



# Community Energy in the UK: Part 2

Final 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).

January 2014

## Table of Contents

<b>Acknowledgements</b> .....	<b>4</b>
<b>Executive summary</b> .....	<b>5</b>
Introduction.....	5
Methodology.....	6
Key findings.....	7
<b>Introduction</b> .....	<b>11</b>
<b>Methodology</b> .....	<b>12</b>
Community Energy definition.....	12
Overview of approach and research stages.....	13
Online survey delivery and response.....	13
Key limitations.....	14
<b>Community energy in the UK: scale, profile and geographical distribution</b> .....	<b>16</b>
Geographical distribution of activity.....	22
Deprivation of areas in which community energy groups are located.....	24
Urban/rural distribution of community energy groups.....	26
Types of energy project being undertaken by community groups.....	27
Capacity for renewable energy generation.....	28
<b>Further insight to address evidence gaps</b> .....	<b>29</b>
Introduction.....	29
Why do communities engage with energy projects?.....	30
How have community energy projects of different types and scales been funded?.....	37
What legal structures are adopted by existing community groups undertaking energy projects in the UK?.....	42
What factors are most critical in the success of community energy projects?.....	45

What are the measurable benefits of community energy projects? .....	47
<b>Plans for the future .....</b>	<b>51</b>
What are the plans of existing community energy groups to undertake future projects? .....	51
What challenges (if any) need to be overcome to enable pipeline projects to be implemented? .....	55
<b>Conclusions and recommendations .....</b>	<b>57</b>
Conclusions .....	57
Knowledge gaps and recommendations .....	59
<b>Appendix A: Methodology .....</b>	<b>62</b>
Overview of approach and research stages .....	62
Online survey delivery and response .....	64
<b>Appendix B: Data sources consulted in compiling the master database .....</b>	<b>69</b>

# Acknowledgements

Databuild and the Energy Saving Trust would like to thank the Community Energy Contact Group (CECG) for assisting in the development of the methodology employed in this study and promotion of the online survey.

We would also like to extend our thanks to the following networks that agreed to actively promote the online survey on our behalf in order to maximise participation:

- Carbon Leapfrog
- Transition Network
- Low Carbon Communities Network

Finally, we would like to thank Community Energy Scotland for mining their databases on our behalf to provide information about all of the completed and pipeline energy projects in Scotland that they are aware of.

# Executive summary

## Introduction

In June 2012, it was announced that the Government would launch a Community Energy Strategy. DECC also published a Call for Evidence on Community Energy in June 2013<sup>1</sup>.

The Government recognises that community-led 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.

DECC and Consumer Futures therefore commissioned Databuild Research and Solutions Ltd (Databuild) and the Energy Saving Trust (EST) in March 2013 to undertake research to supplement the Call for Evidence, helping to ensure the Strategy (published alongside this report) is underpinned by a strong evidence base.

The overarching objectives of the study were to:

- Review existing evidence regarding the delivery and impact of community energy projects to draw out knowledge on barriers and opportunities and identify evidence gaps
- Conduct primary and secondary research to establish the scale of community energy activity in the UK.

The study was also required to gather supplementary evidence to answer research questions identified by DECC, Consumer Futures, the project steering group and the Community Energy Contact Group (CECG) as being important to inform the Strategy.

---

<sup>1</sup> See <https://www.gov.uk/government/consultations/community-energy-call-for-evidence> (last accessed 01/11/2013)

## Methodology

Community Energy was defined for the purpose of the study as **any UK energy project that was completed, commenced or considered in the last five years (i.e. since 2008) and led or partially owned by a community group<sup>2</sup>.**

The definitions of 'energy project' and 'community group' adopted in this study were as follows:

- **Energy project** – any project involving collective action to buy, manage, save or generate energy.
- **Community** – any citizen group or third sector body. To meet the criteria for the study the community group must be either:
  - Responsible and/or accountable for the delivery of an energy project in the UK; or
  - Intending to take responsibility for the delivery of an energy project in the UK in future.

The first phase of research comprised a review of the existing evidence base relating to community energy in the UK. A report was produced to summarise the findings from the first phase of the research and this was published alongside DECC's Call for Evidence to inform the Community Energy Strategy<sup>3</sup>.

This report details the key results from the second phase of research, which consisted of the following key activities:

- **Building a master database of community groups in the UK** that have undertaken, are undertaking or have expressed interest in undertaking community energy projects over the last five years (i.e. since 2008). This involved drawing together and de-duplicating seventeen separate existing data sources that identified community groups with interest or involvement in the community energy sector in the UK<sup>4</sup>.
- **Qualitative work to validate the master database.** This included consulting with individuals nominated by the project steering group in three specific geographic areas of the country to explore the extent to which the master database accounted for existing community energy project activity known to the contact for each area.
- **An online survey** completed by 177 community groups and energy professionals that have undertaken, are undertaking or are interested in undertaking community energy projects in the UK.

The key findings from the second phase of the study are summarised in the next section.

<sup>2</sup> i.e. joint ventures partially owned by a community group were included in the study.

<sup>3</sup> The interim report following the completion of the first phase of this research study can be found here:

[https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/205218/Community\\_Energy\\_in\\_the\\_UK\\_review\\_of\\_the\\_evidence.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/205218/Community_Energy_in_the_UK_review_of_the_evidence.pdf) (last accessed 14th October 2013)

<sup>4</sup> A list of the sources consulted in compiling the master database can be found in Appendix B of this report.

## Key findings

### Scale and geographic distribution of community energy activity

At least 5,000 community groups have considered, commenced and/or completed energy projects in the UK since 2008.

It is not possible to quantify the number of community groups that are currently active in the sector, but the available evidence suggests that a substantial number of new community groups have entered the sector in the last three years.

Whilst community groups are undertaking energy projects across all parts of the UK, activity appears to be particularly prevalent in Scotland and South West England. Similarly, although the majority of groups are based in urban areas, the prevalence of activity in rural areas is greater than would be expected given the relative number of people living in rural as compared to urban areas.

The available evidence suggests the number of community groups in areas of high deprivation is similar to the number in areas of low deprivation, although there is some variation in the types of project being undertaken. The number of community groups solely undertaking projects to raise awareness of opportunities to improve energy efficiency appears to be higher in deprived areas than in areas of low deprivation.

### Renewable energy generation capacity

From the work undertaken in this study it is known that there is at least 49 megawatts (MW) of community renewable energy generation capacity in the UK. This is predominantly made up of a small number of large scale wind turbine projects. The total capacity is likely to be higher than 49MW, however, as capacity data were not available for a number of renewable energy projects identified in compiling the master database<sup>5</sup>.

If all of the renewables projects identified in this research, where capacity data were obtained, were to go ahead, there would be opportunity to grow installed capacity to 433MW.

There is limited evidence available to draw conclusions about the precise scale and impact of other types of project activity (e.g. awareness raising, promotion of energy efficiency measures).

---

<sup>5</sup> A recent study reports that there is 59MW of installed and operational community energy capacity in the UK. See *"The Community Renewables Economy: Starting up, scaling up and spinning out"*. Jelte Harnmeijer, Matthew Parsons, and Caroline Julian. ResPublica Green Paper, September 2013. This figure (59MW) has not been validated or integrated with the analysis conducted in this study as the publication was not available at the time the master database and capacity data were compiled. [http://www.respublica.org.uk/documents/yqq\\_Community%20Renewables%20Economy.pdf](http://www.respublica.org.uk/documents/yqq_Community%20Renewables%20Economy.pdf)

## Why community groups and their facilitators become involved in energy projects

Based on responses to the online survey, addressing climate change / reducing carbon emissions is the most important factor motivating community groups to become involved in community energy projects, followed by reducing energy bills and community income generation.

The top three goals that respondent community groups reported for the projects themselves are to:

- Improve the sustainability/self-sufficiency of the community
- Promote energy efficiency/renewable energy generation
- Reduce the amount of energy used by the community and/or their carbon footprint.

Evidence from the online survey suggests that many of those responsible for driving projects involving renewables or large scale energy efficiency projects are from managerial, administrative and professional occupations (e.g. engineers, architects, environmental and other professionals, some of whom are retired).

The commitment of organisers and volunteers is seen as the most important enabling factor in groups deciding to become involved in community energy projects. This suggests that personal motivation is a fundamental driving force in the development of community energy projects. Committed organisers and volunteers are particularly important to small community groups.

## Funding of community energy projects

Evidence from the online survey indicates that recent community activity has drawn less extensively on grant funding in on-going projects. Furthermore, those planning future projects anticipate being less reliant on grant funding, drawing more heavily on alternative sources of funding including private/public sector loans and share offers.

Community groups undertaking projects involving renewables are more likely than those working on other projects to access non-grant funding (e.g. share and debt offers, and Feed-in Tariffs).

Community groups undertaking or considering projects excluding renewable energy are more likely to have accessed grant funding. These groups also access charitable funding more often than groups involved with projects that include renewable energy generation.

## Legal structures adopted by community energy groups

Community groups undertaking energy projects in the UK have a diverse range of legal structures.

Evidence from the online survey suggests the profile of the community energy sector has evolved considerably in recent years. A substantial number of Community Interest Companies, Industrial and Provident Societies, Community Benefit Societies and Co-operatives have been registered in the last three years.



### Critical success factors

Based on data collected from the online survey, the most critical factors affecting the feasibility and success of community energy projects are securing funding (46%), support from local community / members (37%), co-operation of/support from other organisations (30%), and government policy (e.g. Feed-in Tariffs) (27%).

### Impact and cost effectiveness

The limited available data on community energy projects mean it is difficult to produce a robust assessment of the impact and cost effectiveness of community energy activity in the UK.

This is because most community groups do not monitor the impact of their activity, and the information that currently exists has been developed using a variety of different methodologies. Furthermore, the data collected usually relates to the direct and immediate impacts of projects rather than wider and longer-term benefits across the participating communities.

The available evidence suggests that cost effectiveness is likely to vary widely for any future schemes due to the type of project undertaken, capacity and experience of the groups involved, delivery model and local factors such as support from local authorities and demographics of the area.

### Future activity

From the work undertaken in this study it is known that there are at least 347 energy projects in delivery or in the pipeline<sup>6</sup>. The actual number of projects is likely to be higher due to the limitations of the master database.

The findings of the online survey suggest that a significant number of the projects currently under consideration or being planned are renewable energy projects (solar PV / wind / hydroelectric). A smaller proportion relate to energy efficiency and behaviour change. The majority of these projects are expected to commence by the end of 2014.

A large proportion of those in the process of planning new projects are still in the process of overcoming challenges that could affect their scale, scope and/or timescale. Nevertheless, the majority (approximately two thirds) of community groups are confident that they will be able to overcome some or all of the challenges without altering their project design.

### Recommendations

On the basis of the findings of this study it is recommended that funders of community energy projects:

- **Undertake or encourage more in-depth studies of process and impacts of community energy projects at the project level<sup>7</sup>.** For example, it would be beneficial to evaluate project impacts and benefits at different stages of community group development.
- **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

<sup>6</sup> i.e. Projects currently under consideration or still in the planning stage.

<sup>7</sup> Many of the studies reviewed in phase 1 of the research only reported aggregate figures, providing limited insight into the process and impact of particular types of project. Some information is available in the form of case studies, but it is difficult to conclude whether the process and impacts of these energy projects is typical/representative.

be required to fill evidence gaps relating to particular types of community energy project, such as collective switching and purchasing.

It is also recommended that an evaluation framework for community energy projects is established. Such a framework need not be onerous for the community groups to implement. For example, the Community Action Group Impact Model Framework adopted in Oxfordshire offers opportunity for community groups to produce impact estimates (including energy savings and carbon emissions reductions) for awareness raising and energy efficiency activities. This is achieved using activity data (e.g. number of households approached, small scale follow-up to estimate percentage taking action and type of action)<sup>8</sup>. This could be further developed to support the overall evaluation framework.

If those undertaking community energy projects across the UK were to adopt a consistent approach to evaluating the impact of their activity it would allow more robust conclusions to be drawn about the resulting benefits and cost effectiveness.

---

<sup>8</sup> See <http://www.cagoxfordshire.org.uk/impact-model>

# Introduction

The Coalition Government's programme for government (published in May 2010) made a pledge to *"encourage community-owned renewable energy schemes where local people benefit from the power produced"*.

In June 2012, it was announced that the Government would launch a Community Energy Strategy. DECC also published a Call for Evidence on Community Energy in June 2013.

The Government recognises that community-led 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.

DECC and Consumer Futures therefore commissioned Databuild Research and Solutions Ltd (Databuild) and the Energy Saving Trust (EST) in March 2013 to undertake research to supplement the Call for Evidence, helping to ensure the Strategy (published alongside this report) is underpinned by a strong evidence base.

The overarching objectives of the study were to:

- Review existing evidence regarding the delivery and impact of community energy projects to draw out knowledge on barriers and opportunities and identify evidence gaps<sup>9</sup>
- Conduct primary and secondary research to establish the scale of community energy activity in the UK.

The study was also required to gather supplementary evidence to answer research questions identified by DECC, Consumer Futures and the project steering group as being important to inform the Strategy.

This report details the key findings from the second phase of the research and outlines the conclusions and recommendations of the study.

---

<sup>9</sup> The interim report covering this objective (i.e. the review of existing evidence) was produced following the completion of the first phase of this research and can be found here: [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/205218/Community\\_Energy\\_in\\_the\\_UK\\_review\\_of\\_the\\_evidence.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/205218/Community_Energy_in_the_UK_review_of_the_evidence.pdf) (last accessed 14th October 2013)

# Methodology

This section provides a summary of the methodology adopted in this study. A more detailed account of the methodology can be found in Appendix A of this report.

## Community Energy definition

Community Energy was defined for the purpose of the study as **any UK energy project that was completed, commenced or considered in the last five years (i.e. since 2008) and led or partially owned by a community group<sup>10</sup>.**

The definitions of 'energy project' and 'community group' can be found in Figure 1:

**Figure 1: Definitions used in the research**

Term	Definition used in the research
<b>Energy project</b>	Any project involving collective action to buy, manage, save or generate energy
<b>Community group</b>	Any citizen group or third sector body. To meet the criteria for the study the community group must be either: <ul style="list-style-type: none"> <li>• Responsible and/or accountable for the delivery of an energy project in the UK; or</li> <li>• Intending to take responsibility for the delivery of an energy project in the UK in future.</li> </ul>

In consultation with the project steering group it was agreed that community energy projects completed prior to 2008 should be excluded from the study on the basis that they would not be typical of current activity. 2008 was chosen to provide an opportunity to understand where and how the sector had changed in recent years in light of developments such as the introduction of the Feed-in Tariffs (FITs) in 2010.

<sup>10</sup> i.e. Joint ventures partially owned by a community group were included in the study.

## Overview of approach and research stages

The project comprised three phases of research and analysis:

- **Phase 1: A review of existing evidence relating to community energy in the UK<sup>11</sup>**
- **Phase 2: Research to explore the scale of community energy project activity in the UK and gather supplementary evidence to inform the Strategy**

The second phase of research consisted of the following key activities:

- Building a master database of community groups in the UK that have undertaken, are undertaking or have expressed interest in undertaking community energy projects over the last five years (i.e. since 2008).
  - Qualitative work to understand and validate the coverage of the master database.
  - An online survey of community groups and energy professionals that have undertaken, are undertaking or are interested in undertaking community energy projects in the UK.
- **Phase 3: Analysis and reporting**

The third phase of the project included the following activities:

- Analysing the master database and data from the online survey and developing a report to summarise the findings from phase 2 (this report).
- Mapping the scale, type and geographical distribution of community energy project activity in the UK, covering all community groups identified in developing the master database or responding to the online survey.

## Online survey delivery and response

The online survey comprised two components:

1. **An online questionnaire** to be completed by all respondents to capture information about their community group and insight to inform responses to the research questions described above (e.g. reasons for becoming involved in community energy)
2. **A separate spreadsheet template** for completion by those involved in undertaking or considering multiple community energy projects to provide detailed information about

<sup>11</sup> The interim report following the completion of the first phase of this research study was published alongside the Call for Evidence on Community Energy in June 2013 and can be found here: [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/205218/Community\\_Energy\\_in\\_the\\_UK\\_review\\_of\\_the\\_evidence.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/205218/Community_Energy_in_the_UK_review_of_the_evidence.pdf) (last accessed 14th October 2013)

specific projects (e.g. type of project, funding arrangements, anything that is known about the impact of the project)<sup>12</sup>.

In total, 157 full responses were received from community groups and energy professionals to the questions included in the online survey. This comprised 94 responses from community group representatives, 16 from energy professionals and 47 from individuals stating that they were both (i.e. energy professionals that are also community group representatives).

A further 20 respondents completed enough questions to provide understanding of the profile of the community group or energy professional responding to the survey and whether they had undertaken any energy projects. These 20 respondents did not provide full details of their projects, but it was decided to include these responses to ensure that all of the available evidence was used to draw conclusions about the profile of active community groups<sup>13</sup>.

Out of 123 respondents who indicated they had undertaken multiple projects, 29 agreed to complete a spreadsheet, as described above.

Further details about the delivery and administration of the online survey can be found in Appendix A of this report.

## Key limitations

Due to the sheer diversity, nature and scale of community energy in the UK<sup>14</sup> it is not possible to be certain that the information presented in this report provides a comprehensive account of community energy activity in the UK. The following steps have been taken to ensure that the results presented in this report are as representative as possible:

1. Consulting sector experts in particular geographic areas of the country to validate the coverage of the master database in respect of community groups involved in energy projects over the last five years
2. Using evidence from the online survey to consider what kinds of activity / community group might be missing from the master database
3. Comparing the profile of community groups responding to the online survey with that of those found in the master database to gain some insight into the types of activity / community group that may not be represented in the online survey responses
4. Drawing in secondary evidence (e.g. the number of Industrial and Provident Societies (IPSs) with an interest in energy projects according to Financial Conduct Authority's

<sup>12</sup> It was considered in review with representatives from the Community Energy Contact Group that it would be too cumbersome for community groups to provide detailed information about their projects via an online questionnaire. Requiring community groups to provide this level of detail in the online survey would likely have led to a high level of dropout and nonresponse to other research questions (e.g. reasons for becoming involved in community energy).

<sup>13</sup> Excluding these survey responses would introduce bias in reporting on the overall profile of community groups. It was confirmed prior to the analysis that the 20 partially completed survey responses were from groups that did not feature in the 157 completed interviews.

<sup>14</sup> e.g. small groups, some with no legal status; groups existing for small lengths of time and community energy being only part of the work of some groups.

Mutuals Register, Community Shares Unit & Coops UK) to provide some insight into the current level of activity.

The following conclusions have been drawn from this analysis:

1. The master database provides a good account of significant historic activity, but offers limited insight into more recent activity. A number of community groups responding to the online survey that had yet to complete an energy project or were just in the process of planning or implementing their project were not found in the master database.
2. The online survey responses are considered to be representative of the views and behaviours of community groups that are:
  - a. Currently active in the community energy sector; and
  - b. Have undertaken or are at least considering projects that go beyond small scale awareness raising activities / promotion of measures to improve energy efficiency<sup>15</sup>.

This project is among the first attempts to produce a more comprehensive account of community energy project activity in the UK than was previously available<sup>16</sup>. Inevitably therefore, a number of knowledge gaps still remain. The key knowledge gaps and recommendations for addressing them in future work are discussed in the Conclusions and Recommendations section of this report.

---

<sup>15</sup> Comparison with the master database suggests that there may have been a tendency for larger, more established groups with more significant energy projects to be more likely to respond to the survey. Furthermore, certain types of organisation identified in compiling the master database as being interested or actively involved in the Community Energy Sector do not feature as respondents to the online survey (e.g. faith groups).

<sup>16</sup> This work is one of a number of recent studies that have sought to provide more comprehensive insight into community energy project activity in the UK. For example, some of the research questions covered in this study have been examined in work undertaken by the Community Innovation for Sustainable Energy (CISE) project, University of Sussex / University of East Anglia.

# Community energy in the UK: scale, profile and geographical distribution

## Summary

At least 5,000 community groups have considered, commenced and/or completed energy projects in the UK since 2008.

There is insufficient evidence to quantify precisely how many community groups are currently active in the sector or precisely how the sector has evolved over time. However:

- All of the groups identified in the study were actively interested or involved in the community energy sector at some point since 2008.
- The available evidence suggests that a substantial number of new community groups have entered the sector in the last three years.

Whilst community groups are undertaking energy projects across all parts of the UK, activity appears to be particularly prevalent in Scotland and South West England.

The number of community groups in areas of high deprivation is similar to the number in areas of low deprivation, although there is some variation in the types of project being undertaken:

- The number of community groups solely undertaking projects to raise awareness of opportunities to improve energy efficiency appears to be higher in deprived areas than in areas of low deprivation
- There is a higher prevalence of community groups solely promoting energy efficiency measures in the most and least deprived areas of the country than in areas of medium deprivation
- Groups undertaking renewable energy or multi-faceted projects appear to be more evenly dispersed across the quintiles of deprivation.

Whilst the majority of community groups are found in urban areas, the prevalence of community groups planning/undertaking energy projects in rural areas (41%) is high when compared to the distribution of the UK resident population. For example, approximately 18% of the resident population in England reside in rural areas.



It is challenging to produce an accurate estimate of the current scale of community energy activity in the UK for the following reasons:

- **The sector is relatively new.** As a result, the existing evidence base regarding the number and type of energy projects being undertaken in the UK is limited when compared to more established activities promoting collective action to buy, manage, save or generate energy.
- **The sector comprises a diverse range of activity, from small scale awareness raising projects to large scale renewable energy generation projects.** This means that much of the evidence that does exist often relates to a particular subset of community energy projects, with a particular emphasis in the existing evidence base on renewable electricity generation projects<sup>17</sup>. Small scale activities are not well represented, not least because any community group could decide to undertake a small scale energy project without registering or promoting the project. The type of information and level of detail also varies considerably for different subsets of community energy activity.
- **The sector is rapidly evolving**<sup>18</sup>. This means that the evidence that does exist for subsets of community energy activity, which may provide a strong account of historic activity, does not always reflect recent developments in the sector (e.g. new types of project, community group, approaches to raising finance etc). It is also not always clear whether planned activities come to fruition or whether community groups known to have undertaken an energy project in the past are still active in the sector.

The approach adopted in this project to examine the scale and geographic spread of community energy activity in the UK was to:

- Assimilate data sources identified in the course of the study that provided insight into community groups in the UK that have been involved or at least interested in undertaking one or more community energy projects since 2008, synthesising the data into a single master database.
- Conduct primary research to gain insight into the profile of current activity in the community energy sector and better understand the type of activity that may not be covered by the existing evidence base.

Through desk research undertaken during the course of this study and consultation with representatives from the community energy sector, seventeen data sources<sup>19</sup> have been identified that could be used to identify community groups with interest or involvement in the community energy sector in the UK.

<sup>17</sup> Where there are often funder requirements for monitoring data and the direct impacts of the project are easier to measure in general when compared to the impact of other types of project (e.g. awareness raising activities).

<sup>18</sup> A large number of those responding to the survey had formed in the last three years.

<sup>19</sup> A list of the sources consulted can be found in Appendix B.

In reviewing these sources, just under 5,000 unique community groups that had been involved or interested in undertaking community energy projects since 2008 were identified.

Figure 2 illustrates a simplified account of overlaps between main data sources consulted in compiling the master database of community energy activity.

The diagram represents around 95% of all community groups in the master database (4,706 community groups). 241 groups identified in compiling the master database<sup>20</sup> have been excluded from the diagram due to the large number of permutations of overlap and complexity their inclusion would introduce. This comprises:

- **84 additional groups** that were present in two or more of the data sources illustrated in the diagram but where the overlap could not be easily presented in the diagram
- **157 additional groups** from the following sources:
  - Groups identified through desk research undertaken during the first phase of this study (80 groups)
  - The Local United database (21 groups)
  - The Ynni'r Fro database (19 groups)
  - The Renew Wales database (15 groups)
  - The 'British gas - green streets' database (14 groups)
  - The 'BIG Lottery Communities Living Sustainably' database (8 groups)

---

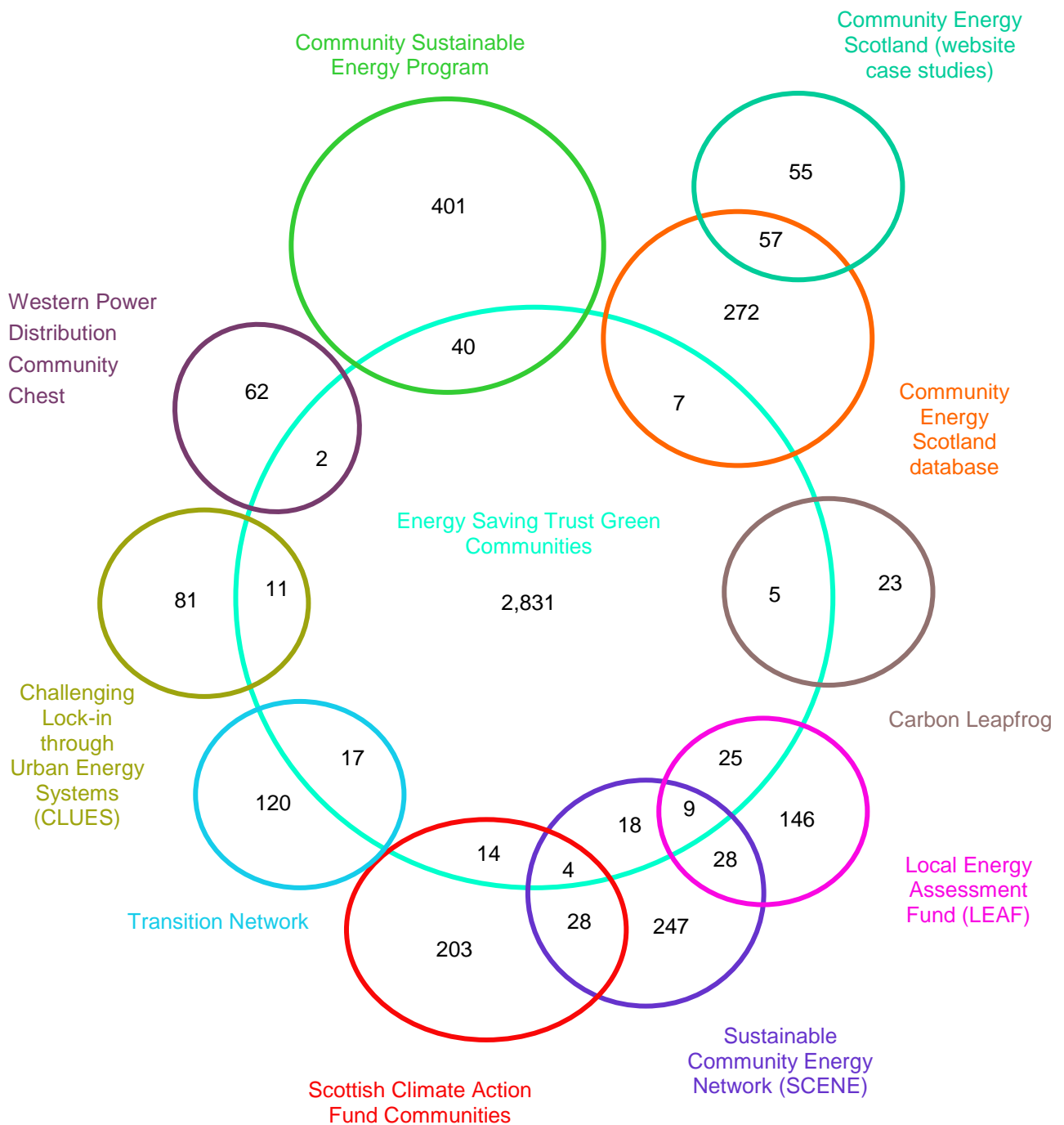
<sup>20</sup> The final master database of community groups incorporates community groups identified in responses to the online survey that did not appear in the master database (79 groups); these are also not included in the diagram.

**Figure 2: Primary data sources used in the study and simplified illustration of number of community groups identified and significant overlaps\***

**The diagram accounts for approximately 95% of records included in the master database (N=4,706)\*\***

\* 84 groups appearing in at least two of the databases sources illustrated below have been excluded from the diagram for simplicity as there are too many unique / small scale permutations to include all of the overlaps

\*\* 157 further groups were identified from sources not included in the diagram



As no single source identified in the course of the study provides a **comprehensive** account of the sector<sup>21</sup>, the under / over representation in the master database of particular types of community group and types of project is difficult to pinpoint. However, the available evidence suggests that:

- a. The master database provides good coverage of significant, historic activity:**
  - The vast majority of groups identified through the online survey that had completed energy projects between 2008 and 2011 were found in the master database
  - Local experts nominated by the project steering group in the three geographic areas where the master database was validated confirmed that the file included all groups known by them to be active in the community energy sector.
  
- b. The master database under-represents recent and pipeline activity substantially:**

79 of the 188 unique community groups identified in the online survey (42%) were not listed in the master database. The majority of these 79 groups had either yet to commence a project or had not completed their first project prior to 2011:

  - 26 were groups that were considering but had yet to undertake an energy project,
  - 15 had commenced a project, but their community group had only recently been formed (2012 or 2013)
  - 18 groups formed between 2008 and 2011 had commenced, but had yet to complete their first project
  - The remaining 20 groups were established prior to 2008 and had completed at least one project prior to 2011.

From the work undertaken in this study it can be concluded that:

- 1. At least 5,000 community groups have considered, commenced and/or completed energy projects in the UK since 2008.**

More than 4,900 unique groups were identified in the master database that had considered, commenced and/or completed an energy project of some kind since 2008, plus an additional 79 groups in the online survey.
  
- 2. A substantial number of new community groups have entered the sector in the last three years<sup>22</sup>.**

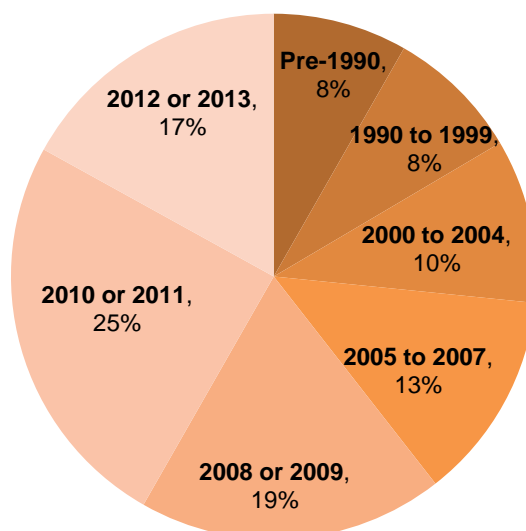
Of the 5,000 community groups identified in this study, project commencement dates are known for only a small proportion (approximately 10%) of community groups. However:

<sup>21</sup> Work undertaken in the CISE project has attempted to provide a more comprehensive account of the sector than was available from previous evidence, but it is difficult to draw conclusions about its coverage of the population. See *A thousand flowers blooming? An examination of community energy in the UK*. Gill Seyfang, Jung Jin Park, Adrian Smith. Energy Policy. October 2013. Other sources provide good coverage for particular subsets of activity (e.g. renewable energy projects), but the evidence base appears to be lacking in its coverage of other activities. For example, evidence from the Green Communities database suggests there are a large number of groups undertaking small scale energy efficiency and awareness raising projects. Current projects of this nature are not well accounted for in the evidence base.

<sup>22</sup> It is not possible to produce a robust estimate of the number of new groups entering the sector in the last three years from the available data; however, 73 of the 182 respondents to the online survey completing the questions regarding legal status and year of establishment were established since 2010.

- a. More than two fifths of community groups responding to the online survey were established in or after 2010 (as illustrated in Figure 3).
- b. From Community Shares Unit data it is known that around 80% of the 150 Industrial and Provident Societies (IPs) in the UK with a renewable energy focus were registered in the last three years<sup>23</sup>.

**Figure 3 Year of community group establishment from online survey responses (n=177)**



It is not possible to ascertain how many community groups are **currently** active in the sector because:

- **Limited resources:** There was insufficient scope within the timescale and available resources for this research to validate the current status of a large proportion of groups identified in compiling the master database. What is known is that more than half of the community groups identified in compiling the master database were solely found in the Energy Saving Trust Green Communities database (57% of all groups, 2,831 groups) which was last subjected to a detailed review in 2011. It is likely that some of these groups – and groups found on other databases used in compiling the master database – may no longer be active in the community energy sector.
- **The sector is rapidly evolving:** The findings of the online survey confirm that the master database does not account well for relatively recent developments and new entrants to the community energy sector, but the online survey sample is too small to estimate the size of the sector that is currently active.

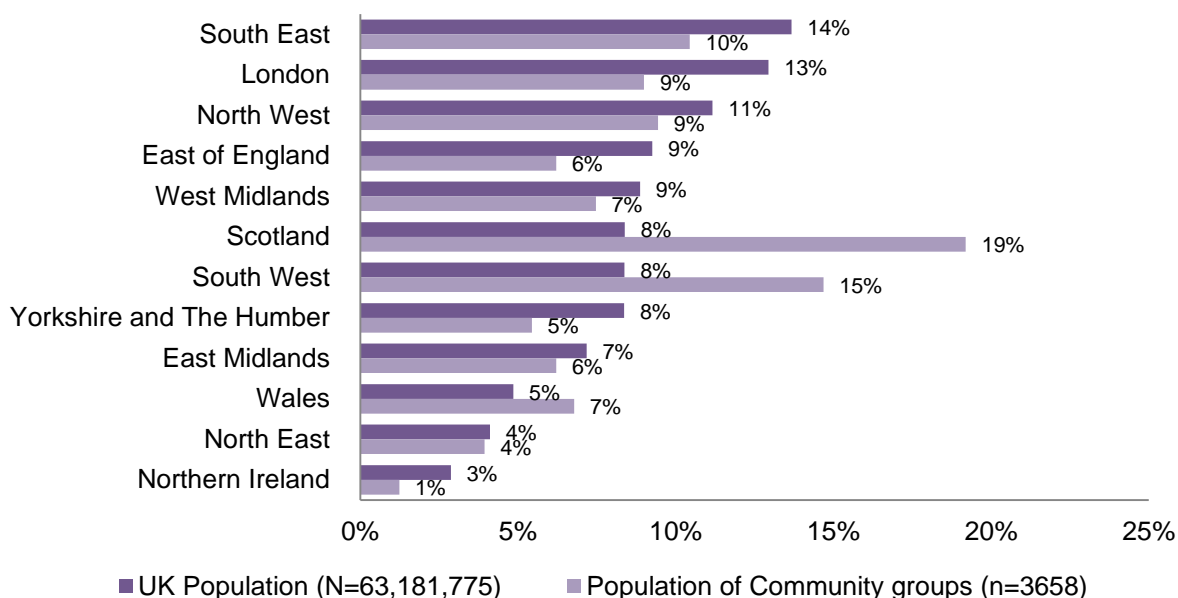
It is important not to lose sight of the fact that, prior to this study being commissioned, the existing evidence base provided a disparate set of snapshots of subsets of community energy project activity in the UK. This study is among the first that has attempted to draw together all of these snapshots to provide insight into the overall scale of the full range of community energy activity in the UK over the last five years.

<sup>23</sup> Based on data from the Community Shares Unit, FCA Mutuals Register & Coops UK

## Geographical distribution of activity

Although community groups are undertaking energy projects across all parts of the UK, a larger proportion of community groups identified in this study were based in Scotland and South West England than would be expected given the distribution of the UK resident population. The geographical distribution of other community groups identified in this study is generally broadly in line with that of the UK population. Figure 4 illustrates the proportion of community groups identified in this study as considering, commencing or completing energy projects in the UK since 2008 that are located in each nation of the UK / Government Office Region in England compared to the distribution of the UK population from the 2011 Census.

**Figure 4 Distribution of community energy groups compared with UK population distribution<sup>24</sup>**

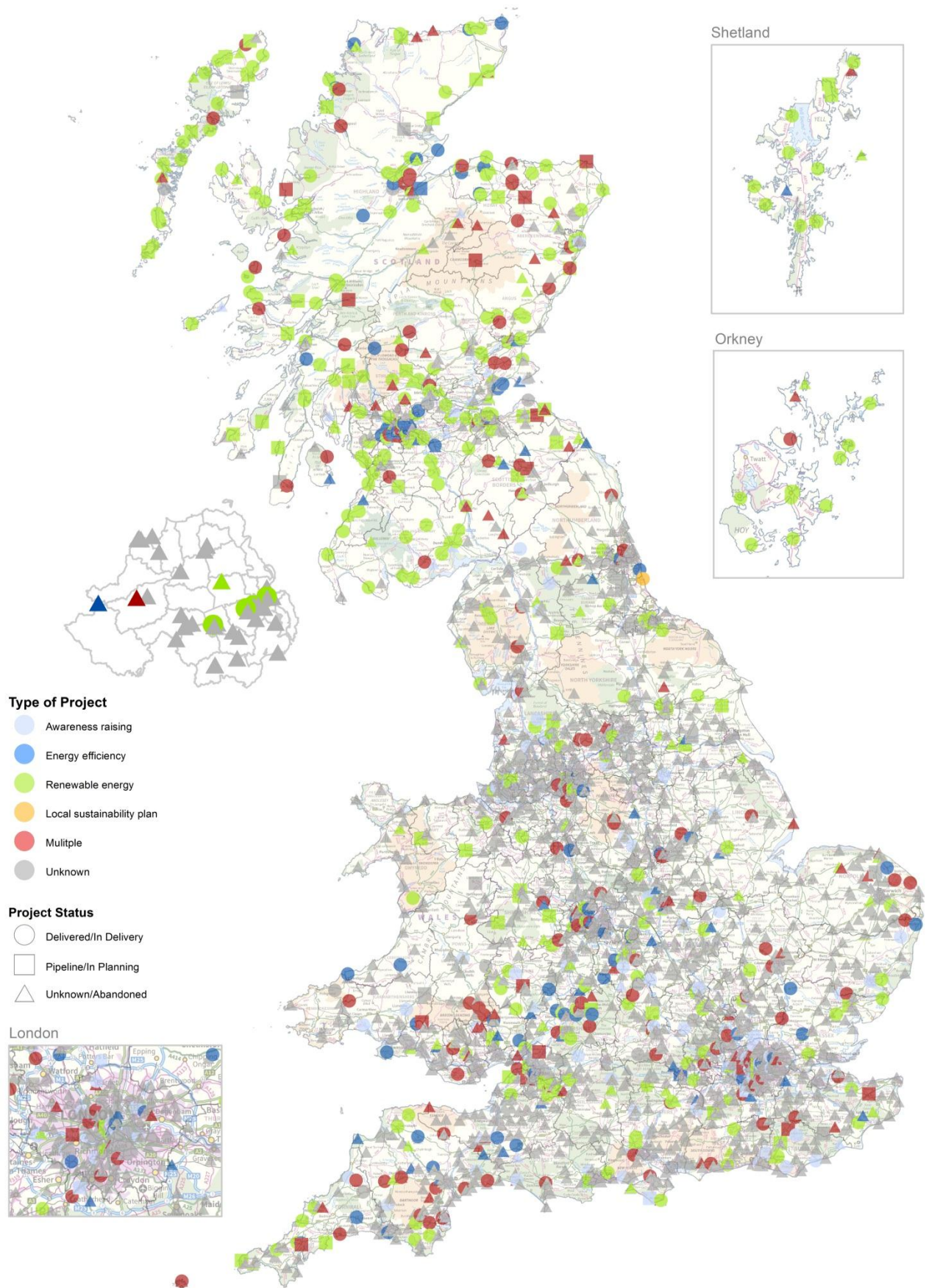


The prevalence of activity in Scotland might be explained in part by investment in the sector. For example, community groups in Scotland have had access to funding through programmes such as the Climate Challenge Fund (CCF) and Centre for Applied Research and Environmental Systems (CARES) for a number of years. Such programmes provide funding for groups to conduct and record energy project activity. Analysis presented later in this section regarding the frequency of community group activity in rural areas may account in part for the prevalence of activity in South West England. This may also be explained by the fact that a number of organisations supporting community energy are based in the South West (e.g. the Centre for Sustainable Energy (CSE)). Figure 5 overleaf provides a map to illustrate the scale and geographical distribution of the community energy project activity identified during the course of this study.

<sup>24</sup> Postcode data were not available for all records in the master database, so some caution is required in drawing conclusions about the precise extent to which community group activity is more prevalent in Scotland and South West England. However, the over-representation of Scotland and the South West from the available data are marked, so it is possible to be confident in drawing the conclusion that there has been more activity than would be expected in these areas since 2008 given the distribution of the UK population.



**Figure 5: Map illustrating all community groups identified in this study that have been active in the UK community energy sector since 2008**



## Deprivation of areas in which community energy groups are located

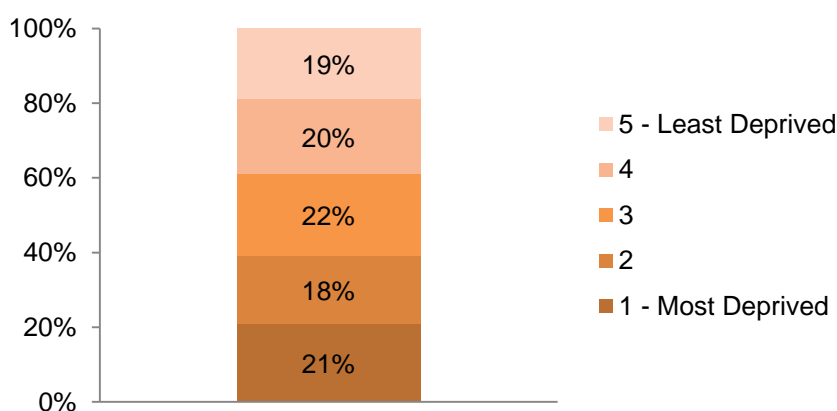
Further analysis of the geographical distribution of projects in England<sup>25</sup> suggests that the **scale** of community energy activity, in terms of number of groups, is similar from the most deprived areas of the country to the least deprived.

England is divided for statistical purposes into 32,482 areas each having roughly the same number of people. These are known as Lower layer Super Output Areas (LSOAs). The English indices of deprivation identify the most and least deprived LSOAs across the country. The Index of Multiple Deprivation (IMD) combines a number of indicators, chosen to cover a range of economic, social and housing issues, into a single deprivation score for each area in England. This enables all LSOAs to be ranked from the most deprived to the least deprived for the purpose of statistical analysis.

LSOAs can be grouped into quintiles according to their ranking (i.e. splitting the population of LSOAs into five groups, grouping the 20% that are most deprived followed by the next 20% and so on to the 20% that are least deprived). If community groups involved in the community energy sector are equally likely to be found in a particular area of England regardless of its level of deprivation, one would expect to find approximately 20% of community groups identified in this study to be found in each quintile of the IMD across England. As illustrated in Figure 6 below, this was broadly found to be the case for community groups in England for which it was possible to identify the LSOA in which the community group was based (n=2,627)<sup>26</sup>.

**Figure 6: Percentage of community groups in England undertaking located in each quintile of the Index of Multiple Deprivation (n=2,627)**

*The reader should note that this analysis relates to the level of deprivation of the area in which the community group is based rather than the level of deprivation of the individuals involved in co-ordinating the activities of the community group.*



<sup>25</sup> The analysis presented here covers England only. Each nation has its own index of deprivation, with differing methods of calculation, so it is not possible to provide robust analysis at the UK level. If a UK level deprivation index could be constructed, local socio-economic conditions in each nation would affect the overall deprivation ranking of community groups in England. As 73% of community groups in the master database are located in England, the overall results presented here can be considered indicative of the UK distribution. There was insufficient time in this study to repeat the deprivation analysis separately for each nation of the UK, but this could be explored further in subsequent research.

<sup>26</sup> i.e. Approximately 20% of community groups in England that were identified in conducting this study were in operation in each quintile of the IMD across England).



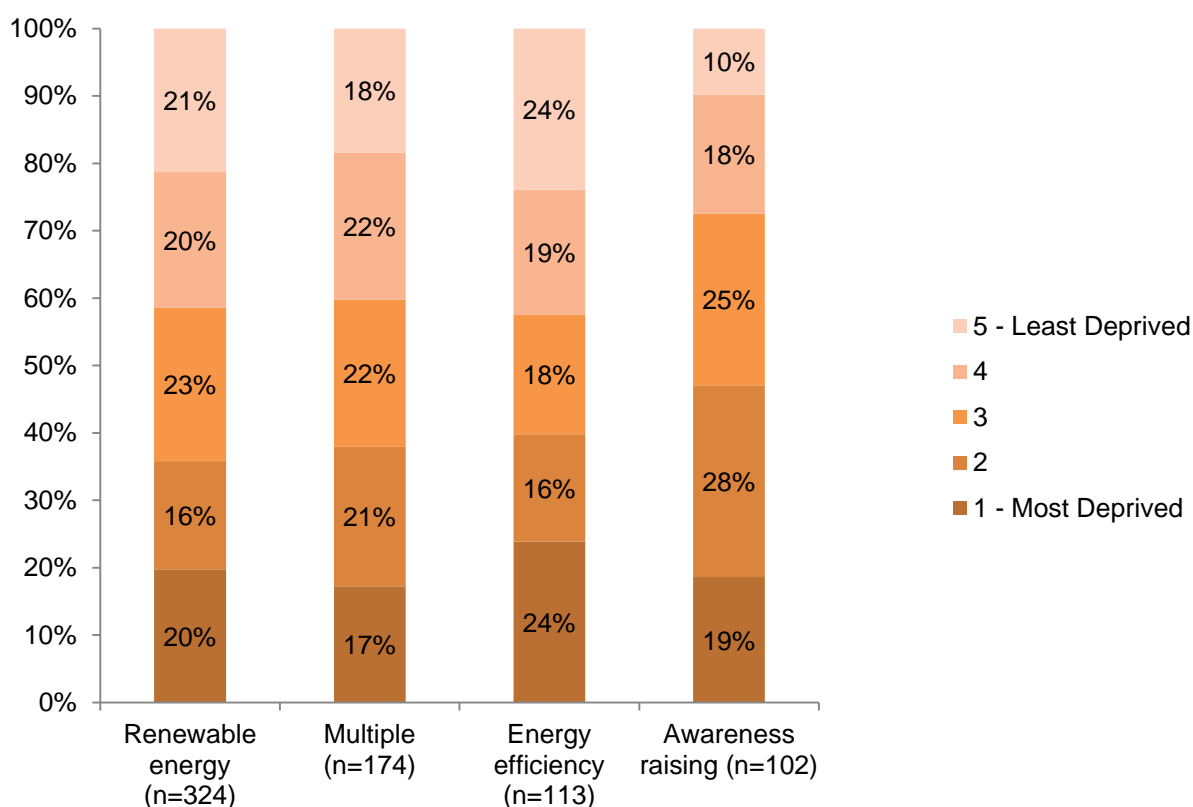
Further analysis suggests there may however be some variation in the **type** of activity being undertaken in areas with differing levels of deprivation:

- **The number of community groups solely undertaking projects to raise awareness of opportunities to improve energy efficiency appears to be higher in deprived areas than in areas of low deprivation.** For example, 47% of community groups solely undertaking awareness raising projects in England are found in the most deprived and second most deprived quintiles of the IMD with 10% being found in the least deprived quintile.
- **Groups undertaking renewable energy or multi-faceted projects appear to be more evenly dispersed across the quintiles of deprivation**, with approximately 20% being found in each quintile of the IMD in England. However, community groups solely promoting energy efficiency measures appear slightly more likely to be found in either the most deprived or least deprived quintile (24% in each quintile i.e. 48% in total).

Figure 7 below illustrates the proportion of community groups in England for which project type data were available and located in each quintile of the IMD (again where this could be ascertained from the available data<sup>27</sup>):

**Figure 7: Percentage of community groups in England undertaking particular types of energy project located in each quintile of the Index of Multiple Deprivation**

*The reader should note that this analysis relates to the level of deprivation of the area in which the community group is based rather than the level of deprivation of the individuals involved in co-ordinating the activities of the community group.*



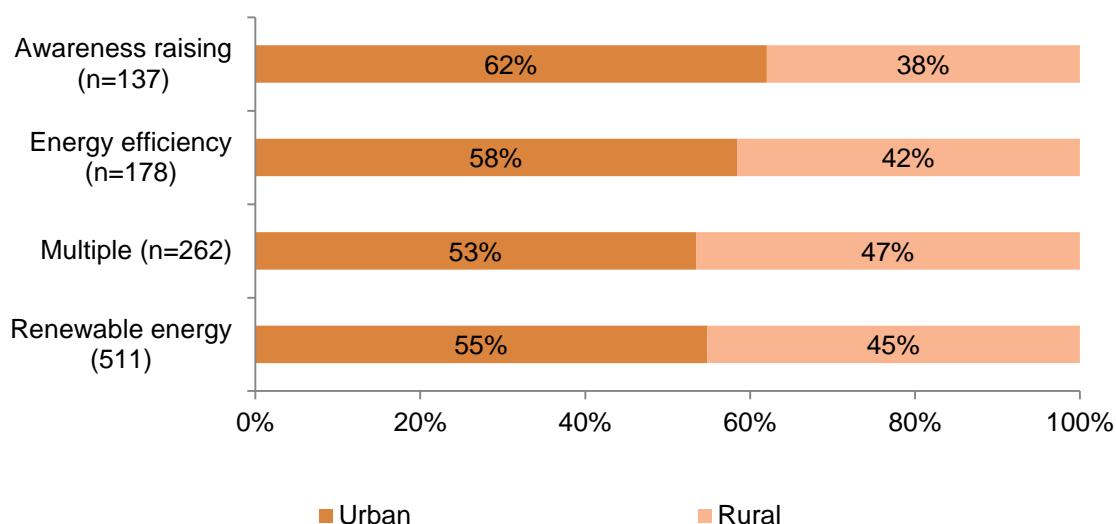
<sup>27</sup> i.e. The analysis presented here is based on the subset of the master database for which the relevant data were available.

## Urban/rural distribution of community energy groups

Using the postcode data gathered in compiling the master database, together with the ONS postcode directory<sup>28</sup>, it has been possible to code the urban / rural status of 3,607 of the 5,000 groups identified in undertaking this study. In total, 59% of these community groups were found to be situated in urban areas with 41% being located in rural areas. Whilst the majority of community groups are found in urban areas, the prevalence of community energy groups located in rural areas is much greater than one would expect. For example, approximately 18% of the population in England reside in rural areas<sup>29</sup>.

Information on the type of project conducted was only available for 1,088 of the 3,607 groups for which it was possible to identify whether they were located in rural or urban areas. Analysis of the available data (as illustrated in Figure 8 below) indicates the prevalence of community energy activity in rural areas is similar regardless of the type of project being undertaken:

**Figure 8: Analysis of the percentage of community groups in the UK undertaking particular types of energy project located in urban and rural areas**



The prevalence of community activity in rural locations is also apparent from other survey work conducted as part of the Community Innovation in Sustainable Energy (CISE) project<sup>30</sup>.

<sup>28</sup> <http://www.ons.gov.uk/ons/guide-method/geography/products/postcode-directories/-nspp-/index.html>. Output areas are treated as 'urban' if the majority of the population of an output area lives within settlements with a population of 10,000 or more.

<sup>29</sup> Based on analysis of data collected in ONS Census 2011

[https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/239288/Population\\_and\\_Migration\\_Indicators\\_Se\\_p13\\_update\\_.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/239288/Population_and_Migration_Indicators_Se_p13_update_.pdf)

<sup>30</sup> See *A thousand flowers blooming? An examination of community energy in the UK*. Gill Seyfang, Jung Jin Park, Adrian Smith. Energy Policy. October 2013

## Types of energy project being undertaken by community groups

From the evidence available from this study, it is known that, since 2008, at least:

- 190 community groups have considered, commenced or completed projects solely to raise awareness of energy use in their community
- 250 groups have considered, commenced or completed projects solely to promote specific energy efficiency measures
- 720 groups have considered, commenced or completed projects solely involving renewable energy technologies
- 400 community groups have considered, commenced or completed multi-faceted energy projects involving more than one of the elements above.

These figures are very conservative minimums, as project type data was not available for 2,500 Green Communities records in the master database<sup>31</sup>.

The table below summarises the number of community groups considering, commencing or completing particular types of energy project since 2008, drawing on the evidence available from compiling the master database and responses to the online survey.

**Table 1 Minimum number of community groups considering or undertaking particular types of project since 2008**

Type of project	Number of community groups	
	Online survey	Master database
Solely awareness raising	14	178
Solely energy efficiency	11	239
Solely renewable energy	50	715
Multi-faceted projects	77	387
Other <sup>32</sup>	9	4
Unknown	16	3,424
<b>Total</b>	<b>177</b>	<b>4,947</b>

<sup>31</sup> The most recent evaluation of the Green Communities programme suggested that 70% of groups in contact with EST through the Green Communities programme had undertaken or were considering undertaking multi-faceted energy projects (including a combination of awareness raising, energy efficiency and/or renewable energy elements), and 27% had solely undertaken or considered awareness raising projects. The available evidence suggests that the number of community groups undertaking projects involving awareness raising and/or energy efficiency is likely therefore to be significantly higher than the reported minimum figure.

<sup>32</sup> 'Other' comprises community groups undertaking or considering projects solely involving demand management, collective switching, or the development of local sustainability plans.

## Capacity for renewable energy generation

Data from the master database, online survey responses and desk research conducted in the timescale available for this study verifies that there is at least 49 MW of installed and operational community energy capacity. Total installed capacity will be higher than 49MW as data were not available from the master database for a number of known installations, particularly Solar PV projects<sup>33</sup>.

Table 2 below reports data from the master database for the total MW of renewable energy capacity installed, in development and planned for the 236 renewable energy generation projects in the UK where data was obtained on the planned or actual capacities of the installations<sup>34</sup>.

**Table 2 Capacity (in megawatts) of installed, in-development and planned UK renewable energy installations**

Stage reached by community group in renewable energy installation	Capacity (MW)	Electricity demand equivalent (estimated number of homes)
<b>Installed</b>	49	24,000
<b>In development</b>	81	41,000
<b>Planned</b>	139	72,000
<b>Unknown status</b>	164	83,000
<b>Total</b>	<b>433</b>	<b>220,000</b>

The installed capacity identified in this study is predominantly made up of a small number of large scale wind turbine projects (at least some of which appear to be joint-ventures rather than solely community led) and a larger number of relatively small scale renewables projects.

If all of the renewables projects identified in this research were to go ahead there would be opportunity to grow installed capacity to 433MW.

<sup>33</sup> A recent study reports that there is 59MW of installed and operational community energy capacity in the UK. See *"The Community Renewables Economy: Starting up, scaling up and spinning out"*. Jelte Hammeijer, Matthew Parsons, and Caroline Julian. ResPublica Green Paper, September 2013. This figure (59MW) has not been validated or integrated with the analysis conducted in this study as the publication was not available at the time the master database and capacity data were compiled. [http://www.respublica.org.uk/documents/yqq\\_Community%20Renewables%20Economy.pdf](http://www.respublica.org.uk/documents/yqq_Community%20Renewables%20Economy.pdf)

<sup>34</sup> All household and CO<sub>2</sub> estimates in this section are based on average load factors by technology type: 10.4% for solar PV, 24.5% for wind, 35% hydro (from Parsons Brinkerhoff Solar PV Cost Update May 2012 & Non PV Cost Data Jan 2012). Average UK household electricity demand of 4,227 kWh ("Energy Consumption in the UK 2013", DECC). 0.44548 kg CO<sub>2</sub> per kWh - Defra/DECC GHG conversion factors June 2013.

# Further insight to address evidence gaps

## Introduction

Work undertaken in the first stage of this research project identified that the existing evidence base provided limited insight in response to research questions identified by DECC and Consumer Futures as key to inform the forthcoming Community Energy Strategy.

This section considers the following priority research questions that were further explored in the second phase of the research to provide supplementary evidence to inform the Strategy:

- Why do communities engage with energy projects?
- How have community energy projects of different types and scales been funded?
- What structures are adopted by existing community groups undertaking energy projects in the UK (e.g. legal structure)?
- What factors are most critical in the success of community energy projects?
- What are the measurable benefits of community energy projects?

The majority of evidence presented in this section is drawn from responses to the online survey undertaken in the second phase of this study, which gathered responses from approximately 170 representatives (community groups and energy professionals) from the community energy sector. Analysis of the profile of respondents to the online survey suggests that the responses can be considered broadly representative of community energy groups in general, with the exception of those solely undertaking small-scale projects to raise awareness or promote energy efficiency measures<sup>35</sup>.

To contextualise the results, comparisons are drawn where possible with results from online survey work conducted by the University of Sussex and the University of East Anglia as part of the Community Innovation in Sustainable Energy (CISE) project<sup>36</sup>.

---

<sup>35</sup> Based on broad comparison with the master database in terms of the type of project activity being undertaken.

<sup>36</sup> The CISE survey provides opportunity for comparison as it included some similar areas of questioning and was targeted at a sample intended to be representative of the population of community groups involved in energy projects.

## Why do communities engage with energy projects?

### Summary

Addressing climate change or reducing carbon emissions was reported by respondents to the online survey to be the most important factor motivating community groups to become involved in community energy projects. This was followed by reducing energy bills and community income generation. This was true regardless of the stage that the community group had reached in their development or the type of project being considered or undertaken.

The most common goals that community groups have for the projects themselves are primarily described in environmental terms, with cost savings appearing to be a secondary concern. The top three goals and objectives from the online survey are:

- Improve the sustainability/self-sufficiency of the community
- Promote energy efficiency/renewable energy generation
- Reduce the amount of energy used by the community and/or their carbon footprint

Despite the top three goals being similar across different types and sizes of group, charities and larger, more established, groups with more than 10 members are more likely to cite regeneration of the economic, social and/or environmental aspects of their community as a motivation. Community groups with more than 50 members place equal importance on improving sustainability/self-sufficiency and bringing the community together.

Evidence from the online survey suggests that many of those responsible for driving projects involving renewables or large scale energy efficiency projects are from managerial, administrative and professional occupations. (e.g. engineers, architects, environmental and other professionals, some of whom are retired).

The commitment of facilitators/volunteers is seen as the most important facilitating factor in groups deciding to become involved in community energy projects. This suggests that personal motivation is a fundamental driving force in the development of community energy projects.

Committed organisers and volunteers are particularly important to small community groups. These were cited as the most important factor by community groups of all legal structures with exception of charities and companies limited by guarantee. In these two groups, community needs and awareness were cited as the most important factor enabling their group to become involved in community energy projects.

## Factors motivating community energy groups to become involved in energy projects

Addressing climate change was reported by respondents to the online survey to be the most important factor motivating community groups to become involved in community energy projects, followed by reducing energy bills and community income generation.

Respondents were asked to rank motivations from 1 to 3 in order of importance. Considering all responses, the overall ranking of motivations is illustrated in Table 3<sup>37</sup>.

**Table 3 Factors that motivate community groups to become involved in community energy projects**

Category	Rank
Addressing climate change/reducing carbon	1
Reducing energy bills	2
Community income generation	3
Alleviate fuel poverty	4
Improving community spirit / empowerment	5
Energy security	6
Job creation	7
Other environmental issues	8
Health benefits	9
Something else	10

Addressing climate change or reducing carbon was the top factor motivating community groups to become involved in community energy projects. This was the case regardless of the stage that they had reached in their development – those considering but yet to have undertaken their first energy project, those that have undertaken a single energy project and those that have undertaken more than one project.

Addressing climate change was also the top motivating factor regardless of the type of energy project. Another prominent concern was alleviating fuel poverty, which ranked 3<sup>rd</sup> for groups involved with projects excluding renewable energy generation.

Table 4 overleaf provides a breakdown of the overall rankings for community groups undertaking/considering projects involving renewables and those undertaking or considering projects not involving renewables.

The findings are broadly consistent with the results of recent survey work conducted as part of the CISE project. Saving money on energy bills and reducing carbon were the two most frequently cited factors motivating groups to become involved in energy projects.

<sup>37</sup> Motivations ranked as 1 (i.e. the most important motivating factor) were awarded a score of 3. Motivations ranked 2 were awarded a score of 2. Motivations ranked 3 were awarded a score of 1

**Table 4 Factors that motivate community groups to become involved in community energy projects by project type**

Category	Projects including renewable energy generation (n=108) Rank	Projects excluding renewable energy generation (n=53) Rank
Addressing climate change / carbon reduction	1	1
Community income generation	2	5
Reducing energy bills	3	2
Energy security	4	8
Improving community spirit/empowerment	4	4
Alleviate fuel poverty	6	3
Other environmental issues	7	9
Job creation	8	7
Health benefits	9	6
Something else	10	10

### Goals and objectives set by community groups involved in energy projects

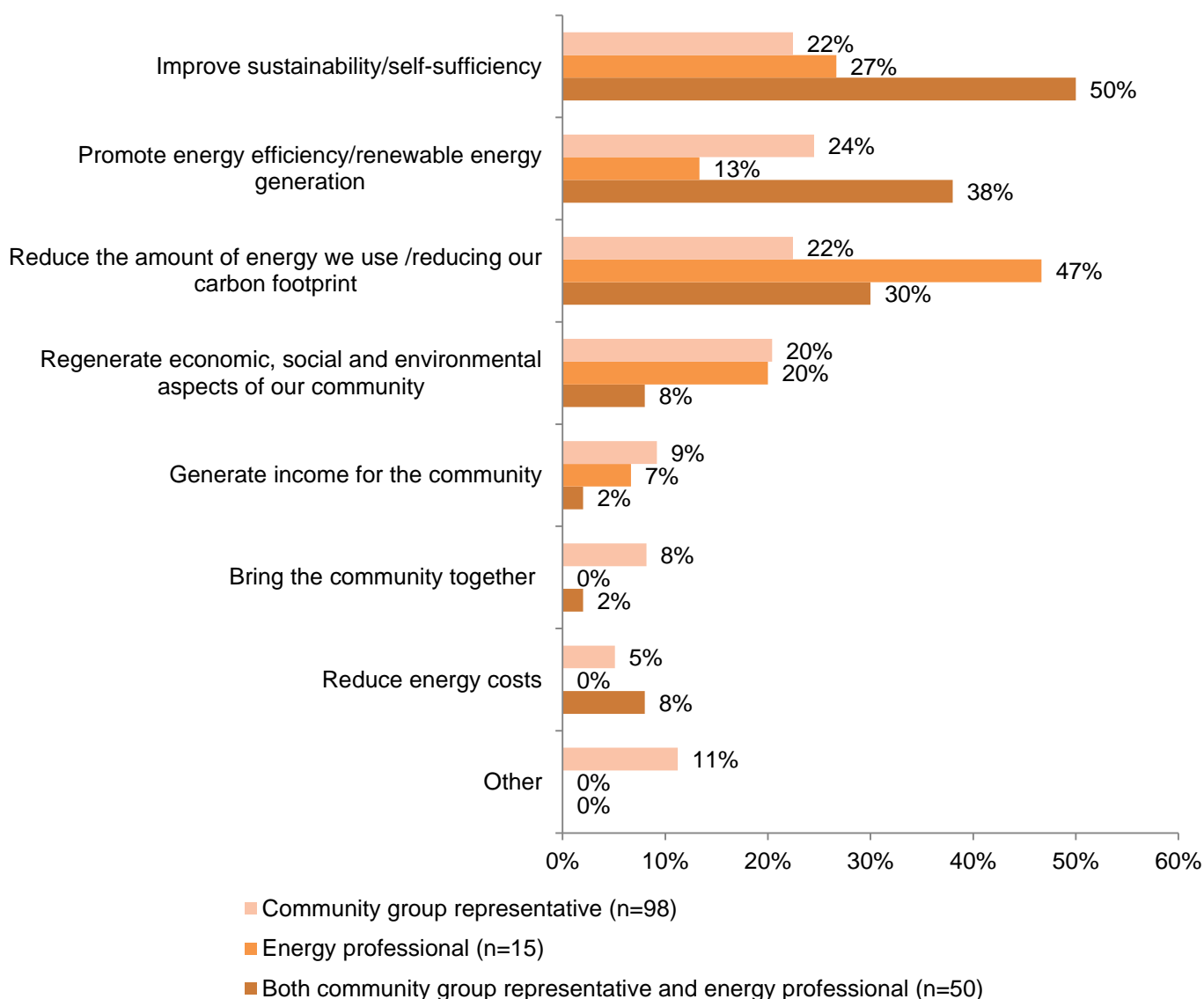
The main goals and objectives that community groups considering or undertaking energy projects have for the projects themselves are to:

- Improve the sustainability/self-sufficiency of the community
- Promote energy efficiency/renewable energy generation
- Reduce the amount of energy used by the community and/or their carbon footprint
- Regeneration; improving economic, social and environmental aspects of the community

Of the 177 community groups and energy professionals responding to the online survey, 163 survey reported on the main goals and objectives that they had when the group they represent decided to become involved in community energy projects. Responses were recorded in free text and later categorised into one or more key clusters of aims/ objectives. The proportion of respondents citing each aim/objective is shown in Figure 9.



**Figure 9 Main aims and objectives cited by community energy groups by type of respondent (multiple response)**



As shown above, the most common goal/motivation overall was to improve sustainability/self-sufficiency. This was closely followed by promoting energy efficiency/renewable energy generation and reducing the amount of energy used/carbon footprint<sup>38</sup>.

Despite the top three goals being similar across different types and sizes of group, charities and larger, more established, groups with more than 10 members are more likely to cite regeneration of the economic, social and environmental aspects of their community as a motivation. Community groups with more than 50 members place equal importance on improving sustainability/self-sufficiency and bringing the community together.

Examining differences in motivation by legal status shows little variation. The most common goal/motivation for all legal structures fell into one of the top three categories cited above (with

<sup>38</sup> It should be noted that many community groups cited multiple goals

the exception of Scottish charitable incorporated organisations, where the sample size was one).

One notable difference is that charities appear more likely to mention regeneration of economic, social and environmental aspects of their community, ranking it as the second most commonly cited motivation/goal (31%, i.e. 10 charities). The second most common motivation/goal for all other legal types also fell into one of the top three categories cited above.

Similarly, examining differences by size of community (number of active members) shows the most commonly cited motivation for all groups features in the top three. However, those with more than 50 members place equal importance on improving sustainability/self-sufficiency and bringing the community together (22% i.e. four groups with more than 50 members). Larger communities (both those with 10-15 members and 50+ members) also appear more likely to cite regeneration of the economic, social and environmental aspects of their community as a motivation. 25% of those with 10 or more members (i.e. 18 organisations) did so, compared to 10% of those with fewer than 10 members (i.e. nine organisations).

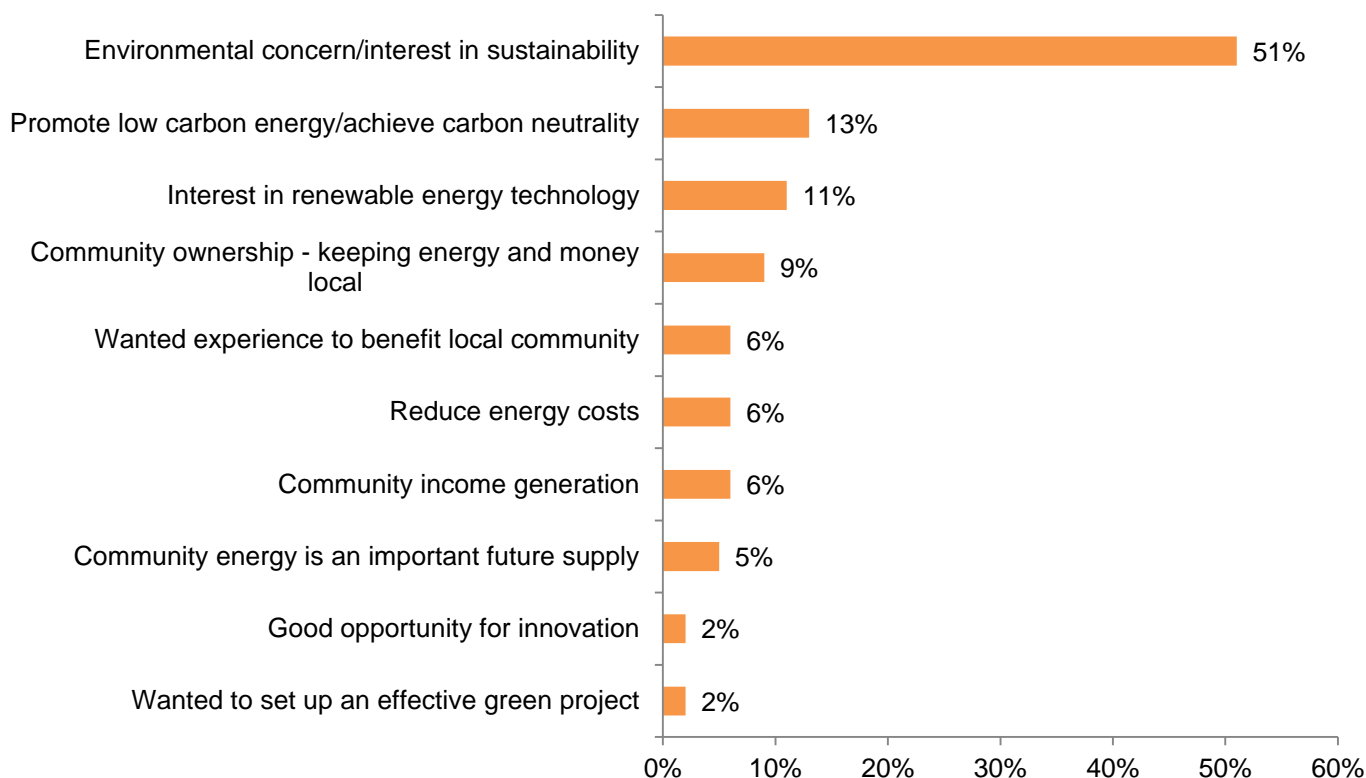
### **Personal motivations for involvement in the community energy sector**

Evidence from the online survey suggests that many of those responsible for driving projects involving renewables or large scale energy efficiency projects<sup>39</sup> are from higher or lower managerial, administrative and professional occupations. Whilst questions to assess socio-economic status were not directly included in the online survey, questions pertaining to how respondents became involved in community energy prompted many to identify their background. For example, many responses to the online survey were received from retired engineers, architects, environmental and other professionals.

Of the 177 community group representatives and energy professionals responding to the online survey, 127 reported on the reasons they personally decided to become involved in community energy projects. Reasons given were categorised into the key categories are shown in the figure below

<sup>39</sup> Types of activity that appear to be represented in the online survey responses through comparison with the master database.

**Figure 10 Personal reasons for involvement in community energy projects, multiple response (n=127)**



As shown above, over half of respondents cited environmental concern/interest in sustainability as the reason for personally getting involved in community energy projects. For energy professionals, involvement often stemmed from their professional involvement or educational qualifications. Overall, environmental concern was the most cited reason for getting involved regardless of respondent type. Some non-energy professionals responding to the survey on behalf of their community group cited an environmental background.

Groups involved with projects excluding renewable energy generation were slightly more likely to state an interest in sustainability as a reason for involvement (56%), compared with groups who are involved with projects including renewable energy generation (48%).

Environmental concern/interest in sustainability was found to be the top motivation regardless of the size or legal status of the group represented by the respondent<sup>40</sup>, though promoting low carbon energy / achieving carbon neutrality was cited as often as general environmental concern by respondents from community groups with over 50 members.

<sup>40</sup> With the exception of Scottish charitable incorporated organisations, where the sample size was one.

## What are the factors that enable groups to become involved with community energy?

The commitment of organisers/volunteers is seen as the most important facilitating factor in groups deciding to become involved in community energy projects. This suggests that personal motivation is a fundamental driving force in the development of community energy projects.

161 community group representatives and energy professionals supporting community groups reported on factors that enabled their group to become involved in community energy projects.

In all cases, whether a group is considering or planning to undertaking their first community energy project, or has undertaken multiple projects, committed volunteers are reported to be the most important enabling factor encouraging the group to consider undertaking a community energy project.

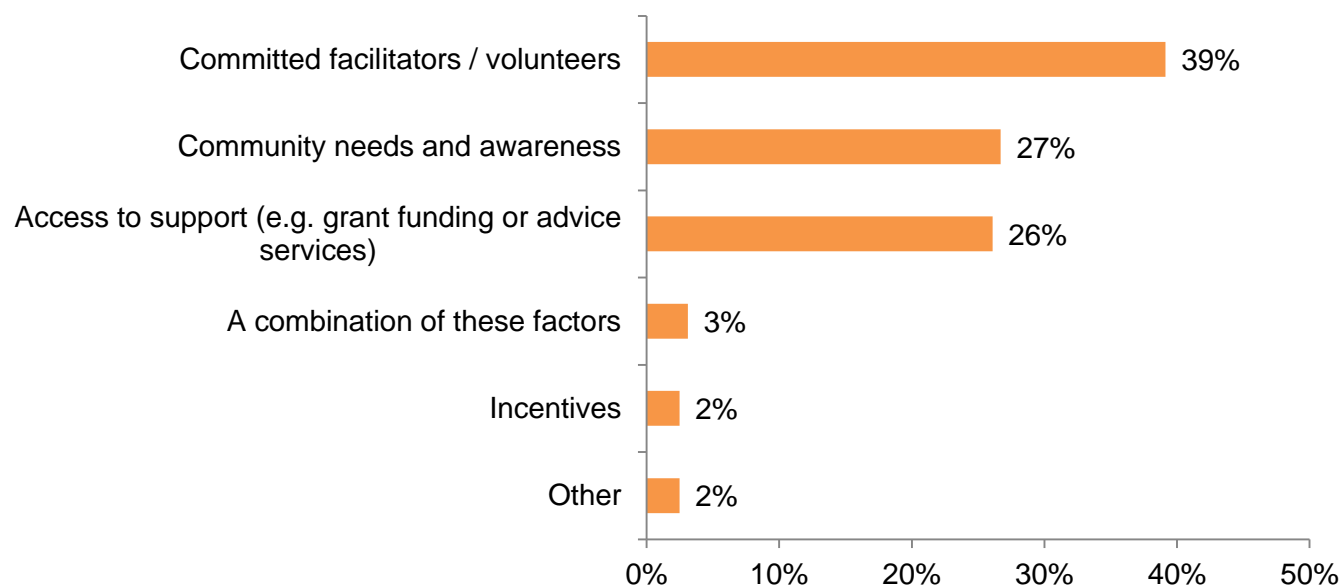
Committed organisers and volunteers are particularly important to small community groups. 63% of groups with five or fewer active members that regularly participate in the activities of the group indicated that committed organisers/volunteers was the most important facilitating factor compared to 35% of those with 50 or more active members.

Committed organisers/volunteers was cited as the most important factor by community groups of all legal structures with exception of charities and companies limited by guarantee. For these groups, community needs and awareness were cited as the most important factor facilitating their group to become involved in community energy projects.

There was little variation in the enabling factors cited by community groups undertaking different types of energy project.

Figure 11 illustrates the proportion of respondents citing particular factors that enabled groups to become involved in community energy projects. The results from the online survey conducted in this study are similar to those obtained in the CISE survey.

**Figure 11 Factors that enabled groups to become involved in community energy projects (n=161)**



## How have community energy projects of different types and scales been funded?

### Summary

Grant funding has historically played a prominent role in driving projects in the community energy sector, particularly those involving renewables or large scale promotion/installation of energy efficiency measures. However the evidence available from the online survey indicates that recent community activity has drawn less extensively on grant funding, and anticipates being less reliant on grant funding for planned projects. Instead, projects are drawing more heavily on alternative sources of funding including loans and share offers.

The available evidence also suggests that groups undertaking projects involving renewables are more likely than those working on other projects to access non-grant funding (e.g. share and debt offers, and Feed-in Tariffs). Those undertaking or considering projects excluding renewable energy are more likely to have accessed or planned to access grant funding. Groups involved with projects excluding renewable energy generation also access charitable funding more often than groups involved with projects including renewable energy generation.

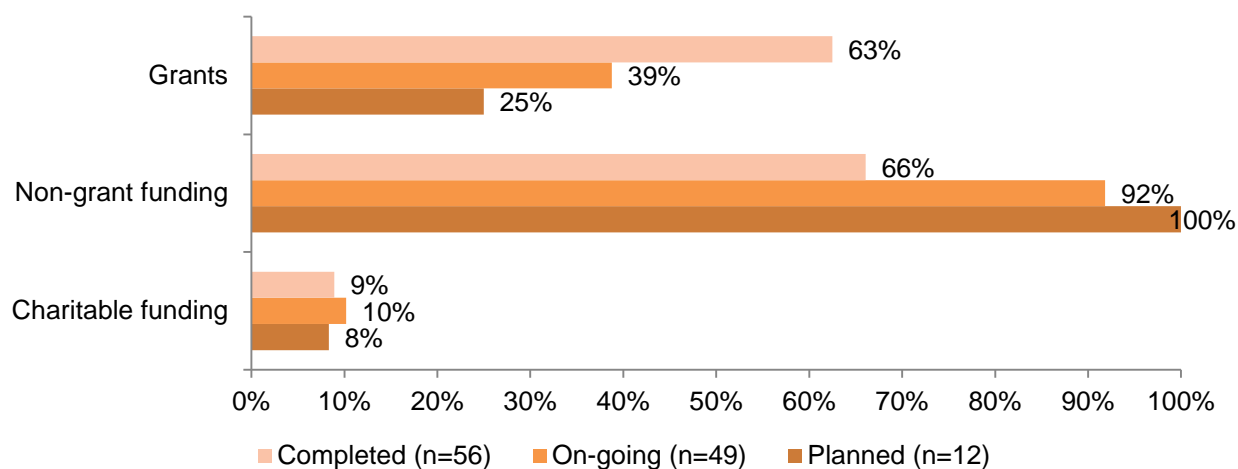
Community groups responding to the online survey were asked to provide details about the way in which they had funded or were intending to fund the energy projects they had undertaken or were intending to undertake. Respondents were asked to indicate whether the projects had or would receive funding from each of the following sources:

- **Grant funding**
- **Other charitable funding** – for example, company giving, in-kind funding, philanthropy
- **Non-grant funding** – for example, subsidy schemes (FITs, RHI, RHPP2), fund raising activity, local share issue, community bonds, private investment

Where respondents returned details of project funding:

- 55% (56/102) of completed projects returned a breakdown of funding sources
- 68% (49/74) of on-going projects returned a breakdown of funding sources
- 38% (12/30) of planned projects returned a breakdown of funding sources.

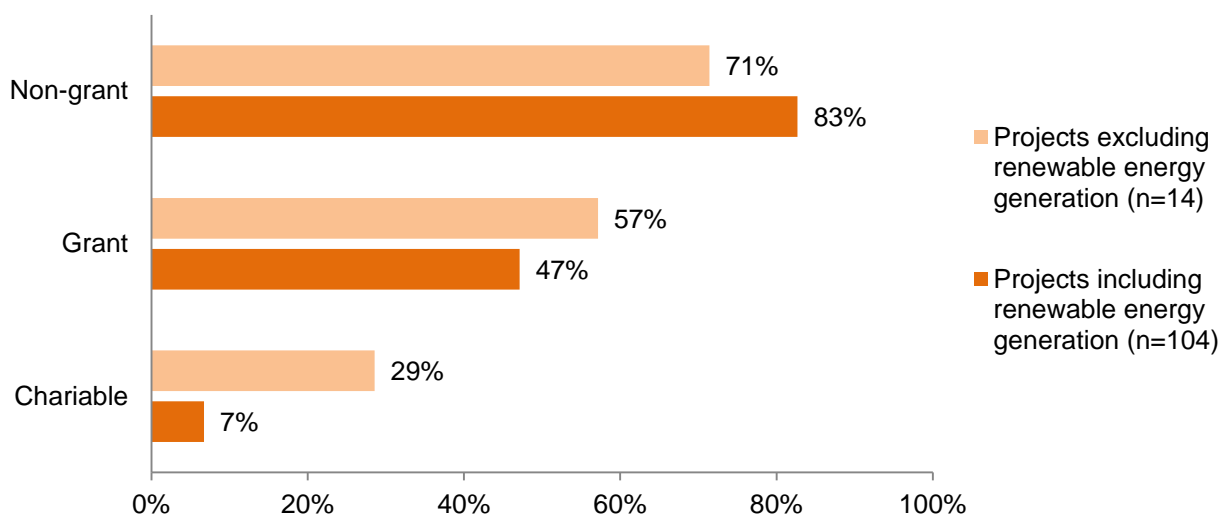
The use of funding from these sources for projects which are completed, on-going and planned is shown in Figure 12.

**Figure 12 Breakdown of funding type used by project completion status**

Although the sample size of projects for which data are available is small, the responses do provide a clear indication that current and future activity has drawn less extensively on grant funding<sup>41</sup>. Respondents anticipate being less reliant on grant funding for planned projects, drawing more heavily on alternative sources of funding including loans and share offers. There was insufficient scope within the context of the online survey to understand the precise reasons for this trend.

The available evidence also suggests that groups undertaking or considering projects excluding renewable energy were more likely to have accessed or planned to access grant funding compared to groups involved with projects including renewable energy generation. A higher proportion of groups with projects involving renewables reported non-grant funding such as share and debt offers and Feed-in Tariffs. Groups involved with projects excluding renewable energy generation also access charitable funding more often than groups involved with projects including renewable energy generation, as illustrated in Figure 13:

<sup>41</sup> This is consistent with findings from survey work undertaken in the context of the Community Innovation in Sustainable Energy (CISE) project.

**Figure 13 Breakdown of type of funding by type of project**

The remainder of this section summarises the data provided in the online survey regarding the funding of completed, ongoing and planned projects, including analysis of the sources and types of non-grant funding cited in each case.

As the amount of money involved in each category is subject to a high degree of variation, the figures should be treated as solely indicative of the amount of funding raised from each form of funding. Although the survey asked respondents to indicate both the source and form of funding, the vast majority of respondents did not indicate the source or cited multiple sources of particular types of funding without providing a breakdown. Therefore, whilst it is possible to report how much funding appears to be coming from grants, other charitable funding and non-grant funding, it is not possible to provide a breakdown of this funding by source.

### Completed projects

The table below summarises the profile of funding reported in the online survey for completed projects:

**Table 5 Analysis of funding utilised by completed projects**

Funding Category	Sample size	Minimum	Maximum	Median
Grant Funding	35	£1,000	£110,000	£15,000
Charitable funding	5	£4,000	£200,000	£28,000
Non-grant funding (e.g. loans / share offers)	37	£300	£2,500,000 <sup>42</sup>	£21,000

Loans (56%), share offers (31%) and sponsorship (16%) were the most commonly cited form of non-grant funding, though some respondents indicated the source of non-grant funding (e.g. Councils, Development Trusts) rather than the precise form in which the funding was provided.

<sup>42</sup> The second highest amount of non-grant funding was £200,000. The £2.5m project – a joint-venture agreement with a renewables developer – could therefore represent an outlier although sample size is too low to be confident in this assessment.

A proportion of projects undertaken by all types of group providing a response (charities, community benefit societies and community interest companies) had used loans to fund at least one of the energy projects they had completed. This use of loans was more prevalent among the community benefit societies. This included use of loans for Solar PV, hydro and boiler replacement projects. Only Community Interest Companies had sought funding from sponsorship.

Interestingly, albeit based on small numbers, the responses suggest that individual community groups completing multiple energy projects have had a tendency to use similar funding mechanisms across more than one project.

### Ongoing projects (i.e. projects that have commenced, but are ongoing or have yet to be completed)

The table below summarises the profile of funding reported in the online survey for ongoing projects:

**Table 6 Analysis of funding utilised by ongoing projects**

Funding Category	Sample size	Minimum	Maximum	Median
Grant Funding	19	£800	£200,000	£35,000
Charitable funding	5	£1,800	£105,000	£5,000
Non-grant funding	45 <sup>43</sup>	£850	£4,000,000	£50,000

Share offers (49%), debt offers (29%) and loans (22%) were the most commonly cited form of non-grant funding used for ongoing projects, though some respondents again indicated the source of non-grant funding (e.g. Councils, Development Trusts) rather than the precise form in which the funding was provided.

The available evidence suggests that share offers are a much more common form of funding for ongoing projects than has been the case for completed projects. The findings also highlight the emergence of debt offers, which were not mentioned at all as a way in which completed projects had been funded.

Use of non-grant funding was cited for a proportion of projects undertaken by all types of community group providing responses about ongoing projects (including charities, community benefit societies, community interest companies, companies limited by guarantee, co-operatives, industrial and provident societies and other forms of community group).

<sup>43</sup> An additional project did report receiving non-grant funding but did not provide a figure as to its value hence the sample size is 45.



### Planned projects (i.e. projects that have yet to commence)

The table below summarises the profile of funding reported in the online survey for planned projects.

**Table 7 Analysis of anticipated funding for planned projects<sup>44</sup>**

Funding Category	Sample size	Minimum	Maximum	Median
Grant Funding	3	£5,000	£3,500,000	£9,000
Non-grant funding	12	£50,000	£8,000,000 <sup>45</sup>	£1,000,000

Interestingly, in terms of total funding, some of the planned projects reported in the online survey appear to be much larger than projects reported as complete by community groups.

All of those expecting to receive non-grant funding providing a response to the question on the type of non-grant funding they anticipating using said they expected to generate funding from share offers. All but one also expected to generate funding from debt offers.

<sup>44</sup> One respondent also stated that they anticipate receiving £10,000 of charitable funding.

<sup>45</sup> The largest project involved funding wind turbines through debt and local share offers. The next largest amount was £2.2m.

## What legal structures are adopted by existing community groups undertaking energy projects in the UK?

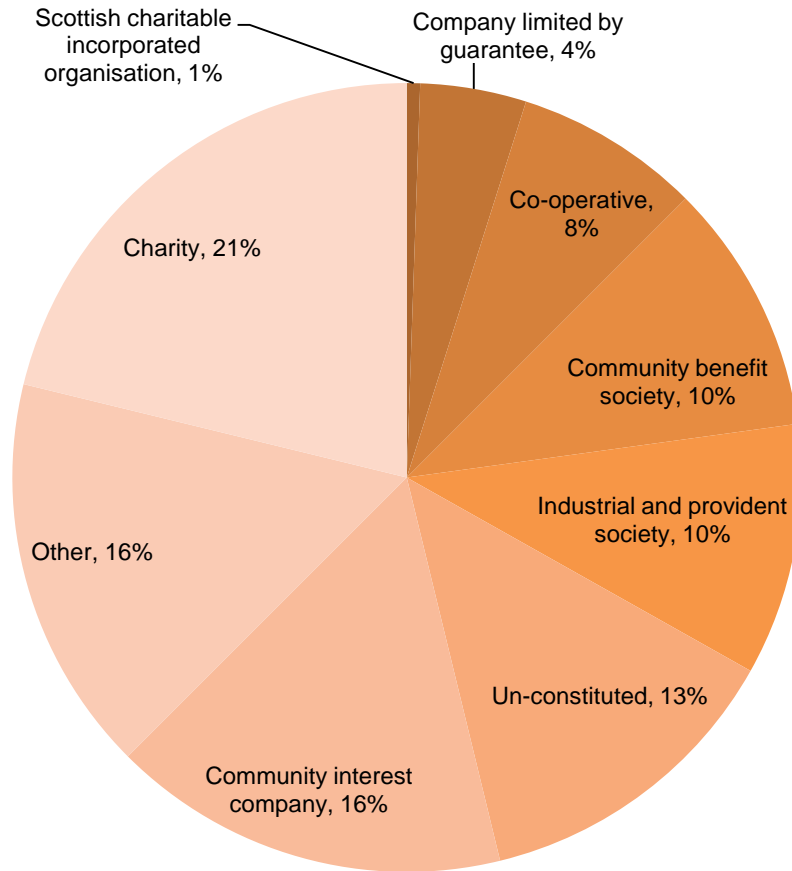
Community groups undertaking energy projects in the UK have a diverse range of legal structures. Consistent with other evidence pertaining to recent developments in the community energy sector<sup>46</sup>, findings from the online survey suggest the profile of the sector in respect of legal structure has evolved considerably in recent years. A substantial number of Community Interest Companies, Industrial and Provident Societies, Community Benefit Societies and Co-operatives responding to the online survey had been registered in the last three years. Although, relatively few groups responding to the online survey established since 2010 have formed charities, two thirds of groups responding to the online survey that were formed prior to 2000 are charities.

The legal structure of community groups **responding to the online survey** – the best insight into the current profile of groups with interest or involvement in undertaking significant energy projects that go beyond small scale awareness raising activities – can be found in the chart below:

---

<sup>46</sup> As reported earlier in the report, from Community Shares Unit data it is known that around 80% of the 150 Industrial and Provident Societies (IPs) in the UK with a renewable energy focus were registered in the last three years. The overall profile of respondents by legal structure also appears to be similar to that found in survey work undertaken by the University of East Anglia and University of Sussex as part of the Community Innovation in Sustainable Energy (CISE) project. The CISE survey found that 79% projects were formed between 2007 and 2011 and that the average age of a community group was 4.2 years

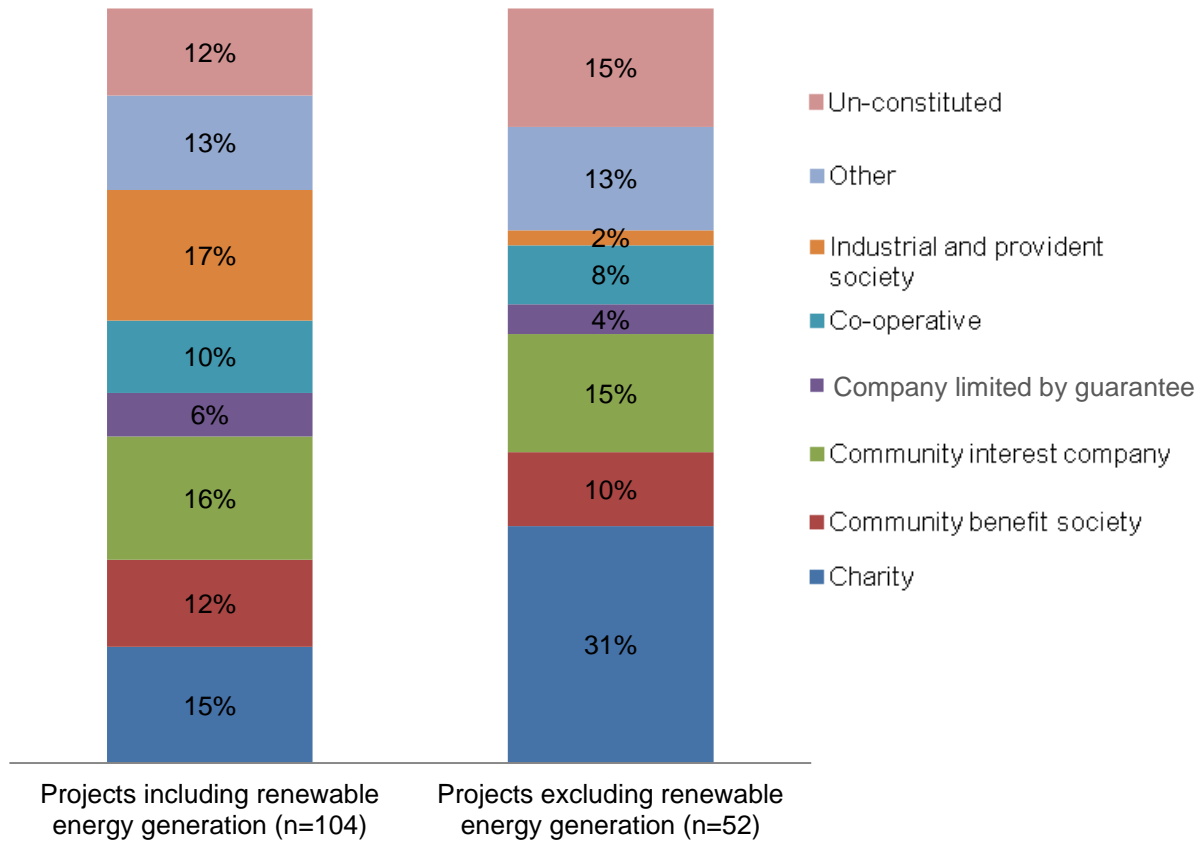
**Figure 14 Legal status based on online survey responses (n=177)**



It was not possible to disaggregate the groups similarly by legal structure in the master database, as groups were categorised in different ways.

The online survey also provides insight into the type of energy project activity being undertaken by groups with particular legal structures. As illustrated in Figure 15, Community groups who are involved with projects including renewable energy generation have a variety of legal forms. The legal structures of groups whose projects do not involve renewable energy generation appear to be less varied, with a high proportion of these groups being charities (31%).

**Figure 15 Legal structure of groups involved with different types of project**



Industrial and provident societies (IPSs) tend to be involved with multiple projects including renewable energy generation (11%), single renewable energy projects (25%) or sustainability projects. Few IPSs responding to the online survey were involved with projects not including a renewables component. A substantial proportion of projects not involving renewables are charities (31%).

## What factors are most critical in the success of community energy projects?

The most critical factors affecting the feasibility and success of community energy projects, in order of prevalence are:

1. Securing funding
2. Support from local community / members
3. Co-operation of/support from other organisations
4. Government policy (e.g. FITs)

Having local skills and knowledge and access to expert advice were reported as being critical by only a minority of respondents.

Groups involved with renewable energy projects were more likely than those not involved in renewable energy to cite the government policy landscape as a factor critical to the success of their projects.

Access to funding was cited as a critical success factor more often where groups were involved with projects excluding renewable energy generation.

105 community group representatives and energy professionals supporting community groups reported on the factors that are critical to the success of their community energy project.

The most critical factors affecting the feasibility and success of community energy projects, in order of prevalence are:

1. Securing funding (46%)
2. Support from local community / members (37%)
3. Co-operation of/support from other organisations (30%)
4. Government policy (e.g. Feed-in Tariffs) (27%).

Table 8 summarises the responses.

**Table 8 Factors that are critical to the success of community energy projects**

Critical success factors	Percentage of sample	Count
<b>Funding</b>	46%	48
<b>Support from local community / members</b>	37%	39
<b>Co-operation of/support from other organisations</b>	30%	32
<b>Government policy (e.g. FITs)</b>	27%	28
<b>Local skills and knowledge</b>	8%	8
<b>Access to expert advice</b>	4%	4

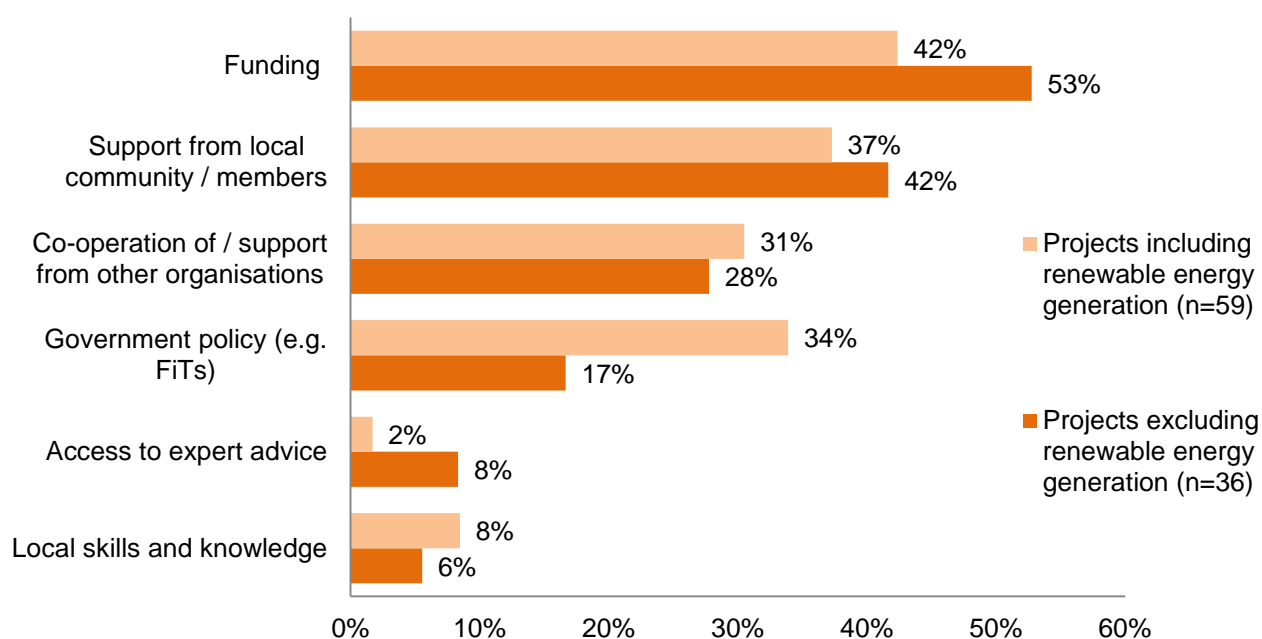
Having local skills and knowledge and access to expert advice were reported as being critical by only a minority of respondents. It is possible that these needs are satisfied by community group leaders and members. If this is the case, this finding should be interpreted as indicating that additional support is only required in a minority of cases.

Groups involved with renewable energy projects were more likely than those not involved in renewable energy to cite the government policy landscape as a factor critical to the success of their projects. Over half of the groups involved with renewable energy projects stated that government policy was critical to the success of their project.

Access to funding was cited as a critical success factor more often where groups were involved with projects excluding renewable energy generation.

Figure 16 below illustrates the critical success factors cited by community groups involved in renewables projects compared to those involved in projects with no renewable energy generation.

**Figure 16 Factors critical to the success of community energy projects by project type**



The factors cited in the online survey as being critical to the success of community energy projects appear to be similar to those identified in survey work undertaken as part of the CISE project.

## What are the measurable benefits of community energy projects?

### Summary

The existing evidence base and the data captured in the online survey undertaken in this project are insufficient to draw robust quantitative conclusions about the impact and cost effectiveness of community energy projects.

Many community groups do not monitor the impact of their activity. The information that currently exists has been developed using different methodologies and usually only collects data on direct impacts of projects rather than wider benefits across the participating communities.

One of the key added value benefits of community-led renewables projects is that the income generated from the project is generally recycled in the community. However, the existing evidence base provides limited insight into precisely how the income is used and, therefore, the lifetime benefits of the project.

Other conclusions arising from the study in respect of the impact and cost effectiveness of community energy activity in the UK are as follows:

- Currently existing information on the impact of community activity on energy shows a significant bias towards renewable energy, with much less information available for other types of project.
- The impact information reviewed for this report suggests that cost effectiveness is not easy to calculate for community energy initiatives and is likely to vary widely for any future schemes. This is because cost-effectiveness can be widely influenced by type of project undertaken, capacity and experience of the groups involved, delivery model and local factors such as support from local authorities and demographics of the area. So in some instances, lower cost effectiveness calculations may appear to indicate poor performance by individual schemes when in fact they are performing at a high value for money rate, and vice versa.
- The effectiveness of early stage grant funding to successful community groups can improve over time as the group's portfolio of projects matures. This should be taken into account in planning future evaluation work on community energy activity.

The existing evidence base and the data captured in the online survey undertaken in this project are insufficient to draw robust conclusions about the impact and cost effectiveness of community energy projects. The key issues are that:

1. Many community groups do not monitor the impact of their activity. By its nature, community energy activity tends to be more focused on taking action than research, evaluation and monitoring as volunteers tend to be motivated by achieving environmental/sustainability benefits or cost savings.
2. Those groups that do monitor their activity do not all use the same metrics and techniques for monitoring impact. This is compounded by the fact that funders do not use common metrics and are a key driver behind monitoring and evaluation of community energy projects.
3. Undertaking a robust assessment of the impact of community energy projects requires assessment of the counterfactual – i.e. what would have happened in the absence of the project/action taken by the community group. However, determining the counterfactual is difficult as there are a wide range of factors affecting behaviour change and the uptake of energy efficiency and renewable energy systems. Ensuring that these factors have similar weight in a comparator area is not usually possible. Background levels of uptake could be determined nationally to provide a baseline, but the effect of support regimes would need to be taken into consideration (in particular the transition from CERT to ECO/Green Deal and the introduction of FITs).

It was beyond the scope of the timescales and resources available for this work to attempt to undertake a robust assessment of the counterfactual<sup>47</sup> for community energy activity.

Nevertheless, it was agreed that:

- a. The online survey would include questions to attempt to gather data from community groups about the gross impacts of individual projects, where this had been monitored / measured by the respondent.
- b. Any data that could be gathered in the online survey would be reviewed alongside the impact data available from the recent evaluation of LEAF to:
  - i. Understand the benefits of community energy activity that are monitored/measured
  - ii. Explore the reliability of these data
  - iii. Conduct exploratory analysis of the available data to explore what (if anything) can be concluded about the cost effectiveness of community energy activity.

The key conclusions arising from reviewing the impact and cost effectiveness of community energy projects in this study are as follows:

- A single generic figure for cost effectiveness of community energy projects would not be helpful due to the diversity of community activity on energy.

<sup>47</sup> It is not possible within the context the primary research undertaken in this study – an online survey – to assess the counterfactual.



- There is currently not enough robust data to generate figures on cost effectiveness of community energy projects. The information that currently exists has been developed using different methodologies and usually only collects data on direct impacts of projects rather than wider impacts across the participating communities.
- Currently existing information on the impact of community activity on energy shows a significant bias towards renewable energy. Reasons for this bias include:
  - Impact of larger renewable energy systems is easier to calculate or predict as kW installed for a system is usually known from midway through the development process. Yield from the installation can often be estimated at the same time enabling the production of carbon reduction figures.
  - Feed-in Tariff has provided a strong support regime enabling many communities to bring forward renewable energy projects and establish self-supporting social enterprise structures with FIT and electricity generation revenues.
  - Monitoring of domestic energy efficiency activity is dependent on tracking multiple transactions or behaviours across many households, making it difficult to generate accurate, reliable figures.
- The information reviewed for this report suggests that cost effectiveness is likely to vary widely for any future schemes. This is due to a number of factors; the type of project undertaken, capacity and experience of the groups involved, delivery model and local factors such as support from local authorities and demographics of the area. This means that cost effectiveness, even for the same activities is likely to vary widely and lower cost effectiveness does not always indicate poor performance by communities.
- Evidence reviewed in the analysis suggests that the cost effectiveness of early stage grant funding to successful community groups can improve over time as the group's portfolio of projects matures. This should be taken into account in planning future evaluation work on community energy activity.

Indicative ranges of cost effectiveness could be developed for some community energy activities that government may wish to support in future (such as area-based approaches to promoting energy efficiency or establishing community-owned PV on commercial or community buildings). In order to generate meaningful benchmark figures, longitudinal studies would need to be carried out, working with community groups to implement and monitor each type of activity over at least three years. Longitudinal studies would enable a better understanding of both the impact of the activities (which can be difficult to establish until the project is fully implemented) and the overall cost of achieving these impacts<sup>48</sup>.

---

<sup>48</sup> Anecdotal evidence indicates that the overall impact and cost effectiveness of community group activities is likely to improve as the group matures and expands its portfolio of projects. A longitudinal study would enable this to be explored in more depth, providing opportunity to consider how group evolution and development affects impact and cost effectiveness. It also presents opportunity for follow-up studies to better understand the level and persistence of behaviour change within the community and to collect data in a consistent format over time.

It may be possible to carry out a retrospective study with groups that have already delivered activity, but that would require additional survey work. If this is pursued, the influence of different funding regimes would need to be considered (e.g. the impact of the introduction of FIT or the end of the CERT regime) to ensure any benchmarks would still be relevant.

Recent developments in the monitoring and evaluation of community energy projects may provide opportunity to better evaluate the impact of energy efficiency and awareness raising projects in future. For example, the impact model and data portal developed to support the evaluation of Community Action Group (CAG) activity in Oxfordshire provides a practical means for community groups to estimate the impact of their activities. It achieves this by providing a framework for community groups to capture basic activity data (e.g. number of households approached) coupled with small scale follow-up to estimate percentage taking action and type of action<sup>49</sup>. This information is combined with data published by DECC, the Energy Saving Trust and other data available in the public domain to produce an estimate of impact. The framework also supports community groups in making a basic attribution assessment to identify householder/community actions that may have been taken anyway in the absence of the community energy project.

We recommend that the development of a consistent framework for gathering data about the impact of community energy projects would be enormously beneficial to future attempts to quantify the impact and cost effectiveness of community energy projects.

---

<sup>49</sup> See <http://www.cagoxfordshire.org.uk/impact-model>

# Plans for the future

## What are the plans of existing community energy groups to undertake future projects?

### Summary

It is known from the work undertaken in this study that there are at least 347 community energy projects in delivery or in the pipeline. The actual number of projects is likely to be much higher as it is clear from the evidence of the online survey that the master database has limited coverage of recent developments and planned projects.

Evidence from the online survey indicates that a substantial number of groups are considering or are already planning renewable energy projects, with most relating to Solar PV, Wind or Hydroelectric power.

A smaller proportion of groups are also planning projects to promote installation of specific energy efficiency technologies and behaviours or intend to raise awareness of energy use in the community and change energy behaviour.

A small number of groups are considering developing or contributing to a local sustainable development strategy. A few groups are also considering collective switching projects, or energy storage.

The majority of planned projects reported in the online survey are expected to commence by the end of 2014.

A large proportion of those in the process of planning new projects are still in the process of overcoming challenges that could affect the scale, scope and/or timescale of the project. The most significant challenge affecting the time scale or scope of projects under consideration is funding. Securing buy-in from the local community / potential customers and planning consent/Environment Agency approval are the next most common barriers

In spite of this, the majority (approximately two thirds) of community groups are confident that they will be able to overcome some or all of the challenges without altering their project design.

In the course of compiling the master database and analysing the responses to the online survey, 347 energy projects in delivery or in the pipeline have been identified. The actual number of projects is likely to be much higher as it is clear from the evidence of the online survey that the master database has limited coverage of recent developments and planned projects.

Table 9 provides a breakdown of the types of projects identified as currently in delivery or in the pipeline:

**Table 9 Number of groups with projects in delivery / in the pipeline**

Type of project and stage of development	Number of community groups		Total (after adjusting for overlaps)
	Online survey	Master database	
<b>Multi-faceted projects</b>	<b>12</b>	<b>97</b>	<b>97</b>
In delivery	9	81	81
Pipeline	3	16	16
<b>Renewable energy</b>	<b>21</b>	<b>133</b>	<b>149</b>
In delivery	2	60	60
Pipeline	19	73	89
<b>Energy efficiency</b>	<b>3</b>	<b>31</b>	<b>32</b>
In delivery	2	28	28
Pipeline	1	3	4
<b>Awareness raising</b>	<b>2</b>	<b>31</b>	<b>31</b>
In delivery	2	29	29
Pipeline	0	2	2
<b>Unknown type</b>	<b>11</b>	<b>27</b>	<b>38</b>
In delivery	0	18	18
Pipeline	11	9	20
<b>TOTAL</b>	<b>49</b>	<b>320</b>	<b>347</b>

Evidence from the online survey indicates that:

- A substantial number of groups are considering or are already planning renewable energy projects. The majority are planned/considered projects involving Solar PV, Wind Turbines or Hydroelectric power. Other renewable energy technologies under consideration include CHP, AD and Biomass heating
- A smaller proportion of groups are also planning projects to promote installation of specific energy efficiency technologies and behaviours or intend to raise awareness of energy use in the community and change energy behaviour. A small number of groups

are considering developing or contributing to a local sustainable development strategy. A few groups are also considering collective switching projects, demand storage (i.e. energy storage).

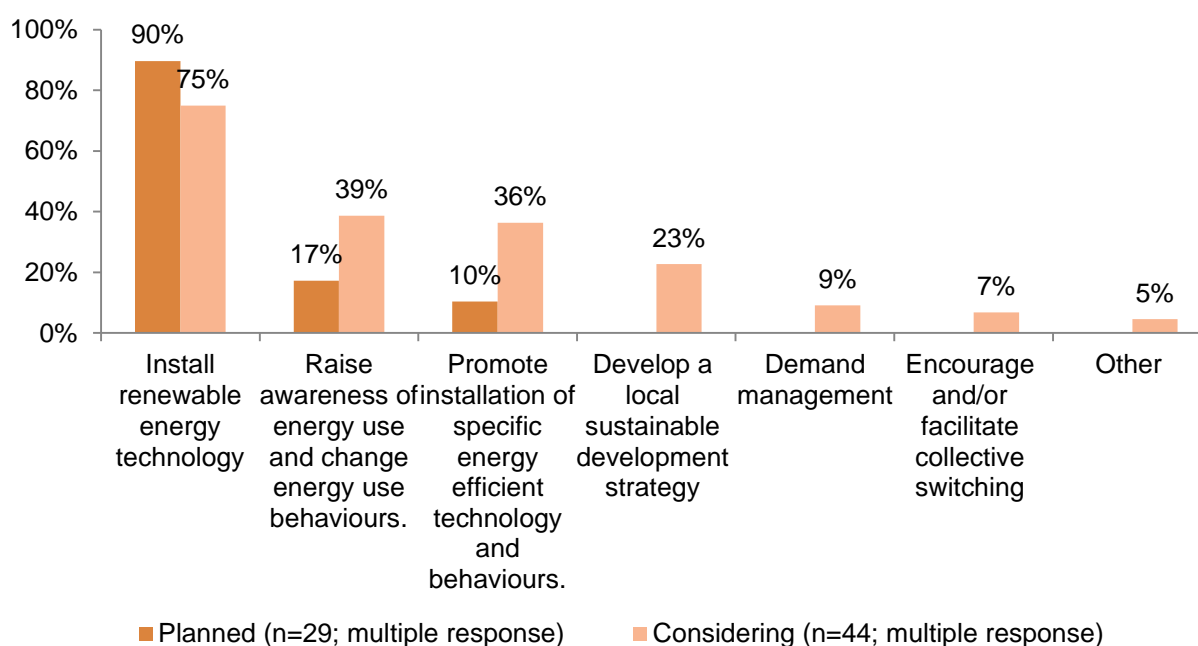
The majority of planned projects reported in the online survey are expected to commence by the end of 2014.

Overall, 60 community groups responding to the online survey reported that they are planning or considering a total of 73 projects in total. Of the 76 projects:

- 30 were described as planned which often had more definite plans/ideas in place
- 46 were described as projects respondents were considering, and consequently often had less definite plans/ideas in place.

Where respondents were able to specify the types of projects that were under consideration the breakdown by type is shown in the graph below:

**Figure 17 Percentage of projects that are under consideration or planned falling under each type (multiple response)<sup>50</sup>**



Further analysis of the specific activities and technologies being considered or planned is presented in the sections below:

<sup>50</sup> Two projects under consideration and one planned project did not provide information on project type.

### Install renewable technology

The types of renewable energy technology projects which are planned or under consideration by community groups responding to the online survey is broken down in the table below:

**Table 10 Types of renewable energy technologies that are being considered or are planned for installation broken down by considered and planned projects**

Renewable energy technology	Number of projects under consideration (n=33 projects)	Number of planned projects (n=26 projects)
Solar photovoltaic	26	10
Wind turbines	11	5
Hydroelectric	9	7
Combined heat and power	8	-
Anaerobic digestion	5	-
Biomass heating	2	-
Geothermal	-	1
Unknown/Missing	-	3

### Raise awareness of energy use and change energy use behaviours

Five planned projects and 17 projects under consideration will raise awareness of energy use and change energy use behaviours. Where these projects were one of multiple projects and details provided in subsidiary spreadsheets further details were often given. The types of awareness raising activity included:

- Activity to support and advise communities on energy use and energy generation
- Building surveys to enable communities to realise the potential for renewable energy technology and energy efficiency measures in the properties they own
- Promotion of “government schemes” and public meetings to make communities aware of the energy options available.

### Promote installation of specific energy efficient technology and behaviours

Projects which will promote installation of specific energy efficiency technologies and behaviours can be broken down as follows:

- 16 of the projects under consideration by communities will promote installation of specific energy efficiency technologies and behaviours, 10 of these have reported on the type of energy efficiency technology they are considering, where:
  - 7 are considering improving the energy efficiency of buildings in the community through the use of energy efficient building and insulation
  - 7 are considering improving the energy efficiency of the lighting and/or appliances in buildings in the community
  - 6 are considering improving the energy efficiency of buildings in the community through the installation of energy efficient heating and ventilation

- Of the 29 planned projects where details on activity were provided, three are planning to promote installation of specific energy efficient technologies and behaviours. One of these will target “public buildings such as schools and village halls” whereas the other two focus on energy efficiency in domestic properties.

### Commencement of considered and planned projects and potential barriers

42 of the 46 considered projects were reported by respondents with a likely commencement date. The majority of groups considering undertaking projects reported that they expect the projects to commence in 2013 (13 projects, 31%) or 2014 (24 projects, 57%). The remainder of groups reported 2015 (10%) and 2016 (2%) as likely commencement years for the projects they are considering.

### What challenges (if any) need to be overcome to enable pipeline projects to be implemented?

Insights from the online survey indicate that a large proportion of community groups in the process of planning new projects are still in the process of overcoming challenges that could affect their scale, scope and/or timescale. The most significant challenge affecting the time scale or scope of projects under consideration is funding. Securing buy-in from the local community / potential customers and planning consent/Environment Agency approval are the next most common barriers

In spite of this, the majority (approximately two thirds) of community groups are confident that they will be able to overcome some or all of the challenges without altering their project design.

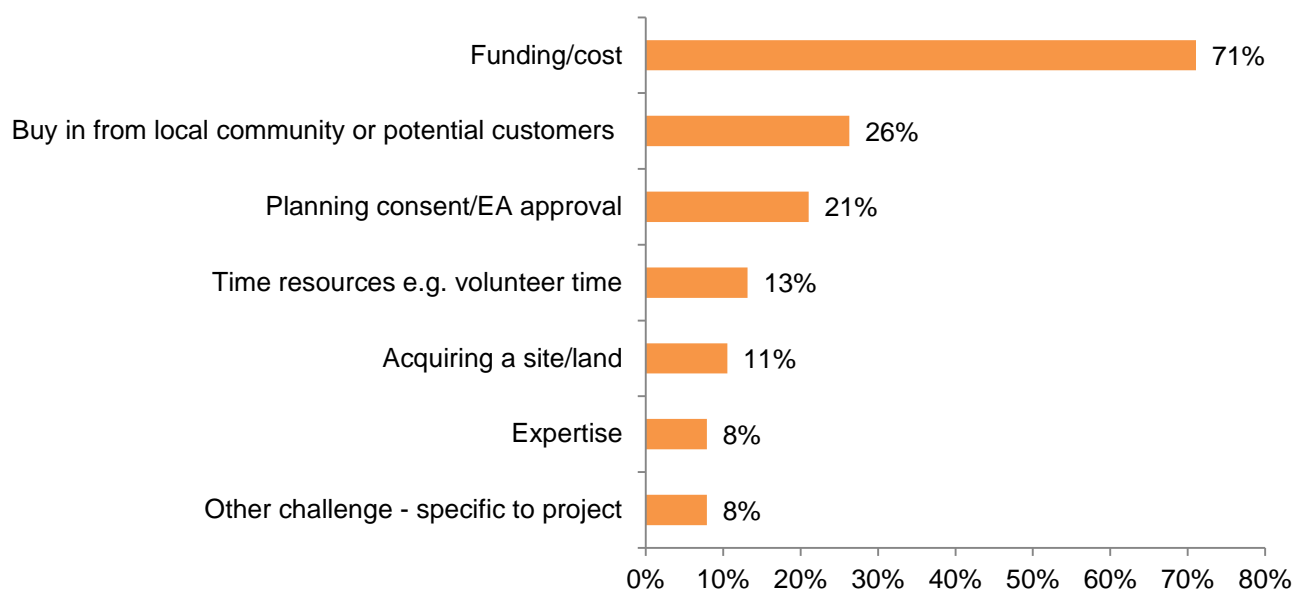
40 of considered projects gave details on whether they believed there would be any challenges they would need to overcome in order for considered projects to commence. All respondents reported that there would be challenges, whereby for:

- 20% of projects, respondents believed there were challenges that could affect the timescale of the project
- 15% of projects, respondents believed there were challenges that could affect the scope/scale of the project
- 65% of projects, respondents believed there were challenges that could affect both the timescale and scope/scale of the project.

For 41% of projects, respondents believed they would be able to overcome all challenges without altering their project design and 23% believed they would overcome some of the challenges without altering project design.

For 38 projects respondents gave details of the types of challenges they envisaged facing. As shown below, funding is the barrier most commonly cited, followed by buy in from the local community or potential customers and planning permission.

**Figure 18: Challenges cited to projects under consideration which would affect time scale or scope/scale of project<sup>51</sup> (n=38)**



Although the sample size for projects of different types is low for this question, the responses indicate that for some community energy groups navigating planning processes can be challenging to projects including renewable energy generation (24%).

Groups involved with renewable energy projects also cite lack of expertise as a challenge more often than groups who are not involved with renewable energy projects. 10% of groups involved with renewable energy projects cite lack of expertise as a challenge. In comparison, none of those involved with other types of energy project<sup>52</sup> reported this as a challenge.

When asked how respondents would overcome these barriers, the most common response was to put in more work on all aspects of the project. This was either cited directly, with comments such as '*Working hard*', but also indirectly e.g. awaiting a committed volunteer. Respondents also mentioned the use of publicity work.

For planned projects, 22 of 30 reported a commencement date. Of these 68% (15 projects) were expected to commence in 2013 or had just begun (although they were still classified as planned as no activity had currently begun). The expected start date of the remaining projects ranged from 2014-2018 (2014 - 9%, 2015 - 5%, 2016 - 5%, 2017 - 9%, 2018 - 5%).

<sup>51</sup> Multiple response

<sup>52</sup> i.e. projects not involving renewable energy.



# Conclusions and recommendations

## Conclusions

The key conclusions of the study are as follows:

### Scale and geographic distribution of community energy activity

- At least 5,000 community groups have considered, commenced and/or completed energy projects in the UK since 2008.
- It is not possible to quantify the number of community groups that are currently active in the sector, but the available evidence suggests that a substantial number of new community groups have entered the sector in the last three years.
- Community groups planning or undertaking energy projects are more prevalent in Scotland and South West England than one would expect given the distribution of the UK population. Similarly, community groups are more prevalent in rural areas than one would expect given the distribution of residence in rural areas compared to urban areas.
- The number of community groups in areas of high deprivation is similar to the number in areas of low deprivation, although there is some variation in the types of project being undertaken.

### Renewable energy generation capacity

- From the work undertaken in this study it is known that there is at least 49MW of community renewable energy generation capacity in the UK. This is predominantly made up of a small number of large scale wind turbine projects.
- If all of the renewables projects identified in undertaking this research where capacity data were obtained were to go ahead, there would be opportunity to grow installed capacity to 433MW.

### Why community groups and their facilitators become involved in energy projects and what drives them

- Based on responses to the online survey, addressing climate change / reducing carbon emissions is the most important factor motivating community groups to become involved in community energy projects, followed by reducing energy bills and community income generation.
- The top three goals that respondent community groups reported for the projects themselves are to:
  - o Improve the sustainability/self-sufficiency of the community
  - o Promote energy efficiency/renewable energy generation
  - o Reduce the amount of energy used by the community and/or their carbon footprint
- Evidence from the online survey suggests that many of those responsible for driving projects involving renewables or large scale energy efficiency projects are from managerial,

administrative and professional occupations (e.g. engineers, architects, environmental and other professionals, some of whom are retired).

- The commitment of organisers and volunteers is seen as the most important enabling factor in groups deciding to become involved in community energy projects. This suggests that personal motivation is a fundamental driving force in the development of community energy projects. Committed organisers and volunteers are particularly important to small community groups.

### **Funding of community energy projects**

- There is clear evidence from the data available from the survey that recent community activity has drawn less extensively on grant funding in ongoing projects. Those planning future projects anticipate being less reliant on grant funding, drawing more heavily on alternative sources of funding including loans and share offers.
- Community groups undertaking projects involving renewables are more likely than those working on other projects to access non-grant funding (e.g. share and debt offers, and Feed-in Tariffs).
- Community groups undertaking or considering projects excluding renewable energy are more likely to have accessed grant funding. Groups involved with projects excluding renewable energy generation also access charitable funding more often than groups involved with projects that include renewable energy generation.

### **Legal structures adopted by community energy groups**

- Community groups undertaking energy projects in the UK have a diverse range of legal structures.
- Evidence from the online survey suggests the profile of the community energy sector has evolved considerably in recent years, with a substantial number of Community Interest Companies, Industrial and Provident Societies, Community Benefit Societies and Co-operatives being registered in the last three years.

### **Critical success factors**

- Based on data collected from the online survey, the most critical factors affecting the feasibility and success of community energy projects are securing funding (46%), support from local community / members (37%), co-operation of/support from other organisations (30%), and government policy such as Feed-in Tariffs (27%).

### **Impact and cost effectiveness**

- The limited available data on community energy projects mean it is difficult to produce a robust assessment of the impact and cost effectiveness of community energy activity in the UK. This is because most community groups do not monitor the impact of their activity, and the information that currently exists has been developed using a variety of different methodologies. Furthermore, the data collected usually relates to the direct and immediate

impacts of projects rather than wider and longer-term benefits across the participating communities.

- Cost effectiveness is likely to vary widely for any future schemes due to the type of project undertaken, capacity and experience of the groups involved, delivery model and local factors such as support from local authorities and demographics of the area. This should be taken into account in risk management for future government programmes.

### Future activity

- From the work undertaken in this study it is known that there are at least 347 energy projects in delivery or in the pipeline. The actual number of projects is likely to be higher due to the limitations of the master database.
- The findings of the online survey suggest that a significant number of the projects under consideration or being planned are renewable energy projects (solar PV / wind / hydroelectric). A smaller proportion relate to energy efficiency and behaviour change. The majority of these projects are expected to commence by the end of 2014.
- A large proportion of those in the process of planning new projects are still in the process of overcoming challenges that could affect their scale, scope and/or timescale. In spite of this, the majority (approximately two thirds) of community groups are confident that they will be able to overcome some or all of the challenges without altering their project design.

## Knowledge gaps and recommendations

Table 11 summarises the key gaps in the available evidence and provides suggestions for how these gaps might be filled in future research.

**Table 11: Knowledge gaps and how they might be filled**

Knowledge gap	How knowledge gap might be filled
<p><b>Insufficient evidence to draw robust conclusions about the <u>current</u> scale of community activity in the UK – i.e. the number of active community groups</b></p>	<p>Knowledge of the current scale of activity could be improved by conducting further primary and secondary research to identify the current status of community groups in the master database produced in this study. This would enable a minimum estimate to be produced for the number of active community groups in the master database. The minimum estimate could then be used in conjunction with the online survey data and other contextual evidence (e.g. population of IPSs involved in community energy) to estimate the current scale of activity.</p>

Knowledge gap	How knowledge gap might be filled
<p><b>Lack of evidence relating to recent developments in the sector (e.g. projects involving collective switching and purchasing or those undertaken by very new and/or geographically dispersed community groups)</b></p>	<p>As the community energy sector is rapidly evolving there will always be a lag between developments in the sector and coverage in the evidence base. It is recommended that DECC undertakes research at regular intervals to keep track of activity and trends in the sector over time. This will also allow DECC to evaluate the effectiveness of its Community Energy Strategy.</p>
<p><b>Lack of impact evidence. Insufficient data to draw robust quantitative conclusions about the impact or added value benefits of community energy projects</b></p>	<p>This gap cannot be fully resolved without further empirical research, and may require a longitudinal study to provide robust evidence. Further primary research is particularly important if conclusions are to be drawn about the value that is added by energy projects being led by the community.</p> <p>One challenge to be addressed is that community projects are evaluating to varying extents using a wide range of different approaches. The development of a consistent framework for gathering data about the impact of community energy projects would be enormously beneficial to future attempts to quantify the impact and cost effectiveness of community energy projects.</p>

On the basis of the findings of this study it is recommended that funders of community energy projects:

- 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 suggested development of a consistent methodology for evaluating community energy projects would allow more robust conclusions to be drawn from the evidence base. There have been a number of recent developments in the monitoring and evaluation of community energy activities that could provide a starting point for the development of an evaluation framework.

Such a framework need not be onerous for the community groups to implement. For example, the Community Action Group Impact Model Framework adopted in Oxfordshire

offers opportunity for community groups to produce impact estimates (including energy savings and carbon emissions reductions) for awareness raising and energy efficiency activities. This is achieved using activity data (e.g. number of households approached, small scale follow-up to estimate percentage taking action and type of action)<sup>53</sup>. This could be further developed to support the overall evaluation framework.

- **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, such as collective switching and purchasing.

---

<sup>53</sup> See <http://www.cagoxfordshire.org.uk/impact-model>

# Appendix A: Methodology

## Overview of approach and research stages

The project comprised three phases of research:

- **Phase 1: Review of existing evidence**

The first phase of research comprised a review of the existing evidence base relating to community energy in the UK. The key research questions explored in the evidence review were as follows:

- Why do some communities engage in community energy?
- How does the involvement of partner organisations including Local Authorities and Energy Providers impact on the development of projects?
- What action has been taken to encourage or incentivise community or collaborative initiatives regarding energy supply, products and services?
- 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?
- What approaches have been successfully employed to build the capacity and capability of community energy projects?
- Is there any evidence about what leads to community energy projects being successfully replicated?
- What are the main barriers to the development of community energy projects? What mechanisms/approaches have been successfully employed to overcome these barriers?

A report was produced to summarise the findings from the first phase of the research and this was published alongside DECC's Call for Evidence to inform the Community Energy Strategy<sup>54</sup>.

The work undertaken in the first phase of the study enabled key themes to be drawn out in response to each of the research questions. However:

- The data that were available from the existing evidence base were not in a form that enabled conclusions to be drawn about the prevalence or relative importance

<sup>54</sup> The interim report following the completion of the first phase of this research study can be found here: [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/205218/Community\\_Energy\\_in\\_the\\_UK\\_review\\_of\\_the\\_evidence.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/205218/Community_Energy_in_the_UK_review_of_the_evidence.pdf) (last accessed 23rd September 2013)

of particular themes among the population (e.g. particular drivers for community energy, barriers)

- There was limited to no data available in the evidence base that provided insight into the overall scale and type of community energy project activity in the UK
- There were limited data available to inform analysis of the impact and cost effectiveness of community energy projects.

It was also identified that the evidence base might not be representative of the full breadth of community energy activity in the UK, as recent activity, particularly activity not receiving funding or support from the public sector, was not necessarily represented in the evidence base.

- **Phase 2: Research to explore the scale of community energy project activity in the UK and gather supplementary evidence**

The second phase of research consisted of the following key activities:

- **Building a master database of community groups in the UK** that have undertaken, are undertaking or have at least expressed interest in undertaking community energy projects over the last five years (i.e. since 2008) using sources identified in:
  - The evidence review undertaken in the first phase of the research
  - Sources subsequently identified through consultation with the project steering group and supplementary desk research.

This involved drawing together and de-duplicating seventeen separate existing data sources that identified community groups with interest or involvement in the community energy sector in the UK<sup>55</sup>.

- **Undertaking qualitative work to validate the master database.** This included consulting with experts identified through discussion with the project steering group in four specific geographic areas of the country to explore the extent to which the master database accounted for existing community energy project activity known to the contact for each area.
- **Conducting an online survey of community groups and energy professionals** that have undertaken, are undertaking or are interested in undertaking community energy projects in the UK. This provides DECC with a snapshot of current activity, an indication of the type of project activity that is in the pipeline, and any barriers that community groups with pipeline projects are expecting to face in delivering

---

<sup>55</sup> A list of the sources consulted in compiling the master database can be found in Appendix B of this report. Analysis of the master database is presented in the next section of this report: *Community energy in the UK: scale, profile and geographical distribution*.

these pipeline projects. The survey was designed to gather evidence to support response to the following research questions:

- Why do communities engage with energy projects?
  - What structures do existing community energy groups have (e.g. legal structure)
  - How have community energy projects of different types and scales been funded?
  - What factors are most critical in the success of community energy projects?
  - What are the measurable benefits of community energy projects?
  - What are the plans of existing community energy groups to undertake future projects
  - What challenges (if any) need to be overcome to enable pipeline projects to be implemented?
- **Phase 3: Analysis and reporting**

The third phase of the project included the following activities:

- **Analysing the master database and data from the online survey and developing a report** to summarise the findings from phase 2 (this report)
- **Producing a map** to illustrate the scale, type and geographical distribution of community energy project activity in the UK, covering all community groups identified in developing the master database or responding to the online survey.
- **Conducting exploratory analysis to understand the cost effectiveness of community energy projects.** This involved examining individual projects where data were available about project spend and impacts and included projects from DECC's recent evaluation of the Local Energy Assessment Fund (LEAF) and data obtained in the online survey.

## Online survey delivery and response

The online survey was promoted via the key networks identified in the first phase of the research as well as being actively promoted by individuals involved in the steering group for the project. We would like to pay particular thanks to the Community Energy Contact Group (CECG) for assisting in the development and promotion of the survey.

We would also like to extend our thanks to the following networks that agreed to actively promote the survey on our behalf in order to maximise participation:

- Carbon Leapfrog
- Transition Network
- Low Carbon Communities Network



The survey link was also sent to network representatives at the following networks:

- Communities Living Sustainably
- Climate Change Fund
- Community Energy Practitioners Forum
- Low Carbon Communities Network
- Transition Network
- Scottish Communities Climate Action Network
- Local United
- Community Energy Coalition
- Carbon Leapfrog
- Ynnir Fro
- Community Energy Wales

The online survey comprised two components:

1. **An online questionnaire** to be completed by all respondents to capture information about their community group and insight to inform responses to the research questions described above (e.g. reasons for becoming involved in community energy)
2. **A separate spreadsheet template** for completion by those involved in undertaking or considering multiple community energy projects to provide detailed information about specific projects (e.g. type of project, funding arrangements, anything that is known about the impact of the project)<sup>56</sup>.

Email reminders were sent weekly for the last two weeks of the agreed period for data collection and the deadline of the data collection period was extended to 28<sup>th</sup> August 2013 to allow for a final promotional push. Three reminder emails were sent in total.

Where contact information was available, attempts were made via both email and telephone<sup>57</sup> to contact 'click and close' respondents five days after opening the link to encourage them to complete the survey.

In total, 157 full responses were received from community groups and energy professionals to the questions included in the online survey. This comprised 94 responses from community group representatives, 16 from energy professionals and 47 from individuals stating that they were both (i.e. energy professionals that are also community group representatives).

Of the 123 respondents indicating they had undertaken multiple projects, 29 agreed to complete a spreadsheet to provide specific details of the projects they had undertaken, were undertaking or were planning to undertake.

---

<sup>56</sup> It was considered in review with representatives from the Community Energy Contact Group that it would be too cumbersome for community groups to provide detailed information about their projects via an online questionnaire and that requiring community groups to provide this level of detail in the online survey may lead to dropout and nonresponse to other research questions (e.g. reasons for becoming involved in community energy).

A further 20 respondents completed enough questions to provide understanding of the profile of the community group or energy professional responding to the survey and whether they had undertaken any energy projects. These 20 respondents did not provide full details of the projects they had undertaken, were undertaking or were planning to undertake. However, it was decided to include these responses to ensure that all of the available evidence was used to draw conclusions about the profile of active community groups<sup>58</sup>.

Overall, 79 respondents described 252 projects at various stages of development in the online survey comprising:

- 102 completed projects
- 74 on-going projects
- 76 projects that were in the process of being considered/planned.

The table below summarises the number of responses to the online survey:

**Table 12 Number of responses to the online survey**

Outcome	Description	Number of responses
Completed survey response	Community groups and energy professionals completing all of the questions in the online survey <sup>59</sup>	157
Partially completed survey response	As a minimum, all community group profile questions have been completed and in some cases, some but not all of the subsequent questions were completed	20
Completed online survey responses plus partially complete	All completed and partially completed online survey responses used in the analysis [i.e. minimum base for all community profile questions]	<b>177</b>

### Key limitations

Due to the sheer diversity, nature and scale of community energy in the UK (e.g. small groups, some with no legal status; groups existing for small lengths of time and community energy being only part of the work of some groups) it is not possible to be certain that the information presented in this report provides a comprehensive account of community energy activity in the UK.

The following steps have been taken to ensure that the results presented in this report are as representative as possible:

1. Consulting sector experts in particular geographic areas of the country to validate the coverage of the master database in respect of community groups involved in energy projects over the last five years

<sup>58</sup> Excluding these survey responses would introduce bias in reporting on the overall profile of community groups. It was confirmed prior to the analysis that the 20 partially completed survey responses were from groups that did not feature in the 157 completed interviews.

<sup>59</sup> 157 is the minimum base for research questions posed to all respondents; however, the base for questions pertaining to particular project level details is lower due to the fact that only 29 of the 123 respondents indicating that they had undertaken or were planning multiple projects were willing to complete the spreadsheet to provide detail about individual projects.

2. Using evidence from the online survey to consider what kinds of activity / community group might be missing from the master database
3. Comparing the profile of community groups responding to the online survey with that of those found in the master database to gain some insight into the types of activity / community group that may not be represented in the online survey responses
4. Drawing in secondary evidence (e.g. the number of IPSs with an interest in energy projects according to FCA's Mutuals Register, Community Shares Unit & Coops UK) to provide some insight into the current level of activity.

The exploratory nature of this research study means there are a number of important limitations that readers should be aware of and keep in mind when interpreting the results presented in this report:

### 1. **Potential for bias in estimating the scale and profile of community activity in the UK**

The master database of community energy activity compiled in this study is subject to bias. As there is no single source that provides a comprehensive account of the sector, the under / over representation of particular types of community group and types of project is difficult to pinpoint precisely.

What is known is that:

#### a. **The master database provides reasonable coverage of significant, historic activity.** This is known because:

- i. The vast majority of groups responding to and/or identified through the online survey that undertook projects before 2011 were found in the master database
- ii. All nominated local experts in the three geographic areas where the master database was validated confirmed that the database covered all groups known by them to be active in the community energy sector

#### b. **The master database significantly under-represents recent and pipeline activity.**

This is known because a significant number of community groups responding to the online survey that had yet to undertake their first project or had only recently commenced an energy project were not found in the master database. This is discussed further in the section of the report entitled "Community Energy in the UK: scale, profile and geographical distribution".

### 2. **Representativeness of the online survey**

Analysis of the profile of respondents to the online survey suggests there may have been a tendency for larger, more established groups with more significant energy projects to be more likely to respond to the survey. However, as there is no comprehensive account of current activity in the community energy sector, it is not possible to confirm with confidence

whether that is or is not the case<sup>60</sup>. What is known is that certain types of organisation identified in compiling the master database as being interested or actively involved in the Community Energy Sector do not feature as respondents to the online survey (e.g. faith groups).

The implication is that all results from the online survey should be considered in the context of the profile of respondents to the online survey

Following consideration of the available evidence, it has been assumed in analysing the results of the online survey that the responses are reasonably representative of the views and behaviours of community groups that are currently active in the community energy sector and have undertaken or are at least considering projects that go beyond small scale awareness raising activities / promotion of measures to improve energy efficiency

This project is among the first attempts to produce a more comprehensive account of community energy project activity in the UK than was previously available. Inevitably therefore, a number of knowledge gaps still remain. The key knowledge gaps and recommendations for addressing them in future work are discussed in the Conclusions and Recommendations section of this report.

---

<sup>60</sup> The master database appears to provide reasonable coverage of historic activity; but it is known from comparison with the online survey responses that it does not account well for community groups that have yet to complete an energy project or are just in the process of planning or implementing their project.

# Appendix B: Data sources consulted in compiling the master database

Table 13 Data sources consulted in compiling the master database

Source	Number of groups	URL where available/ applicable	Data available
Energy Saving Trust – Green Communities	~3200		Community group name, legal structure, partial postcode
Community Sustainable Energy Programme	461	<a href="http://www.communitysustainable.org.uk/filelibrary/website_stats_to_date_270911_-_list.pdf">http://www.communitysustainable.org.uk/filelibrary/website_stats_to_date_270911_-_list.pdf</a> <a href="#">Stats_270911.pdf</a>	Project name, project technology
SCENE	400	<a href="http://connect.scenetwork.co.uk/">http://connect.scenetwork.co.uk/</a>	Community group name. Partial coverage of Legal Status. Project description. Project type. Energy generation.
Community Energy Scotland – Excel database	370		Community name, technology type, postcode
Scottish Climate Action Fund Communities	280		Community group name. Project name.
Local Energy Assessment Fund (LEAF)	236	<a href="http://www.greencommunitiescc.org.uk/DECCFunded.aspx">http://www.greencommunitiescc.org.uk/DECCFunded.aspx</a>	Community group name. Project name.
Transition Network	205	<a href="http://www.transitionnetwork.org/initiatives/by-number?page=14">http://www.transitionnetwork.org/initiatives/by-number?page=14</a>	Community group name. Project name.
CLUES	182	<a href="http://www.ucl.ac.uk/clues/outputs/project_reports">http://www.ucl.ac.uk/clues/outputs/project_reports</a>	Community group name. Project name.
Community Energy Scotland - online	136	<a href="http://www.communityenergyscotland.org.uk/projects">http://www.communityenergyscotland.org.uk/projects</a>	
Western Power Distribution Community Chest	70	<a href="http://www.cse.org.uk/projects/view/1166/show:page">http://www.cse.org.uk/projects/view/1166/show:page</a>	Project name. Project description. Project type.

Source	Number of groups	URL where available/ applicable	Data available
<b>Carbon Leapfrog</b>	44	<a href="http://carbonleapfrog.org/project-profiles/">http://carbonleapfrog.org/project-profiles/</a>	Community group name. Project name. Postcode.
<b>Ynni'r Fro</b>	19	<a href="http://www.energysavingtrust.org.uk/wales/Communities/Case-studies-of-community-projects#east">http://www.energysavingtrust.org.uk/wales/Communities/Case-studies-of-community-projects#east</a>	Community group name. Project name.
<b>Renew Wales</b>	15	<a href="http://www.renewwales.org.uk/community-groups/project-types/energy.asp">http://www.renewwales.org.uk/community-groups/project-types/energy.asp</a>	Project name. Postcode.
<b>Local United</b>	23	<a href="http://www.localunited.net/?q=community/registered-communities">http://www.localunited.net/?q=community/registered-communities</a>	Project name. Postcode.
<b>British Gas "Green Streets"</b>	14		Community group name. Project name. Partial Project description. Partial project type.
<b>BIG Lottery Communities Living Sustainably (CLS) applicants</b>	9	<a href="http://www.communitieslivingsustainably.org.uk/about/">http://www.communitieslivingsustainably.org.uk/about/</a>	Community group name. Postcode.
<b>Other community groups identified in phase 1 of the research</b>	65		Community group name, project name, technology type, postcode

© Crown copyright 2013  
Department of Energy & Climate Change  
3 Whitehall Place  
London SW1A 2AW  
[www.decc.gov.uk](http://www.decc.gov.uk)

**URN 13D/320**