as any UK energy project completed in the last five years that was led by a community group for the benefit of their community. The definitions of ‘energy project’, ‘community group’ and ‘community benefit’ can be found in

Figure 2.

Community groups solely *supporting* the delivery of energy projects that they were not responsible for controlling (e.g. supporting projects owned by a local authority) were excluded and defined as outside the scope of Community Energy for the purpose of the review. This was decided by the project steering group on the basis that the main area of interest for the strategy is activities which are *led by communities*, exploring their potential benefits over other delivery options.

⁶ The project steering group consists of representatives from the DECC, Consumer Futures and the [Community Energy Contact Group](#) represented by Stephen Frankel and Peter Capener.

⁷ Comments on the approach were obtained verbally through an in-depth interview

⁸ See the following guidance on REAs for further information:

<http://www.civilservice.gov.uk/networks/qsr/resources-and-guidance/rapid-evidence-assessment/how-to-do-a-rea> [accessed 22 March 2013].

⁹ Details of the purpose, role and membership of the CECG can be found on the GOV.UK website:

<https://www.gov.uk/government/policy-advisory-groups/community-energy-contact-group>

Figure 2: Definitions used in the review

Term	Definition used for the review
Energy project	Any project involving collective action to buy, manage, save or generate energy
Community group	Any citizen group or third sector body with a representative voice. To meet the criteria for the review the community group must be responsible and/or accountable for the delivery of an energy project in the UK.
Community benefit	Energy projects included in the review must generate a benefit for the community in the form of income or profits or other economic or social benefits ¹⁰ .

No geographical constraints were imposed in defining ‘community’, as some community energy projects involve collective effort across multiple regions of the UK.

This interim report summarises the current evidence about the role and impact of community energy, drawing on a review of 25 studies of UK community energy projects meeting the definition described above¹¹.

The studies include a combination of evaluations of major programmes and initiatives, as well as academic research undertaken, which encompass a wide variety of energy projects across the UK.

Community energy is a relatively new, but rapidly developing, sector so there are a limited number of robust studies as defined by traditional rapid evidence assessment (REA) standards, which meet the above criteria. On this basis, no restrictions were applied regarding sample size and both quantitative and qualitative studies were included. Few studies included robust quantified data (e.g. carbon/ energy savings, section 4.2.3), so energy savings are reported for individual studies rather than in an aggregated form across the studies¹².

¹⁰ E.g. through generated energy, which lowers fuel bills.

¹¹ There are some cases where studies partly fit the definitions (e.g. in the Low Carbon Communities Challenge 16 of the 22 community groups meet the ‘community-led’ criteria, and 6 were Local Authority or third sector led, but the study overall was included)

¹² Therefore weighting is not applicable.

2.3 Limitations of the review

There are a number of limitations associated with the evidence review, including:

- Search for evidence: the evidence gathered was mainly sourced through consultation with key community energy sector stakeholders, such as the CECG and academics in the field, which may have introduced some bias. A systematic search¹³ was also undertaken, but the timescales and resources available for this was shorter than normal for a REA.
- Depth and breadth of analysis: there are elements of the analysis which require further thought and work including:
 - o Lack of granularity is an issue as most studies comprise research on multiple community energy groups and projects, leaving evidence gaps on 'project specific' issues (e.g. factors which affect individual community energy projects). Data on individual projects has been collated to fill some of the gaps in detail, but is not included in this report.
 - o Impact analysis is limited to carbon and energy savings at this stage as no robust quantitative data of other impacts has been found to date.
- A significant proportion (17/25) of the studies available for the evidence review make reference to projects implemented prior to 2010. It is important therefore to bear in mind that the findings drawn from these studies may not be fully representative of the current policy context and economic climate. For example, many projects covered by the review were in operation prior to the introduction of the Feed-in-Tariffs (FITs) scheme which provides financial incentive for uptake of renewable electricity-generating technologies (FITs was introduced in April 2010).

¹³ The search terms and key results of the systematic search can be found in Appendix 4: search record.

3 Categorising and assessing the available evidence

This chapter introduces the categorisation and assessment process undertaken for the evidence base.

3.1 Categorisation process

The definition of energy projects is broad. We therefore introduced categorisations in order to map the projects in a logical way. The first level of categorisation is by energy policy area. Categories include:

- Energy efficiency.
- Energy generation.
- Other types of energy project, such as collective purchasing, switching and metering or load management.

A useful further level of categorisation would be project development stages; this is currently being developed by DECC in parallel with this project¹⁴.

3.2 Quality assessment – introduction

The evidence assessed largely comprises a body of two general types of study:

1. Those which research the processes and impacts of a particular fund or programme (e.g. the Low Carbon Communities Challenge), in which multiple community groups participated.
2. Academic studies with a focus on process, in particular understanding reasons for development of community energy projects, how they are delivered and their added value and learnings. These are generally smaller scale studies, but in most cases have also included multiple groups and projects.

The findings in this report should be interpreted in accordance with the strength of the evidence base. In line with REA good practice, a quality assessment tool was developed and applied to both quantitative and qualitative evidence. Further details are provided in Appendix 2 however, in summary, studies were assessed and rated within the following areas:

¹⁴ Internal work for DECC led by Pete Capener

1. Fit for purpose i.e. the method was relevant to the research questions
2. A ranking based on a scale of scientific method¹⁵, which categorises studies according to research design ranging from simple quantification of impacts (without consideration for counterfactual) to a randomised control trial¹⁶.
3. Research design quality, taking in to account scale/ robustness in terms of coverage (e.g. census, sample) and representativeness (e.g. the adoption of an approach that means the findings can be considered reasonably representative of the population).
4. Quality of research delivery – e.g. conducted in line with recognised research standards.
5. Independence from study delivery.

Scoring based on these metrics was utilised to select suitable studies for disseminating both qualitative and quantitative information. Evidence assessment findings therefore make reference to the number of studies referenced when pulling together the key themes.

3.3 Studies covered in the study and quality assessment

In summary, 25 studies were considered to be within scope and were fully reviewed in producing this report. A full list of the studies included in the evidence review can be found in Appendix 1: Bibliography.

HM Treasury guidance¹⁷ recommends that empirical research evidence and impact evaluation is used wherever possible to inform policy making. The guidance stipulates that impact evaluations used to inform policy making should ideally include both a measure of the outcome of a policy, programme or project and a robust means of estimating what would have happened in its absence or under an alternative policy scenario, which usually requires the use of a comparison group.

Of the 25 studies reviewed in this evidence assessment, only one makes use of a comparison group, with a further two using alternative methods to estimate what would have happened in the absence of the project – one doing so by asking community group representatives a series of questions to understand the difference the project had made, and another making use of pre- and post- project data to inform an assessment of impact.

¹⁵ In this case an adapted version of the Maryland scale recommended by the Government Social Research service. Government Social Research Service. [REA toolkit 2013](#). (For further details see Appendix 2: Quality Assessment)

¹⁶ It should be noted that this framework was adopted for consistency with best practice guidance. In reality, as truly randomised control trials are unlikely to be feasible in the context of community energy projects, it was not expected that we would find studies employing such an approach. The scale was helpful in distinguishing between studies that had sought to estimate at least an analytical counterfactual and those that had not.

¹⁷ See HM Treasury Magenta Book for further details:

http://www.hm-treasury.gov.uk/d/magenta_book_combined.pdf

The remaining studies solely present the process and outcomes of the project, without accounting for what might have happened in its absence or if the project had been led by someone other than the community (e.g. a local authority).

Of the 12 studies which reported indirect and/or direct impacts of community energy projects, six reported carbon savings associated with the projects.

Table 3 below briefly summarises the studies reviewed in the evidence review. Detailed references for these studies are provided in Appendix 1: Bibliography.

Table 3: Summary of studies reviewed in the evidence review

Project name ¹⁸ (Abbreviated)	Project Code	Nature of study	Energy policy area covered by study		
			Energy Efficiency	Energy Generation	Other Areas
Heiskanen E., LCCC study	LoCC	Quantified impacts, with comparison groups – unmatched i.e. not controlling for profile characteristics/factors that influence the outcome	Yes	No	None
BG Green Streets	BGGS	Quantified impacts, with baseline pre-intervention	Yes	Yes	None
EST Green Communities	EST GC	Quantified direct impacts – with contribution analysis (e.g. attribution)	Yes	Yes	Water, waste, food growing
LC Communities Challenge	LCCC	Quantified direct impacts (e.g. measures installed)	Yes	Yes	None
EST Local Outreach	EST LO	Quantified direct impacts (e.g. measures installed)	Yes	Yes	Water, waste, food growing
Scottish CC Fund	SCCF	Quantified direct impacts (e.g. measures installed)	Yes	No	Transport, water, food growing
CE Scotland	CES	Quantified direct impacts (e.g. measures installed)	Yes	Yes	None
Wind CE study (Scotland)	CWMM	Quantified indirect impacts (e.g. behavioural change)	Yes	Yes	None
Community study Oxford	JH	Quantified indirect impacts (e.g. behavioural change)	Yes	Yes	None
Sustainable Blacon	BEM	Quantified indirect impacts (e.g. behavioural change)	Yes	Yes	None
Transition Towns study	TT	Quantified indirect impacts (e.g. behavioural change)	Yes	No	Capacity building, awareness raising
Environmental Action Fund	EAF	Quantified indirect impacts (e.g. behavioural change)	Yes	Yes	Transport, water, waste, food

¹⁸ A detailed list of studies reviewed in the evidence assessment can be found in Appendix 1: Bibliography

					growing
The Big Green Challenge	BGC	Predominantly qualitative	Yes	Yes	Transport, water, waste, food growing
EST NESTA BGC study	EST NESTA	Predominantly qualitative	Yes	Yes	Transport, water, waste, food growing
UEA CE in UK study	UEA	Predominantly qualitative	Yes	No	None
Walker G. (2008) CE study	GW	Predominantly qualitative	No	Yes	None
LDNP CE study	JAWS	Predominantly qualitative	No	Yes	None
Rogers J et al. case study	RSCW	Predominantly qualitative	No	Yes	None
Mobilising CE	MCE	Predominantly qualitative	Yes	Yes	None
CE initiative project	CEIP	Predominantly qualitative	No	Yes	None
Seyfang G. et al. CE study	GSAH	Predominantly qualitative	Yes	Yes	Food growing
Park J.J.CE study	JJP	Predominantly qualitative	Yes	Yes	None
NEA - study on LCCC	NEA	Predominantly qualitative	Yes	Yes	None
WMLA LC economy study	WM	Predominantly qualitative	Yes	No	None
CLUES - Project Summary Report	CLUES	Predominantly qualitative	Yes	Yes	None

4 Evidence assessment findings

This section provides an overview of the evidence assessment findings and then provides detail on each of the main research questions in turn.

4.1 Overview of key findings

The key findings of the review are as follows

1. The evidence base for community energy is limited and does not provide a complete picture of current activity in the UK

Whilst community energy projects funded by public sector organisations tend to be evaluated and the results published, this does not always appear to be the case for the wider population of community energy projects. Feedback from the community energy sector suggests that there is a significant amount of additional activity going on in the UK which is not included within the evidence base. There also appears to be a timing issue as there is a time lag between project delivery and evaluation, which means that more recent projects are not included here. As a result, we can conclude that:

- i. The available evidence reflects only a subset of current community energy activity in the UK.
- ii. There may be a bias in the evidence towards community energy projects funded by the public sector on the basis that such projects are more likely to be subjected to evaluation and feature in published research reports or papers.

2. Much of the evidence that does exist does not meet the standards ideally required for policy making.

The implication is that the evidence that is available to inform the Strategy falls short of the standards that would ideally be required for policy making, and should be considered insufficient to draw robust conclusions about the precise impacts and added value of Community Energy¹⁹ compared to alternative policy options.

HM Treasury guidance²⁰ recommends that empirical research evidence and impact evaluation is used wherever possible to inform policy making. The

¹⁹ It is clear from the evidence review that Community Energy is an emerging area, and that the resources available for evaluation are limited. In general, community groups are not experts in evaluation. Even where community groups do have evaluation expertise it is challenging to measure the outputs and outcomes of community energy projects, particularly indirect benefits such as improved community cohesion.

²⁰ See HM Treasury Magenta Book for further details:

http://www.hm-treasury.gov.uk/d/magenta_book_combined.pdf

guidance stipulates that impact evaluations used to inform policy making should ideally include both a measure of the outcome of a policy, programme or project and a robust means of estimating what would have happened in its absence or under an alternative policy scenario, which usually requires the use of a comparison group.

It is unlikely to be feasible to adopt a randomised control trial approach (RCT)²¹ in measuring the impact of community energy projects, due to their diverse objectives and multi-dimensional nature (which renders it difficult, if not impossible, to control for all of the factors that might influence outcomes). For the same reasons it is challenging to identify comparison groups that are sufficiently similar in profile to the community energy projects of interest to enable robust conclusions to be drawn about impact.

The next best alternative would be to construct an analytical counterfactual²². In the context of community energy projects, this would involve using a combination of quantitative analysis and qualitative evidence to try to understand what might have happened to the performance of the energy system in a given community in the absence of a particular community project.

The analytical counterfactual can be informed by comparison groups (i.e. what has been achieved through a different model of delivery adopted elsewhere), but it does not become the sole basis for drawing conclusions about impact and additionality (i.e. what additional impact has come about as a result of the community energy project that would not have been achieved compared to what would have happened in its absence).

Of the 25 studies considered in this evidence review, 13 are solely based on qualitative evidence, with no assessment of impact. Of the remaining 12 studies that quantify impacts (including both indirect impacts such as behaviour and direct impacts such as number of measures installed) 6 quantify energy/carbon impacts. Of these, only three make an attempt to estimate the counterfactual. One makes use of a comparison group, with a further two using alternative methods to estimate what would have happened in the absence of the project – one doing so by asking community group representatives a series of questions to identify the difference the project had made, and another making use of pre- and post- project data to inform an assessment of impact. The remaining studies solely present the outcomes of the project, without accounting for what might have happened in

²¹ The Magenta Book defines an RCT as: “In an RCT, the allocation of individuals, groups or local areas to receive the intervention is determined by lottery or some other purely random mechanism. Carefully conducted, a RCT provides the clearest evidence of whether an intervention has had an effect.”

²² In a similar manner to the approach that is used for policies like the Clean Development Mechanism (CDM) in which project proposers need to construct a baseline counterfactual against which their low carbon project can be compared. In the CDM, the difference between the project and that counterfactual is used as a basis for awarding carbon credits. The CDM rulebook provides further details <http://cdmrulebook.org/83>.

its absence or if the project had been led by someone other than the community (e.g. a local authority).

The implication is that the evidence that is available to inform the Strategy falls short of the standards that would ideally be required for policy making, and should be considered insufficient to draw robust conclusions about the precise impacts and added value of community energy projects²³ compared to alternative policy options.

3. In spite of the limitations of the evidence base, there is evidence that implies that community energy projects can reduce energy consumption and increase capacity in the UK for renewable energy generation.

The evidence base provides several examples of community energy projects that have delivered energy savings and other benefits to members of the communities to which they relate. There are also a number of instances where it is reported that community energy projects acted as a catalyst for wider action in the community to improve energy efficiency.

The next sections explore how the evidence contributes to answering each of the main research questions.

4.2 What factors facilitate development of community energy projects?

There are 23 studies which report some evidence as to the motivations for community energy schemes, of which 16 met the quality criteria, so the analysis focuses on these studies. In all studies aside from two, these factors have been explored qualitatively with project leads and other stakeholders involved in projects.

4.2.1 Why do some communities engage in community energy?

Communities who have engaged in community energy projects have principally done so for environmental and economic reasons.

Other motivations include social benefits and becoming more self-reliant.

Evidence provided in the studies reviewed highlights the following key reasons why communities engage in community energy:

²³ It is clear from the evidence review that community energy is an emerging area, and that the resources available for evaluation are limited. In general, community groups are not experts in evaluation. Even where community groups do have evaluation expertise, it is challenging to measure the outputs and outcomes of community energy projects, particularly indirect benefits such as improved community cohesion.

- **Environmental** – including strong interests in climate change and reducing environmental impacts.
- **Economic** – to help reduce energy bills, alleviate fuel poverty (particularly relevant for communities in disadvantaged areas) and through exploration of new business opportunities (e.g. income generation from energy generation).
- **Social** – includes improving wellbeing, particularly in disadvantaged neighbourhoods.
- **Infrastructure or self-reliance** – important for some types of groups (e.g. isolated or rural communities).

Two studies provide quantitative assessments of the reasons why groups are set up to, and focus on energy, with the most commonly mentioned metrics being environmental and economic benefits. Additionally, a high proportion of participants in one study mentioned their desire to build local self-reliance.

The remaining studies explored reasons for engagement qualitatively. Table 4 below provides a summary of the frequency with which different types of reasons for engagement were reported in the qualitative studies.

Table 4: Reasons for engagement²⁴ (n=17²⁵)

Reasons for engagement	Frequency
Economic	10
Environmental	9
Social	8
Infrastructure for self-reliance	3

²⁴ Includes studies which pass the quality criteria only.

²⁵ It is important to note the frequency of factors noted the table does not imply that these are the most important as they are reported qualitatively (refer to Appendix 2 for further details).

4.2.2 How does the involvement of partner organisations impact on the development of schemes?

It is not possible to conclude from the available evidence precisely how the involvement of different partner organisations impacts on the development of projects. However, the evidence does provide an indication of the roles that different types of partner organisation play in the development of community energy projects.

The following roles were described within the evidence base:

- **National Government and delivery bodies-** National Government almost exclusively takes a funding role. This is both for specific community energy initiatives (e.g. LCCC), or other policy support measures which act as a funding source (e.g. grants programmes, feed in tariff etc.). Delivery bodies also provide funding, but to a lesser degree, and also provide advice, guidance and funding in combination (e.g. EST).
- **Local Energy Professionals²⁶** – provided local expert advice, tactical support (e.g. events, marketing), capacity support (such as assistance with funding applications) and technical support, such as feasibility and design studies.
- **Local Authorities and Housing Associations** –Entered into partnerships with groups and provide assistance.
- **Other business support** –Included partnerships with energy suppliers (e.g. British Gas, BGGs) both for technical advice and more basic support such as support for delivery of measures.

Table 5 shows the frequency with which partners are reported within applicable studies.

²⁶ Local energy professionals are defined broadly as a range of organisation types, from commercial companies providing specific solutions (e.g. energy audits) to charities and not for profit organisations working to improve energy use locally through supporting delivery of advice and other support (e.g. funding for measures).

Table 5: Partner roles in community energy projects²⁷ (n=25²⁸)

Partner roles	Frequency
Central Government / Delivery Bodies	10
Local Energy Professionals/ Charities Not for Profit	6
Local Authorities / Housing Associations	4
Other Business Support	4

4.2.3 Actions taken to encourage or incentivise community or collaborative initiatives, such as Government initiatives or industry activity regarding energy supply, products and services

Key initiatives taken to encourage or incentivise community initiatives to date include:

- Challenges or competitions
- Funding support – e.g. for renewables, energy efficiency measures or whole projects
- Advisory support to encourage community projects.

The evidence shows that key initiatives taken to encourage or incentivise community initiatives are mainly driven by the public sector. These include challenges or competitions, such as the Low Carbon Communities Challenge (LCCC), the Big Green Challenge and the Scottish Climate Challenge Fund.

Energy suppliers also contribute, through the provision of subsidies for energy saving measures through obligations set by Government policy. Whilst this is only explicitly mentioned in a few studies, it is implicit in the projects covered by many other projects as subsidies apply to many energy saving or generating measures in the UK.

Additionally, one study mentioned the involvement of the National Lottery in testing public attitudes towards wind farms. However, as highlighted earlier in the report,

²⁷ This only includes organisations other than the community group themselves (if they are established as one). No quality criteria have been applied here.

²⁸ It is important to note the frequency of factors noted the table does not imply that these are the most important as they are reported qualitatively (refer to Appendix 2 for further details).

these results may be subject to bias given that most published studies involve large-scale publicly funded energy projects and may therefore place greater emphasis on public sector partners.

Key initiatives reported in the evidence base are reported in Table 6. It is not an exhaustive list as it only refers to those initiatives funded within the evidence assessed²⁹. This means that key initiatives (e.g. RHPP2³⁰), which have provided major support have not been included.

Table 6: Key initiatives regarding energy supply, products and services

Funder	Initiatives	Project type
National Government and delivery bodies	Low Carbon Communities Challenge	Delivery of low carbon technologies; community engagement/behaviour change
	Big Green Challenge and Big Green Challenge plus	Information sharing, household energy reduction, renewable energy production
	EST Green Communities	Supporting, facilitating and promoting community based energy projects
	EST Local Outreach	Support to communities to overcome barriers and deliver more effective projects by developing action plans and delivering measurable local carbon saving projects
	EST Community Action for Energy (CAfE)	Supporting, facilitating and promoting community based energy projects
	Climate Challenge Fund (Scotland)	Grants to help community groups wanting to achieve a measurable reduction in carbon emissions
	Environmental Action Fund (EAF)	Support/encourage pro-environmental behaviour change. Facilitating community action, working with specific communities, individual households and national organisations
	Scottish Homes and Communities Renewables Initiative (SCHRI), Scottish Government Community and Renewable Energy	Promote local ownership of renewable energy generation projects and increase the benefits for communities

²⁹ Including studies which met quality criteria and those that did not.

³⁰ Renewable Heat Premium Payment Phase Two (which includes a communities funding stream).

Funder	Initiatives	Project type
	programme (CARES)	
	Low Carbon Buildings Programme	Grants for renewable energy generation projects
	The Big Energy Shift	Public dialogue, how Government could encourage householders/communities to adopt low carbon measures
Energy supplier	Green Streets Strong Communities.	Supporting, facilitating and promoting community based energy projects
	Carbon Emissions Reduction Target (CERT)	Subsidies for energy saving measures.
	Community Energy Savings Programme (CESP)	Subsidies for energy saving measures in areas of multiple deprivation
National Lottery	Scottish Wind Energy	Testing public attitudes towards wind energy through different ownership models.

4.2.4 What evidence is there of this activity having been successful? (project impacts)

It is clear from the available evidence that community energy projects can reduce energy consumption and increase capacity in the UK for renewable energy generation. However, there is insufficient empirical research evidence to draw conclusions about the precise magnitude of the impact of community energy projects, and how they compare to other types of intervention.

The evidence shows that energy savings can very likely be achieved by community energy projects. In total, six studies reported some form of carbon savings as result of actions taken by community projects. However, the quality through which these assessments have been made varies. In total, five studies met quality standards regarding the method by which carbon estimates were derived.

The most robust of these studies (British Gas Green Streets - BGGs) provided a baseline assessment utilising meter readings taken before and after the intervention to calculate savings. Based on available evidence, the remaining studies meeting quality standards appear to have made a measurement of carbon after intervention only. Only one of the studies made an assessment of the

counterfactual through the use of an attribution assessment. Without some assessment of the counterfactual it is generally not possible to isolate cause and effect.

Table 7 below summarises the carbon impacts reported by the five studies meeting the quality criteria used in the evidence review:

Table 7: Summary of carbon impact assessments

Study	Impact reported (rounded to nearest hundred)	Carbon impact evaluation
British Gas Green Streets	200 tCO₂ per year across 14 projects	Collated and analysed energy meter readings for all householders throughout the challenge period, modelling usage where readings were not available, and conducted analysis of generation data for all microgeneration equipment
Low Carbon Communities Challenge	3,100 tCO₂ per year across 18 projects	Projects completed an audit tool at the end of the programme to report on the number and type of low carbon measures installed; responses were used to calculate the theoretical carbon savings of the projects
Big Green Challenge	1,800 - 2,100 tCO₂ per project	Carbon emissions reductions were monitored throughout the project. Impacts relate to finalists of the Big Green Challenge
Energy Saving Trust Green Communities	407,800 attributed tCO₂ overall (lifetime)	Savings were calculated based on the measures reported to have been installed by community groups. Attribution of the savings to the project was also assessed during the survey
Scottish Climate Challenge Fund	1,800 and 5,800 tCO₂ per project (lifetime)	Reductions in CO ₂ emissions were monitored for 8/21 projects which achieved a saving of between 1,800 and 5,800 tCO ₂ per project (lifetime).

The three most useful studies for the purpose of drawing conclusions about the impacts of community energy projects are described in more detail below:

- The BGGs study shows that significant carbon savings can be achieved (6.3% savings per household). These were mainly achieved through the installation of energy efficiency and renewables measures in the homes and community buildings participating in the project. In addition to assessing carbon savings from participants, the wider community survey (1300 respondents) showed significant changes in awareness of the project (40% average during the project). Of those aware, 46% claimed to have been inspired to take action on energy efficiency and renewable energy as a result of BGGs, showing that wider influence can be achieved through community energy projects. While this is encouraging, it should also be noted that BGGs was a unique and well-funded project (£2 million in capital was provided, with a £100,000 prize fund).
- The EST Green Communities study provides estimated evidence of impact, based on measure installation claims from community energy project leads, including an assessment of attribution to the programme. While this does not provide feedback on the impacts within the wider community, it provides a useful understanding of the level of activity of community energy projects, and shows it to be significant (total lifetime CO₂ savings of 545,941 tCO₂).
- The LCCC evaluation provides self-reported data on carbon saving measures installed as a result of the scheme (3063 tCO₂/a). It does not provide an assessment of attribution, therefore the extent to which action may have been taken anyway cannot be reported. The evaluation did also undertake a large scale survey of the wider community before and after the scheme. This showed small, but significant changes in awareness (7% increased awareness about local action on energy and climate change). The study reported little evidence of wide-spread changes in attitudes, behaviours or uptake of low carbon measures. However, uptake of specific measures was evident in some communities e.g. households in West Oxford were more likely to have installed loft insulation.

4.2.5 What are the factors that catalyse community energy projects?

The key factors which catalyse community energy projects appear to be

- **committed facilitators and volunteers within the community**
- **access to support (e.g. funding), and**
- **responding to community needs and awareness.**

Existing groups, incentives and the wider policy framework also appear to play a role. However, the relative importance of these factors is not clear.

It is not possible to determine from the available evidence the best time in the development of community energy projects to offer different support.

15 studies provided qualitative information on factors which help catalyse community energy projects, of which 12 passed the quality assessment. Catalysing factors help to drive projects to achieve success and are most often reported in the studies in response to in-depth interview questions with project leads/other stakeholders about 'what made it (the project) happen?'. The key factors identified are outlined in the table below:

Table 8 Key factors which help to catalyse community energy projects³¹ (n=12³²)

Catalysing Factors	Frequency
Committed Facilitators/Volunteers	6
Access to Support	2
Community Needs and Awareness	2
Existing groups	1
Incentives	1

The key factors identified are discussed in more detail below:

³¹ Includes studies which pass the quality criteria only.

³² It is important to note the frequency of factors noted the table does not imply that these are the most important as they are reported qualitatively (refer to Appendix 2 for further details).

- **Commitment:** The most prevalent factor reported in six studies was that projects were catalysed by the actions of committed community group leaders and volunteers. The evidence includes good examples of how local leadership, often delivered by individuals with some background in energy, were instrumental in delivering projects. Local leaders were also cited as playing a role in volunteer work, for example in helping raise awareness of projects within the community.
- **Access to support:** This refers to groups being able to access funding and advice/technical support (e.g. from local energy professionals). Funding support responses vary according to the types of projects covered by each study. It is also discussed as a key barrier in section 4.4. An initial review of the case studies³³ provides further evidence of the importance of funding in this area as it appears to be commonly mentioned (more so than in the main research studies). However, as noted in Section 4.1, this may be an artefact of the types of studies covered by current evaluations which were often large-scale and funded.
- **Existing groups:** Existing groups attracted new projects and funding and acted as a starting point for projects to get off the ground. Existing groups also appeared to play a role in helping other projects ‘see how it’s done’ and therefore lead by example, which also suggests this plays a role in replication.
- **Community needs and awareness:** Specific local factors also catalysed projects. For example, Walker G. et al (2010)’s review³⁴ of renewable energy projects highlighted specific issues such as the need to improve a community building for the benefit of the community in one case, and two local farmers who needed to diversify their businesses in another.

Figure 3: Case study: The Big Green Challenge: Final Evaluation Report for NESTA. May 2010³⁵ (Code: BGC)

The Big Green Challenge: Project aims and objectives

10 projects, across UK, with various aims – including energy efficiency, generating renewable energy, sustainable transport, food growing, and tree planting. The Big Green Challenge prize aimed to reward outcomes rather than activities.

³³ The team are undertaking a review of project specific case study information to provide further detail on the community groups supported through the main studies included in this review.

³⁴ Walker G., Devine Wright P., Hunter S., High H. And Evans B. (2010) Trust and community: Exploring the meanings, contexts and dynamics of community renewable energy. *Energy Policy*, 38(6): 2655–2663

³⁵ See also ‘Using social challenge prizes to support people-powered innovation’, NESTA.

Key factors in catalysing the project(s) and how they helped project delivery

1. Focus and sense of urgency

The competition provided a sense of urgency and focus for projects. It acted as a catalyst for projects that would otherwise have faltered – by helping communities understand and come together around issues, and engage with projects.

2. Credibility and access

Increased credibility and raised profiles as a result of being part of the Challenge. This enabled several projects to raise additional funding and other resources.

3. Key individuals

"Leadership by catalytic and entrepreneurial individuals". These key project members *"generally had a clear vision and purpose, subject knowledge, strength of character to push things through, resilience, charisma and connections within their target communities."*

Added value

The projects *"acted as a beacon ... for people who were already active in their communities but not necessarily on climate change issues"*. Perhaps easier to 'recruit' as a result of the raised profile and/or credibility, and may provide access to further skills and contacts.

The research questions also ask for evidence to inform the question of when is the best time in the development process to offer different kinds of support. However, the evidence base is predominantly focussed on researching multiple community energy projects, with evidence of aggregated outcomes. This means the studies lack the granularity of detail required to assess stages of individual projects reliably. This element of the evidence is highlighted as a gap. This was highlighted as an issue early in the project as it has implications for subsequent stages of this research project. To fill this gap, the work is being linked to internal work for DECC being led by Pete Capener³⁶ for DECC, assessing the different stages of development of community energy projects.

³⁶ CECG and Chair of Bath and West Community Energy

4.3 What are the main factors in the success of community energy projects?

The key factors to the success of community energy projects include:

- **Funding**
- **Organisational skills and capacity**
- **Having support and good relationships with stakeholders (e.g. energy professionals, Local Authorities, funders) and the wider community**

It may be more appropriate to view these as key 'ingredients' for success – i.e. the absence of factors causes problems- rather than as success factors with relative importance.

21 studies reported overall success factors, of which 15 met the quality criteria. Table 9 shows the frequency with which these studies report different success factors.

Table 9: Reported success factors³⁷ (n=15³⁸)

Success Factors	Frequency
Funding	8
Organisational skills and capacity	5
Support	4
External relationships	4
Relationship with the wider community	3

The evidence provides details on the following factors:

- **Funding:** Aspects of funding which were important included funding level, when it was secured and what it was available for.
- **Skills and capacity:** Having members of the project team with the necessary time and skills to plan and lead, developing clear objectives and focus. This often included having paid staff and the ability to develop infrastructure, where appropriate.

³⁷ Includes studies which pass the quality criteria only.

³⁸ It is important to note the frequency of factors noted the table does not imply that these are the most important as they are reported qualitatively (refer to Appendix 2 for further details).

- **Support:** Support from expert advisors and local authorities includes support to develop organisational skills and provide consultancy on technical areas. Also mentioned was support to help groups understand how to interpret Government policy and, available subsidies.
- **External relationships:** Included partnerships with other stakeholders such as Government, local professionals and other groups (also relevant to section 4.2.2).
- **Relationships with the wider community:** Provide trust and/or 'moral' authority in the local area. Local knowledge helps tailor messages and actions. The presence of a group in the area also enabled projects to be effective by being exposed to intensive contact to drive action.

4.3.1 Levels of funding made available and from what sources

Seven studies provided specific details of funding sources as detailed in Table 10.

Table 10: Levels of funding made available by source

Project name and code	Funding level	Funding source
Scottish Climate Challenge Fund (SCCF)	£37.7 million over four years (individual awards ranging from a few thousand pounds to £1m)	Scottish Government
Environmental Action Fund	Total £7 million over three years (from £90,000 to £400,000 per project)	DEFRA
Low Carbon Communities Challenge (LCCC)	Total £10 million over two years (from £250,000 to £970,000 per project, average £450,000)	DECC, DEFRA, DETI, the Welsh Government and Sciencewise-ERC.
Scottish Transition Towns (TT)	£570,000 over the course of three years	Scottish Government
The Big Green Challenge (BGC)	£1 million total (split between three winners & a runner-up)	NESTA (National Endowment for Science, Technology and the

Project name and code	Funding level	Funding source
		Arts)
Green Streets, Strong Communities (GSSC)	Each project was given a share of £2million	British Gas
Does community ownership affect public attitudes to wind energy? A case study from south-west Scotland (CWWM)	£440,000	National Lottery, Highlands & Islands Enterprise, commercial loan finance, equity finance (HIE and the Isle of Gigha Heritage Trust).

Some studies covered the same funding sources³⁹ and the table does not include funding sources from other policy instruments (e.g. CERT, CESP etc.⁴⁰).

4.3.2 What approaches have been successfully employed to build the capacity and capability of community energy projects?

Factors which appear to be important in building community group capacity and capabilities include:

- **Partnering with local organisations, such as energy professionals, to increase resources and skills**
- **Influencing local stakeholders, such as Local Authorities to provide support.** However, this receives limited attention in the evidence base, as only two studies contribute evidence of this

Two studies in the evidence base provide useful case studies⁴¹ which help to inform approaches which have helped in developing community projects. These are reported below.

³⁹ e.g. several studies noted funding from Low Carbon Communities Challenge, including the LCCC evaluation, NEA research and others.

⁴⁰ On the basis that where these were mentioned in the studies, specific funding levels were not provided.

⁴¹ Neither case study meets the quality criteria for the evidence assessment, but both provide useful insights on capacity building and have therefore been included here. There is additional case study information known to the report authors, which will be considered as part of the second phase of this research.

Figure 4: Evaluation of community-led approaches to energy reduction in Oxfordshire Case study

Source: Evaluating the impacts and limits of community led approaches to energy reduction in Oxfordshire. Jo Hamilton, research conducted in 2010

Project aims and objectives

Six projects, focusing on combinations of: household energy/carbon reduction, renewable energy, information sharing, transport, waste.

Key factors in building the projects capacity and capabilities

1. Partnering with other local organisations

- a. Two groups catalysed eco-activities in local primary schools e.g. 'The school project... couldn't have gone ahead without a partner, and we made that possible'. (No further detail on what activities the school actually undertook).
- b. Influences on other community groups: "all but one of the groups citing instances of advising other groups, developing ideas and sharing their learning, for example with thermal imaging projects." (Again, no further detail provided)

2. Influencing "*tertiary audiences such as Local and District councils and housing developers*". Community-based groups added value through "*local connections and personal ties*".

Figure 5: Environmental Action Fund Case Study

Source: Environmental Action Fund: A Review of Sustainable Consumption and Production Projects. Jan 2009 (Code: EAF)

Project aims and objectives

35 projects in England. Varied projects, including: energy efficiency, renewables, transport, waste, water and food growing.

Takes a broad definition of 'community' to cover those with common affiliation even if not in one geographical area - e.g. Faith groups

Key factors in building the project(s)' capacity and capabilities and how these helped

1. Creation of resources (knowledge, volunteer networks, toolkits)

Organisations have produced a wide range of resources, both sector/subject specific and generic. The evaluation encourages Defra to make these freely available, to ensure the work can be built on and highlights a "*serious criticism of*

past funds” where future projects re-invent the wheel. Some projects used resources that had been created previously, and took the opportunity to test and further refine them, using new/wider audiences.

2. Programme provided increased financial stability & new partnerships

The EAF helped projects improve their financial position and expand – one (BabyGROE) is now financially viable; another (BP) is in a position to win large commercial contracts; a third (Envision) was able to expand out of London to Birmingham.

Evidence of replication

The Transition Towns movement provides some evidence of factors which encourage replication, such as quality control and protecting reputation, networking and learning from other groups. However, further research would be beneficial as there is only one study that examines replication in detail.

Replication was defined as community groups learning from other groups and undertaking the same activities in order to achieve the same outcomes. One study, by Seyfang et al (2011⁴²) at the University of East Anglia reports replication. The study researches the UK Transition Town movement across the UK and with Transition Norwich in more depth.

Figure 6: Transition Town case study⁴³

Source: Growing grassroots innovations: exploring the role of community-based initiatives in governing sustainable energy transitions. 2010 (Code: GSAH)

Aims and objectives

Transition Town movement. Original Transition Town formed in autumn 2005, but by Feb 2009 there were 94 in UK and another 40 abroad. By Oct 2011, there were >200 in UK and 186 abroad.

Aims: local actions to address challenges of climate change and peak oil.

⁴² Haxeltine A, Syfang, G (2009) Transitions for the People: Theory and Practice of ‘Transition’ and ‘Resilience’ in the UK’s Transition Movement.

⁴³ We note that the Transition Towns movement involves a range of activities, some of which result in specific community energy projects.

Key factors in building the project(s)' capacity and capabilities

The Transition movement replicated very quickly (although direct success factors for this are not discussed). Positive messages are highlighted as more inviting than scapegoating or negative messages. Key factors in building project capacity and capabilities are outlined below:

1. Quality control and reputation

The name 'Transition Town' can only be used once accredited by the Transition Network. While this may be restrictive to groups, it does ensure they have considered potential issues when forming the group and have taken key steps required for success (not detailed). This approach protects the movement's reputation and ensures only viable groups move forward.

2. Networking

A core activity for the movement. The Transition Network "*facilitates sharing expertise and experience between local groups, consolidates learning through online resources, standardises 'transition thinking' through compulsory training for TT organisers, provides speakers for events, offers consistent messages through media relations, and disseminates information through publications and consultancy*". (More mixed results on networking locally: of the UK TTs surveyed, 83% had links to local government, 74% had links to other voluntary organisations, 59% with businesses).

3. Learning

Strong emphasis on learning – both ongoing and as part of the process of becoming a TT. Useful for "*creating shared visions, understandings, and frames of reference*" and linking disparate groups of members.

"The TT movement is attending to aspects of the key elements of successful niche formation... and, as a result, has seen a rapid initial spread of its niche ideas and practices."

4.4 What are the main barriers to the development of community energy projects?

The available evidence suggests that the key barriers to the development of community energy projects are access to funding, restrictions imposed by policy/regulations, problems encountered in community group development, technical issues and local resistance to change.

24 studies noted specific barriers to the development of community energy projects. In general, while barriers were commonly reported, approaches taken to overcome them were less well covered.

The key barriers and how they were overcome are summarised in the table below:

Table 11: Barriers to development of community projects

Barrier	Description	How community energy projects overcome the barrier
Funding	Access to funding, particularly to get projects up and running, and funding requirements (e.g. grant applications)	Exploring financing solutions and establishing revenue generating social enterprises. Costs of measures were also noted as a barrier, overcome in one case by bulk purchasing.
Policy/regulation	Barriers arising from policy/regulation, such as planning permission, which applies mainly to generation projects.	Where planning issues were overcome, this was done by accessing professional support and/or installing only measures which are classified as permitted development (although this limited the scale).
Community group development	Barriers arising where community groups had a lack of: <ul style="list-style-type: none"> • Resources/capacity/time • Skills/knowledge 	Community groups generally overcame these barriers by: <ul style="list-style-type: none"> • Merging activities with other groups and networking with Local Authorities for additional

Barrier	Description	How community energy projects overcome the barrier
	<ul style="list-style-type: none"> Leadership/communication Aims, objectives and governance structures 	<p>support</p> <ul style="list-style-type: none"> Seeking professional support (and funding for it)
Technical issues	Technical issues included assessing technical feasibility for projects, lack of local supply chains and community group exposure to risk	Technical issues are not always overcome, which then stops or changes the focus of projects; however, there is evidence of some technical issues being overcome through professional support
Local resistance to change	Local resistance to renewables projects (e.g. wind).	Some objectives were overcome by concerted effort by community groups to change attitudes in the local community.

1. Funding barriers⁴⁴ are split into two major groups:
 - a. Funding barriers (e.g. costs): Commonly reported, particularly when the project intervention involved little or no funding support (e.g. EST Green Communities). The scope of funding issues affected many aspects of projects at different stages covering:
 - i. ‘Start-up’/ funding. Several community renewables projects reported difficulties in finding or accessing ‘start-up’ funding, even though there would be a revenue stream in future. This was overcome by exploring financing solutions with relevant providers and establishing revenue generating social enterprises (BGGs, LCCC).
 - ii. Costs of measures (e.g. solid wall insulation), which was overcome to some extent by bulk purchasing (SCCF)
 - iii. Lack of cheap finance was also reported (WMLA) - no solution reported.
 - b. Funding requirements (e.g. grant applications): Two studies reported difficulties with completing grant applications (BGC, FCE) – no solution reported.

⁴⁴ Cited in 11 studies, approaches to overcome cited in five studies.

2. Policy/ regulation barriers⁴⁵ fell into two groups:
 - a. Three studies reported general public sector institutional barriers and lack of on-going support.
 - b. Two studies of community renewables projects reported problems in obtaining planning permission, which were overcome by only using measures which were permitted development and by accessing expert support (legal, finance and planning) (SCCF, LCCC).

3. Community group development barriers⁴⁶ fell into six groups:
 - a. Lack of resources/ capacity/ time was reported by several groups, including transition towns, "*new TTs attract much local attention and interest, they soon settle down to a core group of activists, who struggle to recruit more members*". Where issues were overcome, approaches included merging activities with other groups to 'bump up' numbers, and networking with Local Authorities and local professionals to recruit capacity (GWMA).
 - b. Lack of skills/ knowledge: Reported to have held back progress, particularly on more challenging projects such as renewables; overcome by seeking professional support (BGC).
 - c. Lack of leadership/communication between members:
 - i. Lack of an effective group leader was seen as an issue, overcome by seeking professional support (BGC).
 - ii. Other projects reported issues with ensuring volunteers communicated effectively in order to ensure projects were delivered effectively (BGC, LCOx).
 - d. Lack of aims and objectives: The EST Local Outreach Support Evaluation reported that groups with no aims and objectives were less likely to make progress, overcome by seeking professional support.
 - e. Need to set up organisational structure/ group governance: Similarly, those without effective structures in place were less likely to make progress (BGC, GWMA, LDNP). Some groups within the Big Green Challenge overcame these issues by setting up a 'buddy' scheme to share skills and expertise.

4. Technical barriers⁴⁷: Key issues included:
 - a. Assessing technical feasibility of technologies, finding appropriate land etc. (community renewables); overcome by seeking professional support (SICRP, CIEP, LDNP).

⁴⁵ Barriers cited in 5 studies, of which 2 included approaches to overcome them.

⁴⁶ Barriers cited in 24 studies, of which 10 included approaches to overcome them.

⁴⁷ Barriers cited in 5 studies, of which 2 included approaches to overcome them.

- b. Desire/need to utilise local supply chain (CES); no detail on how overcome.
 - c. Community group exposure to risk (LCCC); no detail on how overcome.
5. Barriers to engaging the wider community⁴⁸: A variety of issues were reported in engaging the wider community to take action, including:
- a. Negative media about sustainability (e.g. climate change), which put some householders off. These were overcome to some extent by developing locally relevant messages and making them specific and personal (BGC).
 - b. Local resistance (community renewables); overcome by local consultation, hand holding and tangible/ visual presentation of results.
 - c. Social barriers in the wider community (e.g. language barriers, social issues); no detail on how overcome.

Figure 7 Low Carbon Communities Challenge barrier case study

Source: Low Carbon Communities Challenge. DECC, 2012 (Code: LCCC)	
Projects aims and objectives	
22 UK communities (although 6 were council-led projects), energy efficiency and renewables	
Barriers and how they were overcome	
Amount of time required for project management was generally substantial and often underestimated	Projects highlighted importance of paid staff (and for funding providers to fund this) – local authority and third sector led projects were better resourced and had easier access to guidance (e.g. on planning)
Perceived exposure to risk (particularly for community-led projects). Participants felt they lacked support to resolve legal and planning difficulties and this put their project's success at risk	Access to expert support (especially legal, finance & planning) and a 'toolkit' (e.g. legal templates, key challenges/hurdles, signposting to advice/support)
Delays and confusion	No details provided

⁴⁸ Barriers cited in 3 studies, of which 2 included approaches to overcome them.

regarding eligibility for FiTs	
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4.5 What are the added value benefits of community energy projects?

A key objective of the review was to explore to what extent it is possible to draw conclusions about whether energy projects that are community led provide additional benefits to equivalent projects that are led by other parties (i.e. whether they are any more or less effective than equivalent energy projects led by other parties e.g. local authorities).

There were no studies which were able to quantify added value, but 13 studies explored it qualitatively.

Table 12: Reported added value⁴⁹ (n=13⁵⁰)

Added Value Area	Frequency
Awareness raising of energy issues in the community	7
Sense of ownership reduces Opposition	6
Sense of ownership encourages Behavioural Change	5
Value of existing community energy groups	4
Use of local knowledge	3
Increased chance of building self-sustaining projects	3
Social Benefits	3

⁴⁹ Includes studies which pass the quality criteria only.

⁵⁰ It is important to note the frequency of factors noted the table does not imply that these are the most important as they are reported qualitatively (refer to Appendix 2 for further details).

Added Value Area	Frequency
Local Economic Benefits	4

Although evidence was limited, key areas of reported added value of community energy projects included:

1. **Awareness-raising of energy issues in the community:** Where this was reported, it referred to community energy projects' ability to target and deliver awareness raising activities to help change attitudes and mobilise action in communities which would otherwise be challenging to target through other routes (e.g. projects delivered by energy suppliers).
 - “[the project] acts as a ‘beacon for change’ amongst communities that would not otherwise be reached” (BGC).
 - “[the project] has had an unexpected catalytic effect on raising awareness in other communities and changing attitudes towards energy issues” (BGS).

2. **Sense of ownership and responsibility reduces opposition and encourages behaviour change:** Having ownership and responsibility for projects was reported to increase trust in the project and reduce opposition, adding value to the outcomes of a project (scale and longevity). For example, one study which was researching methods of delivering wind farms recommended that delivering projects via a community-focussed model would reduce local opposition (CWMM). This was also reported by other studies:
 - “Community action makes the community believe that action is possible and worthwhile” (SCCF).
 - “Trust helps to reduce opposition to energy projects and encourages people to feel positive about getting involved” (CEIP).
 - “Community energy projects are less opposed” (CES)

Being involved in community-led energy projects also encourages those involved to make changes to their behaviour.

- “Local ownership leads to long term behaviour change” (LCCC)
- “Community energy groups have important impacts on behaviours and attitudes towards energy use” (BGS)

One study quantified the resulting behaviour change of respondents that had been involved in community energy projects - “Of the respondents who had ‘future plans’ in terms of sustainable energy, 52% planned to try out other

energy-saving approaches or sustainable energy technologies, and a further 29% planned to expand their existing activities.” (UEA).

Community ownership also encourages conventional behaviours to be challenged as community groups innovate to find new solutions to delivering energy efficiency.

- *“Community groups can collectively develop alternative conventions outside of social norms and feel more comfortable with the new behaviour...private conventions can be challenged.” (LoCC)*
- *“Community work encourages creative and innovative thinking to deliver energy efficiency.” (BGS).*

3. Use of local knowledge: Local knowledge enabled the development of projects that were locally relevant and complimented the economic, social and environmental needs and contexts of that community. Examples included:

- *“Local knowledge ensures decisions around project objectives and direction suits location situation” (EST GC)*
- *“Groups can develop tools/approaches to better deliver in their individual community contexts” (EAF)*

4. Value of existing community energy groups: Having existing community groups with a focus on energy provided confidence in both the ability to deliver and effectiveness, both within the group and in the local community.

- *“Existing relations with community members gives more confidence of success” (LCCC).*
- *“Existing reputation builds trust in what can be achieved” (SCCF).*

One project discussed in detail the ‘unique’ position of some community groups in the market, which allowed them to develop opportunities that other organisations would not be able to. This means that communities can (in the right circumstances) provide an effective resource for delivering change.

- *“Communities operate at an intermediate scale between private individuals and ‘corporate’ organisations (business or public institutions). They create a sense of ownership and responsibility that big and ‘distant’ organisations often can’t, while a sense of collective endeavour makes individuals believe that change is both possible and worthwhile.” (BGC)*

5. Increased chance of self-sustaining projects: Community action pools physical and financial resources. As a result, community-led projects have an

increased chance of being self-sustaining in the future, in terms of both action and financing.

- *“Community asset ownership inspires financially self-sustaining action” (BGC).*
- *Community groups create a local resource base to ensure that work can be built upon (EAF).*

6. **Social benefits:** Community energy projects encourage people to work together to achieve something for their community. It is reported that this has resulted in greater social cohesion between members of the community, while increasing the physical numbers of people using community facilities.

- *“People ‘got to know the community better’. The project elicited a feeling of community spirit and pride” (CEIP).*
- *“The Community project enhances social cohesion” (RSCW)*

7. **Local Economic Benefits:** Community groups have also reported a range of economic benefits that have resulted from projects – from financial gains to increased employability of staff – that have benefited both the local people and the geographic area.

- *“Examples of additional jobs created. Many projects have increased the employability of their staff through skills development in a range of areas” (SCCF)*
- *“The financial gains for some community buildings have been significant.” (BGGS)*
- *“Community-owned means of production can generate income locally, lower energy costs and give a reliable supply. Creation of employment can result” (GW)*

One report projected the economic gain - in terms of job creation – that might be achieved if community-led energy projects were adopted on a wider scale throughout that particular geographic region (Yorkshire’s Lake District National Park).

- *“Community-run schemes could generate almost 10 times the jobs of centralised facilities in the Park” (JAWS)*

5 Gaps in the evidence

The current evidence base does not allow conclusions to be drawn about the drivers, barriers and benefits of community energy projects. The key knowledge gaps are as follows:

- **There is limited to no coverage of particular types of community energy project in the evidence base.** This includes a lack or limited evidence relating to:
 - Projects that are not funded by public sector programmes or initiatives.
 - Projects involving particular types of action, such as the recent development of collective switching and purchasing schemes.
 - Action by communities where members are geographically dispersed across the UK rather than all residing within a particular location.
- **There is limited evidence about the impact of community energy projects.** There are only a few studies that provide empirical evidence relating to the impact of community energy projects
- **There is a lack of detail about the drivers, barriers and benefits of individual community energy projects, as evaluations tend to report findings in aggregate.** We acknowledge that there is additional evidence in the form of case study reports, but these have not been included within the evidence review to date. This evidence will be considered as part of the second phase of research.

5.1 Key areas for further research

Table 13 summarises the key gaps in the available evidence, the implications in terms of the conclusions that can be drawn about community energy projects, and how these gaps might be filled.

Further research will be undertaken in the second phase of this project to fill gaps that can be filled with the available resources for this research project. The second phase of this project will include:

1. Further work to produce as comprehensive a list as possible of community projects across the UK.
2. An online survey of representatives from these community projects; this will build on information collated through desk research to obtain a range of data to fill knowledge gaps.

3. A UK-wide segmentation and mapping of community energy projects, building on typologies developed in previous studies, such as ‘The development of community carbon reduction groups’, by BRE for DECC in 2010⁵¹.
4. A brief review of evidence submitted in response to the Call for Evidence to understand whether and how this evidence might inform understanding of the likely impact of particular policy options on community energy in the UK.

In addition to the work to be undertaken in the second phase of this project, the submission of additional evidence (e.g. unpublished research) in response to the Call for Evidence may also help to fill some of the knowledge gaps.

Table 13: Knowledge gaps, implications and how they might be filled

Knowledge gap	Implication	How knowledge gap might be filled
Lack of evidence about community energy projects not funded by the public sector	It is not possible to draw conclusions about the scale of UK community energy activity, or to be confident that the drivers, barriers and benefits indicated by the evidence base are fully representative of community energy projects across the UK	Submission of evidence in response to the Call for Evidence Through identification of projects not covered by the evidence base for inclusion in the second stage of this research project
Lack of evidence relating to new areas of activity such as projects involving collective switching and purchasing or those undertaken by geographically dispersed community groups	The available evidence does not enable conclusions to be drawn about the scale of community energy activity in the UK. It may also present a misleading picture of the scale of community energy activity, as the drivers, barriers and benefits are likely to differ to those identified in the existing evidence base	Submission of evidence in response to the Call for Evidence Bespoke research to identify and evaluate these projects
Lack of empirical impact evidence	It is not possible to draw robust conclusions about the impact or	Unlikely to be resolved at this time without further empirical

⁵¹ BRE (2010) The development of community carbon reduction groups

Knowledge gap	Implication	How knowledge gap might be filled
	added value benefits of community energy projects	research. Submission of evidence in response to the Call for Evidence may help to fill some knowledge gaps but is unlikely to provide a complete picture. Some impacts may not be possible to quantify (e.g. social benefits), so a combination of quantitative and qualitative approaches may be needed
<p>Lack of detail in the available evidence about the drivers, barriers and benefits of individual community energy projects</p>	<p>There is insufficient detail available to inform the Strategy. For example, it is not possible to draw conclusions about:</p> <ul style="list-style-type: none"> • The relative importance of factors that catalyse or influence the success of community energy projects • The prevalence of particular barriers to community energy projects and extent to which these are overcome • What support would be most effective at each stage of community energy project development 	<p>Submission of evidence in response to the Call for Evidence, particularly the sharing of unpublished evidence</p> <p>By including detailed questions in the online survey of community energy project representatives to be undertaken in the second stage of this research</p>

On the basis of the findings of the evidence review, the recommendations for further research include:

- **Undertake or encourage more in-depth studies of process and impacts of community energy projects at the project level.** For example, it would be beneficial to evaluate project impacts and benefits at different stages of development. The development of a consistent methodology for evaluating community energy projects would allow more robust conclusions to be drawn from the evidence base

- **Explore whether and how community energy projects that are not covered well in the evidence base might be evaluated.** It is likely that bespoke primary research will be required to fill evidence gaps relating to particular types of community energy project.

Appendix 1: Bibliography

Reference	Project name (abbreviated)	Project Code	Extent to which the study meets the agreed definition of Community Energy ⁵²
Department for Energy and Climate Change (2012) Low Carbon Communities Challenge Evaluation Report [Online] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/48458/5788-low-carbon-communities-challenge-evaluation-report.pdf	Low Carbon Communities Challenge (2012)	LCCC	Community led (of the 22 case studies, 6 do not meet the definition - they are council led (as opposed to community?))
Stockton H. (National Energy Action) (2011) Support to Low Carbon Communities Setting Up Social Enterprises and the Implications for Policy and Practice. Independent Evaluation [Online] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/48155/2537.NEA-social-enterprises-lccc-report.pdf	Social Enterprises - Policy and Practice Implications (2011)	NEA	Community led - reviews stages of development rather than impact
Hamilton J. (2011) Evaluating the impacts and limits of community led approaches to energy reduction in Oxfordshire. Graduate School of the Environment, Centre for Alternative Technology, and Environmental Change Institute, University of Oxford. [Online] http://gse.cat.org.uk/papers?...community-led-approaches-to...oxfordshire	Impacts of Community Led Approaches, Oxfordshire (2011)	JH	Community-led
Brook Lyndhurst (2010) The Big Green Challenge Final Evaluation Report. Executive Summary for NESTA [Online] http://www.nesta.org.uk/library/documents/BGC-Evaluation-Exec-Summary-FINAL.pdf	Big Green Challenge (2010)	BGC	Mainly community-led
Fawcett J. (2010) Energy Saving Trust / NESTA Community Research - Summary of Lessons Learnt from The Big Green Challenge and other Community Projects	EST NESTA Community Research (2010)	EST NESTA	Mainly community-led
University of Chester (2011) Evaluation of the Blacon Energy Management Programme - Sustainable Blacon [Online] http://www.sustainableblacon.org.uk/images/pdfs/Blacon_Baseline_Report_Final.pdf	Sustainable Blacon (2011)	BEM	Community led project
Fawcett J. (2010) Energy Saving Trust Green Communities Programme Evaluation 2009-10	EST Green Communities Programme Evaluation (2010)	EST GC	Measures impact of community energy projects, both community-led and not
Fawcett J. (2010) Energy Saving Trust Green Communities Programme Evaluation 2009-10	EST Local Outreach (2010)	EST LO	Both community-led groups and not
Community Energy Scotland (2012) Community Energy Projects – Impact Survey [Online] http://www.communityenergyscotland.org.uk/assets/000	Community Energy Scotland (2012)	CES	Impacts of community owned renewable energy projects

⁵² As described in the methodology section of this report, and the executive summary.

0/7817/Full_Report.pdf			
Transition Scotland (2011) Transition Scotland Support Project Report 2008 - 2011 [Online] http://www.transitionscotland.org/transition-scotland-support	Transition Towns (2011)	TT	Community action to recude carbon emissions long term
Brook Lyndhurst and Ecometrica (2011) Review of The Climate Challenge Fund [Online] http://www.scotland.gov.uk/Resource/Doc/352709/0118663.pdf	Scottish Climate Challenge Fund (2011)	SCCF	Both community-led groups and not
Cox, J; Wilkins, C; Ledsom, A; Drayson, R; Kivinen, E (2009). Environmental Action Fund (EAF): A Review of Sustainable Consumption and Production Projects (SCP2.2). A report to the Department for Environment, Food and Rural Affairs. Brook Lyndhurst. Defra, London.	Environmental Action Fund (2009)	EAF	Partly meets definition, limited scope. Local groups & national organisations included.
Platt R., Cook W., Pendleton A. (2011) Green Streets, Strong Communities - What communities can do for emissions reductions and what emissions reductions can do for communities - A Report for British Gas. Institute for Public Policy Research. [Online] http://www.communityplanning.net/pub-film/pdf/GreenStreetsStrongCommunities.pdf	Green Streets, Strong Communities (2011)	BGGS	Mostly community-led projects
Seyfang G., Park JJ., Smith A. (2012) Community Energy In the UK - 3S Working Paper 2012-11. Science, Society and Sustainability (3S) Research Group School of Environmental Sciences University of East Anglia. [Online] http://www.3s.uea.ac.uk/sites/default/files/3S%20WP%202012-11%20CISE.pdf	Community Energy in the UK (2012)	UoEA	Participants were involved in community-led energy projects
Warren C., McFadyen M. (2010) Does community ownership affect public attitudes to wind energy? A Case Study from South-west Scotland. Land Use Policy, 27: 204–213	Community Ownership and Public Attitudes - Scottish Wind Energy (2010)	CWMM	Community-owned projects
Walker G., Devine Wright P., Hunter S., High H. And Evans B. (2010) Trust and community: Exploring the meanings, contexts and dynamics of community renewable energy. Energy Policy, 38(6): 2655–2663	Trust and Community Renewable energy (2010)	CEIP	Community-led projects
Walker G. (2008) What are the barriers and incentives for community-owned means of Energy Production and Use? Energy Policy, 36: 4401–4405	Community Owned Energy - Barriers and Incentives (2008)	GW	Community-led projects
Seyfang G. and Haxeltine A. (2012) Growing grassroots innovations: exploring the role of community-based initiatives in governing sustainable energy transitions. Environment and Planning C: Government and Policy, 30: 381 – 400	Community Initiatives and Sustainable Energy Transitions (2012)	GSAH	Community-led projects

Park J.J. (2012) Fostering community energy and equal opportunities between communities. <i>Local Environment</i> , 17(4): 387–408	Fostering Community Energy (2012)	JJP	2012, wide review of community energy projects
Allen J., Sheate W. and Diaz-Chavez R. (2012) Community-based renewable energy in the Lake District National Park – local drivers, enablers, barriers and solutions. <i>Local Environment</i> , 17(3): 261–280	Community Renewable Energy - Lake District National Park (2012)	JAWS	Mainly community-led
Heiskanen E., Johnson M., Robinson S., Vadovics E., Saastamoinen M. (2010) Low-carbon Communities as a Context for Individual Behavioural Change. <i>Energy Policy</i> , 38: 7586–7595	Low-carbon communities and Behavioural change (2010)	LoCC	published 2009, only one of 4 programmes is in UK
West Midlands Local Authority (2012) West Midlands Local Authority Low Carbon Economy Programme – Community Strand Summary Report [Online] http://www.sustainabilitywestmidlands.org.uk/media/resources/LCEP_summaryreport_final.pdf	WM Low Carbon Economy Programme (2012)	WM	Community strand of work, 2012
Rogers J., Simmons E., Convery I., Weatherall A. (2012) Social impacts of community renewable energy projects: Findings from a Wood Fuel Case Study. <i>Energy Policy</i> , 42: 239–247	Social Impacts of Community Energy Projects (2012)	RSCW	impacts of a community-led wood fuel heating project, ongoing in 2009
Wiersma B., Devine-Wright P. (2012) CLUES Project Summary Report: UK Case Studies. University of Exeter, Geography, Environment & Sustainability Research Group [Online] http://www.ucl.ac.uk/clues/files/UK_Cases	CLUES Project Summary (2012)	CLUES	Comparison of community decentralised energy programmes with DE programmes from other sectors. Only two of the projects are community led
Bomberg E., McEwen N. (2012) Mobilizing community energy. <i>Energy Policy</i> 51: 435–444	Mobilising Community Energy (2012)	MCE	Explains how/why community energy groups mobilize

Appendix 2: Quality Assessment

Quantitative quality assessment criteria

To explore the suitability and robustness of studies reviewed in producing this report, each study was assessed under the criteria outlined in Table 14 and given within each category. These scores were used as a tool to make an objective assessment of each study.

It should be noted that for some quality assessment metrics (such as, fit for purpose) scoring was carried out considering each study in the context of the aims of this review. The context under which each study was assessed may not therefore be in line with the individual aims of each study and is not necessarily a representation of their quality in regard to the individual objectives they set out to achieve.

Table 14: Scoring categories used to assess each study

Score	Fit for our purpose (relevance)	Adapted Maryland rating	Research design quality		Quality of research delivery	Independence of study from delivery
			Scale/robustness in terms of coverage	Representative?		
1	All aspects are relevant to our objectives	Qualitative evidence – qualitative assessment of a community energy project and outcomes.	Census – every member of the population approached with near full coverage of population (90%+)	Comprehensive coverage (census only)	Conducted in line with good practice (ISO20252 or similar)	Independent study
2	Some aspects are relevant to our objectives	Quantified impacts (e.g. CO ₂ , kWh, ££)	Sample-based research/evaluation – less than 90% coverage, but sample size sufficient to allow for results to be extrapolated in principle (will depend on population size and variation in response) providing the sample is representative	Randomly selected sample, representative of the population for which conclusions are drawn (evidence suggests there is no or limited bias)	Steps taken to ensure quality either not undertaken or not reported	Some aspects are independent, others led by those responsible for delivery
3	Limited relevance to our objectives	Quantified impacts – with contribution analysis (e.g. attribution)	Case study approach – e.g. a small number of cases considered from a relatively large population. To be judged by reviewer on a case by case basis, but as an indication, to	Sample selection is non-random and may not be representative of the population (either through non-random design or bias e.g. non-response bias)		Non-independent study

4		Quantified impacts, with baseline (pre-intervention)	be selected where coverage is: · Lower than 50% for small populations (e.g. less than 60 in population) · Less than 30 members of the population for medium populations (e.g. 60 – 150 in population) · Less than 50 members of the population for larger populations			
5		Quantified impacts, with baseline and contribution analysis				
6		Quantified impacts, with comparison groups – unmatched i.e. not controlling for profile characteristics/factors that influence the outcome				
7		Quantified impacts, with comparison groups – matched to control for factors other than intervention that influence the outcome				

Qualitative quality assessment

To assess the qualitative evidence within each study the following categories were utilised:

1. Whether the study was fit for purpose – i.e. it was relevant to the research questions.
2. Whether it was an independently commissioned study.
3. A assessment of quality of research delivery (e.g. whether met research professional standards or were peer reviewed)⁵³.

Each study was awarded a numerical score under these three characteristics. Studies rated green scored the best possible score within each category, whereas those rated red had limited relevance to objectives, were not carried out fully independently or were not knowingly conducted in line with any quality standards.

⁵³ Further assessment criteria would be helpful to apply here, but given the limited timescales this was not possible for the interim report.

Project name (Abbreviated)	Project Code	Energy policy area covered by study			Quality scores			Traffic light assessment**
		Energy Efficiency	Energy Generation	Other Areas	Fit for Purpose	Independence	Quality of Research Delivery	
LC Communities challenge	LCCC	Y	Y	none	1	1	1	Green
NEA - study on LCCC	NEA	Y	Y	none	2	1	2	Red
Community study Oxford	JH	Y	Y	none	2	1	2	Red
The Big Green Challenge	BGC	Y	Y	transport, water, waste, food growing	1	1	1	Green
EST NESTA BGC study	EST NESTA	Y	Y	transport, water, waste, food growing	1	1	1	Green
Sustainable Blacon	BEM	Y	Y	none	1	1	2	Red
EST Green Communities	EST GC	Y	Y	water, waste, food growing	2	1	1	Amber

EST Local Outreach	EST LO	Y	Y	water, waste, food growing	2	1	1	Amber
CE Scotland	CES	Y	Y	none	1	2	2	Red
Transition Towns study	TT	Y	N	capacity building, awareness raising	1	2	2	Red
Scottish CC fund	SCCF	Y	N	transport, water, food growing	2	1	1	Amber
Environmental Action Fund	EAF	Y	Y	transport, water, waste, food growing	2	3	2	Red
BG Green Streets	BGGS	Y	Y	none	1	1	1	Green
UEA CE in UK study	UEA	Y	N	none	1	1	1	Green
Wind CE study (Scotland)	CWM M	Y	Y	none	2	1	1	Amber
CE initiative project	CEIP	N	Y	none	2	1	1	Amber
Walker G. (2008)	GW	N	Y	none	1	1	1	Green

CE study								
Seyfang G. et al. CE study	GSAH	Y	Y	food growing	2	1	1	Amber
Park J.J.CE study	JJP	Y	Y	none	2	1	1	Amber
LDNP CE study	JAWS	N	Y	none	1	1	1	Green
Heiskanen E., LCCC study	LoCC	Y	N	none	2	1	1	Amber
WM LA LC economy study	WM	Y	N	none	2	2	2	Red
Rogers J et al. case study	RSCW	N	Y	none	1	1	1	Green
CLUES - Project Summary Report	CLUES	Y	N	none	3	2	2	Red
Mobilising CE	MCE	Y	Y	none	1	1	1	Green

Of the 26 studies in total:

- 25 were deemed to be at least largely fit for purpose (i.e. they met definitions and were fit for purpose in terms of answering research questions).
- 21 were independently delivered studies.
- 17 met research delivery quality criteria (e.g. met research professional standards or were peer reviewed).

Applying all three of these standards eliminated nine studies. Therefore 17 studies formed the focus for the assessment of qualitative studies⁵⁴.

Limitations: An important limitation of assessing qualitative research is that it is not possible to provide a robust analysis of the relative importance or scale of some of the issues covered in the studies as these are not quantified. This should be considered to be a gap. What is possible however is to provide an understanding of the frequency with which similar issues are raised within different studies exploring the same subject, which has been done. While this is a crude analysis approach, it may provide some early indications of importance/scale, which could be explored further.

Quality assessment for quantitative studies

Quality assessment for these studies is based on the following criteria:

1. Whether the study is fit for purpose.
2. Establishing a ranking based on a scale of scientific method⁵⁵, which categorises studies according to research design ranging from simple quantification of impacts (without consideration for counterfactual) to a randomised control trial.
3. Research design quality, accounting for scale/ robustness in terms of coverage⁵⁶ and representativeness⁵⁷.
4. Quality of research delivery – e.g. conducted in line with recognised research standards.
5. Independence from study delivery.

Due to short timescales, quantified impacts focus solely on carbon and energy savings. This will be updated to include other impacts during the second stage of the research project.

As indicated in the table below, there are six studies in the evidence base which report quantified carbon or energy savings. Applying the quality assessment

⁵⁴ The other studies are not excluded, but have been reviewed separately to see whether these studies add to the overall picture, which may need further research to substantiate.

⁵⁵ In this case an adapted version of the Maryland scale recommended by the Government Social Research service. Government Social Research Service: [REA toolkit 2013](#).

⁵⁶ e.g. census, sample based etc.

⁵⁷ e.g. random selection for sampling methodologies

criteria to the studies we find:

1. One study which does not meet the quality criteria:
 - Community Energy Scotland impact assessment (CES) – relied on communities to directly report the CO₂ saving achieved (where known) through a short survey and without verification.
2. Four studies which partially meet the quality criteria:
 - Low Carbon Communities Challenge evaluation – quantified carbon savings through self-reported audits, not reported attribution. Undertook a large scale survey of householders to evaluate change in the wider community (including baseline).
 - EST Green Communities evaluation – quantified carbon saving impacts using a large, representative sample and assessed attribution. However, no baseline was assessed and relied on survey responses from community project leads (evaluating the impact within the wider community is a gap).
 - Big Green Challenge evaluation (BGC) - had CO₂ monitoring undertaken independently for NESTA by CRed, however the spate methodology report could not be found in publically accessible sources at the time of publishing this report. .
 - Scottish Climate Challenge Fund evaluation (SCCF) - Quantified impacts using a baseline scenario, but only on a case study sample and mainly using assumptions and secondary data.
3. One study which is considered a good assessment of impact:
 - Green Streets, Strong Communities (BGGs) – quantified carbon savings using a baseline (assessment of energy bills and estimated meter readings) and collated and analysed meter readings throughout the project. However, there does not appear to have been an assessment of attribution, which means it is difficult to assess cause and effect. The evaluation included a wider survey of the community, but not a direct comparison group testing energy savings.

Limitations: As there are only a small number of studies available which quantify impacts such as carbon, the assessment is limited to a few studies.

Table 15: Quality assessment of quantitative studies

Project Code	BGGS	LCCC	BGC	EST GC	CES	SCCF
Energy Efficiency	Y	Y	Y	Y	Y	Y
Energy Generation	Y	Y	Y	Y	Y	N
Other Areas	none	none	transport, water, waste, food growing	water, waste, food growing	none	transport, water, waste, food growing
Fit for Purpose	1	1	1	2	1	2
Maryland scale	5	3	1	4	3	3
Independence	1	1	1	1	2	1
Quality of Research Delivery	1	1	1	1	2	1
Scale/Robustness of Coverage	1	2	2	2	2	2
Representative	1	3	2	2	3	2
CO2 savings	Collated and analysed energy meter readings for all householders throughout the challenge period, modelling usage where readings were not available and conducted analysis of generation data for all microgen equipment. 215 tCO2 per year across 14 projects.	Projects completed an audit tool at the end of the programme to report on the number and type of low carbon measures installed, responses were used to calculate the theoretical carbon savings of the projects 3,062 tCO2 per year across 18 projects	Carbon emissions reductions were monitored throughout the project, finalists of the Big Green Challenge cut carbon emissions by at least 1,770 - 2,059 tCO2 per project	Savings were calculated based on the measures reported to be installed by community groups. Attribution of the savings to the project was also assessed during the survey. 407,754 attributed tCO2 overall (lifetime)	Communities were asked directly whether carbon reductions had been made. 4/7 had reduced carbon but only 2 were able to report this ranging from 360-2200 tCO2 per project	Reductions in CO2 emissions were monitored for 8/21 projects which achieved a saving of between 1,807 and 5,837 tCO2 per project (lifetime)
CO2/ household (where applicable)	0.48 tCO2e/a/hh	0.03 tCO2/a/hh	n/a	n/a	n/a	n/a
Traffic light assessment of quantitative information	Green	Amber	Amber	Amber	Red	Amber

Appendix 3: Project methodology summary

Interpretation of the definitions for the evidence assessment

A question led approach was adopted to conduct a rapid evidence assessment (REA), whereby a question was used to dictate the scope and approach taken. The question for this project was:

“What are the impacts of community-led energy projects?”

Additionally, assumptions surrounding the REA question were set out to give clarity over the scope of the assessment and to ensure that the question was answerable. Key definitions and assumptions are:

1. Energy projects: All projects which involve collective action into buying, managing, saving and generating energy.
2. Community groups: Defined as any group or body with ownership, leadership, accountability or control of the project. These do not need to be geographically constrained.
3. Community energy projects: In order to be included, community energy projects must include:
 - i. A distinct element of increased local community ownership, leadership, accountability and/or control.
 - ii. The local community benefiting collectively from the outcomes. As discussed at the inception meeting, the interpretation of ‘benefits’ includes some form of income/profits alongside other economic or social benefits for the community.
4. Timescales: Studies completed in the last 5 years.
5. Geography: Activities within the UK.

The project will focus on finding what is the ‘added value’ of community-led projects vs the counterfactual (i.e. non-community-led projects).

To answer the research question, we focused on finding:

1. Projects which meet the definitions set out above

2. Studies of projects⁵⁸, which their real or anticipated outcomes which will be included in the evidence assessment.

The studies located were then subjected to the quality assessment criteria shown in Appendix 2: Quality Assessment.

It is worth noting that although we followed a process based on a formal REA; the process adopted cannot strictly be called an REA. This is because:

- DECC had a range of additional research questions to answer through the review
- Due to the nature of the intervention and the range in quality of studies researching impacts, many studies we include here would not pass quality tests of a traditional REA
- The timescales involved prohibited a true REA from being performed⁵⁹.

We have excluded studies which provide less robust evidence of impact than those traditionally accepted by an REA, but categorised them according to a quality typology described below and in further detail in Appendix 2: Quality Assessment.

Evidence assessment process

We developed a database in MS Excel to manage the evidence assessment process which recorded the details of the projects outlining whether they were in scope (based on the key definitions and assumptions outlined above).

Additional columns were included within the spreadsheet for each of the research questions. The spreadsheet was then populated as the studies considered to be in scope were appraised.

Figure 8: Example evidence assessment spreadsheet (excerpt)

Mapping					Evidence Assessment					
Meets definition ?	Project name	Location	Energy policy area	Project type	Purpose of the study	Study type (qualitative/quant etc.)	Study methodology	No. Participants	Main findings	Stage of community developer
Y/N			e.g. Energy efficiency	E.g. Awareness raising	Estimate change in behaviour	E.g. Quantitative indirect impacts. No comparison group.	E.g. Telephone survey of householders engaged after intervention.	e.g. 100	e.g. 50% changed habitual energy behaviours	XXX

⁵⁸ Which meet the definitions.

⁵⁹ The recommended minimum timescale for a REA is 2 – 6 months.

Search approach

Due to the tight timescales involved, a pragmatic approach has been taken to the search for existing evidence. Further studies identified following the publication of this report will be reviewed in subsequent phases of the research where it is identified that they are likely to contribute further insight into community energy activity in the UK.

The search consisted of:

1. Collating list of known evidence including known databases.
2. The list was then circulated to DECC colleagues and the CECG for them to identify additional studies.
3. Comprehensive searches of electronic databases. This included the use of search strings in electronic databases. Studies identified in this way were first subjected to an initial review of summaries/abstracts on the basis of:
 - a. Whether the abstract addressed the research question and definitions set out above.
 - b. Whether it was a primary study examining the effectiveness of the intervention.
 Where these criteria were met, the full study was included in the evidence assessment. This search also included non-academic sources, such as planning permissions.
4. Qualitative discussions with individuals suggested by the steering group to identify additional sources of evidence.

Typology of community energy projects

As the definition of energy projects is broad, we developed a categorisation framework outlining the energy policy area covered by the project in order to help define the energy projects undertaken by community groups in a logical way⁶⁰. The energy policy areas included:

- **Energy efficiency projects**
 - a. Domestic
 - b. Community building/non domestic
- **Energy Generation projects**
 - a. Domestic
 - b. Community building
 - c. Community scale
- **Other types of project**
 - a. Collective purchasing – e.g. oil, small scale renewables
 - b. Collective switching – e.g. energy tariffs
 - c. Smart metering/ load management
 - d. Capacity building

⁶⁰ This will also help inform the mapping process undertaken in the second stage of the research.

- e. Awareness raising
- f. Action in other policy areas (e.g. Transport, water, food growing, waste, food growing, waste).

We also recorded the impact (or likely impact), whether this be carbon, energy savings, financial savings, economic growth etc. where captured by studies. For the purposes of this report, we have focused on carbon savings and made an assessment of the quality of the method through which these impacts were captured/calculated.

Research questions

For each project, the evidence assessment focused on finding evidence to answer the following questions:

What factors facilitate the development of community energy schemes? This included understanding why communities engage, how external partners (e.g. Local authorities) and incentives impact on the initiation and development of schemes, and when such involvement and incentive is best deployed. This review includes evidence covering:

- Why some communities engage in energy efficiency
 - How the involvement of partners impacts on project development
 - What actions have been taken – to serve what purpose (e.g. energy supply, products and services)
 - Factors that catalyse community energy projects.
- **What are the main factors in the success of community energy schemes?** This included consideration of what levels of funding are available (and from where), how the capacity and capability of community energy projects can be built, and how they can be most effectively disseminated and replicated. This element therefore included:
 - What levels of funding were available
 - Sources through which funding has been made available
 - Description of the group and particular members (e.g. community leads) and how this affected success
 - Member skills and knowledge
 - Relationships with key partners – e.g. Local Authorities, energy professionals.
 - **What are the main barriers to the development of community energy schemes?** This included :
 - The policy and regulatory framework
 - Lack of support in building community capacity and capability
 - The need for financing and income generation models that facilitate increased community leadership and control

- The need for more effective working between communities and external stakeholders
 - Volunteer burnout
 - Wider community apathy
 - Complexity and resource requirements to access funding
 - Lack of knowledge and confidence around technical decisions e.g. the most appropriate technologies to install / invest in.
- **What mechanisms/approaches have been successfully employed to overcome barriers identified?** This considered the key barriers around engagement, skills, expertise, funding and structure. It also considered both previous successful approaches to overcoming these and hypothetical and innovative solutions to new challenges, in particular barriers resulting from, or opportunities created by, recent changes to the regulatory or financial environment.
 - **What are the added value benefits of community energy projects?** For example, how much additional investment can the community energy sector leverage from share offers; what is the value of programmes that develop community capacity in terms of increasing community capability to act on energy issues etc?
 - **Where are the gaps in the evidence which will be needed to answer the questions as outlined and how can these gaps be filled?** The identification of evidence gaps is a key output of the evidence assessment. The key gaps and our suggestions for filling those gaps are outlined in the Section 5 of this report.

Quality assessment

We needed to establish criteria to appraise the quality of all sources identified for consideration in the evidence review. This included consideration of both their quality as research studies and their usefulness in answering the agreed research questions.

The proposed approach to the quality assessment was shared in draft form with the steering group for the project for comment and approval. The methodology was also peer reviewed by Professor Jim Watson of the UK Energy Research Centre (UKERC).

The process adopted in the review is described in detail in Appendix 2: Quality Assessment.

Qualitative discussions with key individuals

To supplement the evidence assessment, we conducted discussions with experts recommended by the steering group.

These discussions served the purpose to:

1. Draw on a leading sector expert's knowledge and experiences to provide views on the key work package 1 research questions. This included some of the qualitative questions, which were challenging to fully address in the evidence review, such as:
 - a. Approaches which have been successfully employed to build the capacity and capability of community energy projects?
 - b. Evidence about what leads to community energy projects being successfully replicated?
 - c. What are the key barriers to community energy projects? Including exploration of previous failures (as a way of approaching survivorship bias).
 - d. How does the involvement of partner organisations (e.g. LAs, energy providers) impact on the development of schemes?
 - e. What role(s) do community groups play in different types of projects and why?
2. Enable these individuals to signpost any further useful research or data sources that could be included in the evidence assessment.

Appendix 4: search record

Searches were restricted to the period 2008-present. We included journals that were accessible on Google Scholar, Web of Knowledge, Web of Science and Science Direct.

Source	Search Term	Results	Any Relevant?
Google Scholar	Energy policy community energy impacts 2008	166,00	First 60 checked. Does community ownership affect public attitudes to wind energy? A case study from south-west Scotland Warren C. McFadyen M. From private lives to collective action: Recruitment and participation incentives for a community energy program SM Hoffman, A High-Pippert - Energy Policy, 2010 – Elsevier
	Energy policy community energy impacts 2009	135,00	First 60 checked. COMMUNITY ENERGY INITIATIVES PROJECT Trust and community: exploring the meanings, contexts and dynamics of community renewable energy Gordon Walker*, Patrick Devine-Wright, Sue Hunter, Helen High and Bob Evans, Department of Geography, Lancaster University Does community ownership affect public attitudes to wind energy? A case study from south-west Scotland CR Warren, M McFadyen - Land Use Policy, 2010 – Elsevier
	Energy policy community energy impacts 2010	144,00	First 60 checked. Public perceptions of opportunities for community-based renewable energy projects JC Rogers, EA Simmons, I Convery, A Weatherall - Energy Policy, 2008 – Elsevier
	Energy policy community energy impacts 2011	105,000	First 60 checked. No further relevant papers found. Ones that were relevant have been picked up in previous searches.
	Energy policy community energy impacts 2012	138,000	First 60 checked. No further relevant papers.
	Energy policy community energy impacts 2013	39,600	First 60 checked. No further relevant papers.
	UK community energy impacts, in Local Environments, 2008-2013	1270	First 60 checked. Fostering community energy and equal opportunities between communities JJ Park - Local Environment, 2012 - Taylor & Francis Opening up the "local" to analysis: exploring the spatiality of UK urban decentralised energy initiatives P Devine-Wright, B Wiersma - Local Environment, 2013 - Taylor & Francis Community-based renewable energy in the Lake District National Park—local drivers, enablers, barriers and solutions J Allen, WR Sheate, R Diaz-Chavez - Local Environment, 2012 - Taylor & Francis
	UK community energy impacts, in Environment and Planning, 2008-2013	1100	First 60 checked. Growing grassroots innovations: exploring the role of community-based initiatives in governing sustainable energy transitions G Seyfang, A Haxeltine - Environment and Planning-Part C, 2012 - envplan.com

Source	Search Term	Results	Any Relevant?
Web of Knowledge	Community Energy UK 2008-2013	150	Mobilizing community energy Author(s): Bomberg, Elizabeth; McEwen, Nicola A regional-scale assessment of local renewable energy resources in Cumbria, UK A.M. Gormally J.D. Whyatt R.J. Timmis C.G. Pooley ^a Energy autonomy in sustainable communities—A review of key issues Callum Rae Fiona Bradley Can premium tariffs for micro-generation and small scale renewable heat help the fuel poor, and if so, how? Case studies of innovative finance for community energy schemes in the UK Author(s): Saunders, R. W.; Gross, R. J. K.; Wade, J. Social impacts of community renewable energy projects: findings from a woodfuel case study Rogers, Jennifer C.; Simmons, Eunice A.; Convery, Ian; et al. Public perceptions of opportunities for community-based renewable energy projects

			Author(s): Rogers, J. C.; Simmons, E. A.; Convery, I.; et al.
	Local Energy UK 2008-2013	178	No further relevant papers found.
	Decentralised Energy UK 2008-2013	17	The implications of an increasingly decentralised energy system Author(s): Wolfe, Philip What changes, if any, would increased levels of low-carbon decentralised energy have on the built environment? Author(s): Keirstead, James Prospects for and barriers to domestic micro-generation: A United Kingdom perspective Author(s): Allen, S. R.; Hammond, G. P.; McManus, M. C.
	Community Renewables UK 2008-2013	5	No further relevant papers found.
	Community Electricity UK	19	No further relevant papers found.
	Community Heat UK	35	No further relevant papers found.
	Distributed Energy UK	181	No further relevant papers found.

Source	Search term	Results	Any Relevant?
Science Direct	Community energy 2008-2013		First 200 reviewed. The role, organisation and contribution of community enterprise to urban regeneration policy in the UK <i>Progress in Planning, Volume 77, Issue 1, January 2012, Pages 1-35</i> Nick Bailey Delivering Energy Savings Through Community-Based Organizations <i>The Electricity Journal, Volume 23, Issue 9, November 2010, Pages 65-74</i> David Berry Grid-connected versus stand-alone energy systems for decentralized power—A review of literature <i>Renewable and Sustainable Energy Reviews, Volume 13, Issue 8, October 2009, Pages 2041-2050</i> Deepak Paramashivan Kaundinya, P. Balachandra, N.H. Ravindranath Social license and consultation criteria for community wind projects <i>Renewable Energy, Volume 44, August 2012, Pages 392-397</i> Kenny Corscadden, Adam Wile, Emmanuel Yiridoe Low-carbon communities as a context for individual behavioural change <i>Energy Policy, Volume 38, Issue 12, December 2010, Pages 7586-7595</i> Eva Heiskanen, Mikael Johnson, Simon Robinson, Edina Vadovics, Mika Saastamoinen Windfalls for whom? The evolving notion of 'community' in community benefit provisions from wind farms <i>Geoforum, Volume 43, Issue 6, November 2012, Pages 1108-1120</i> Gillian Bristow, Richard Cowell, Max Munday The value of social networks in the diffusion of energy-efficiency innovations in UK households <i>Energy Policy, Volume 53, February 2013, Pages 159-168</i> Megan McMichael, David Shipworth Supporting energy initiatives in small communities by linking visions with energy scenarios and multi-criteria assessment <i>Energy Policy, Volume 39, Issue 12, December 2011, Pages 7884-7895</i> Evelina Trutnevyte, Michael Stauffacher, Roland W. Scholz Mobilising community action towards a low-carbon future: Opportunities and challenges for local government in the UK <i>Energy Policy, Volume 38, Issue 12, December 2010, Pages 7596-7603</i> Michael Peters, Shane Fudge, Philip Sinclair
	Local Energy UK 2008-2013	1137	First 200 reviewed. No further relevant reviews found.
	Decentralised Energy UK 2008-2013	179	Assessing the impact of renewable energy deployment on local sustainability: Towards a theoretical framework <i>Renewable and Sustainable Energy Reviews, Volume 12, Issue 5, June 2008, Pages 1325-1344</i> Pablo del Rio, Mercedes Burguillo
	Community Electricity UK 2008-2013	15	No further papers found.
	Community Heat UK 2008-2013	8	No further papers found.
	Distributed Heat UK 2008-2013	55	No further papers found.

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