



COMMUNITY ENERGY STATE OF THE SECTOR

A study of community energy in England, Wales
and Northern Ireland

Full Report





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Foreword

We are proud to launch the first annual State of the Sector Report. With our partners, Community Energy Wales and Scene, we would like to thank everyone who participated in this landmark research project.

This report clearly demonstrates the broad scale of what the sector has achieved, its full contribution to the nation’s energy supply, the benefits derived for local communities and those which will impact on us all - such as reduced carbon emissions, increased biodiversity and greater energy efficiency.



The challenge is now to take this invaluable evidence and show others how community energy can play an even greater role in meeting the nation’s energy needs.



But we must heed the report’s other clear messages. 2016 saw record levels of community energy activity but we know that policy and regulatory changes have since impacted dramatically on this success, with many projects put on hold or even abandoned.

Establishing any energy industry requires public sector commitment. The support demanded by the community energy sector is extremely modest but it is vital. We need fair tax relief, a planning review and full and fair access to energy markets so we can play our full part in the move to a decentralised energy system and meeting the nation’s energy needs.

Emma Bridge, Chief Executive

At Northern Powergrid we see our role as much more than just keeping the lights on, we have a significant role to play in helping those customers who want to take control of their bills and reduce the carbon footprint associated with energy consumption. We’ve been actively involved in the development of community energy since 2014 by making our connections services more accessible, nurturing a regional network of community groups in the North East, Yorkshire & the Humber, and by exploring the new territories that the innovative and



often unconventional mind-set of community energy groups opens up.

Through the production of case studies and research, we’ve contributed to the ever-growing evidence base that a grass root approach on some aspects of the energy system brings incredible value to the community.



In the last couple of years, the transformation of the entire energy sector has accelerated, the political context has changed, and as a result, so has the community energy sector. We’re delighted to support the production of this new report which takes stock of the situation and will help representative organisations such as Community Energy England build an appropriate response.

Anne-Claire Leydier, Sustainability Manager



Acknowledgements

The *Community Energy: State of the Sector Report 2017* was prepared by Scene Connect on behalf of Community Energy England.

The report benefitted from invaluable assistance from staff and board members at Community Energy England and Community Energy Wales who provided essential contributions to the research.

External contributors to content include Luke Wilson from Sheffield Renewables who assisted with content regarding local authorities and community energy and Nicholas Gubbins from Community Energy Scotland who assisted with content related to community energy in Scotland. We also thank Community Energy South for providing the cover photo and to the Coigach Community Development Company (CCDC), Plymouth Energy Community (PEC), Northern Ireland Community Energy (NICE) and Talybont-on-Usk Energy Ltd. for providing in text images.

Further acknowledgement should be extended to all community energy organisations who participated in this research as well as for the support of key regional and umbrella organisations within the community energy sector, including:

- 10:10
- Communities for Renewables
- Community Energy London
- Community Energy South
- Energy4all
- The Energy Saving Trust
- Low Carbon Hub
- Mongoose Energy
- North East Community Energy
- Pure Leapfrog
- RegenSW
- Shareenergy

1 Introduction

This report details research carried out in early 2017 and provides an overview of the community energy sector in England, Wales and Northern Ireland. The report was funded by Community Energy England (CEE), with support from the Esmée Fairbairn Foundation, and was delivered in partnership with Community Energy Wales (CEW) and Scene Connect (Scene).

1.1. The State of the Sector Report

This State of the Sector report builds on CEE’s 2015 report *Community Energy: Generating More than Renewable Energy*. It aims to provide the most comprehensive overview of the community energy sector to date, and to provide a quantitative basis for the ongoing support of, and advocacy for, community energy in the UK.

Understanding the range of factors, inputs and outcomes that influence community energy is critical in maintaining and improving support for the sector. Particular study of the factors associated with the success or failure of community projects, the risks and barriers faced by community energy organisations and where the most value can be derived from their activities, is vital in designing and directing support mechanisms.

Through analysis of community energy organisations throughout England, Wales and Northern Ireland, this State of the Sector Report aims to:

- Identify and locate active community energy groups¹;
- Understand low carbon activities undertaken by community groups;
- Investigate how much energy communities produce or save;
- Understand how activities are financed and how much they cost to operate;
- Detail the income or savings activities generate;
- Capture the wider community co-benefits;
- Understand the barriers that cause difficulties or projects to stall;
- Understand the future plans of community groups; and
- Provide a basis for further research to understand the ongoing benefits of community energy to the UK.

The information and analysis contained in this report supports the ongoing work of Community Energy England and Community Energy Wales and in turn the community energy sector as a whole. Further to this, the data will provide evidence to influence and support government policy in regards to community energy.

The community energy sector in Scotland is annually surveyed by the Energy Saving Trust, on behalf of the Scottish Government. Data from their most recent report² has been used to augment the data collected in this study.

1.2. Research Background

There have been attempts to quantify and understand the community energy sector in England and Wales, including high level research, such as the Coalition Government's 'Community Energy Strategy (2014)³. The Community Energy Strategy provided an aggregated view of previous research into community renewables in the UK, focusing more on future support of the sector rather than its current state.

Prior to the publication of this report, CEE's 2015 report *Community Energy: Generating More than Renewable Energy*⁴ provided the most in-depth understanding of the community energy sector to date. Through detailed surveying of 82 community energy organisations, the report identified £50m of investment supporting 30 MW of active energy generation across 175 schemes.

10:10's 2016 report *The Way Forward*⁵ offered a more in-depth understanding of the characteristics, identities and impacts of community energy. The report also provided a more qualitative understanding of the nature of community energy enterprises, their focus and motivations, and barriers to the ongoing development of the sector.

This report builds upon CEE's 2015 data and provides a wider database for the sector across a greater number of organisations. It thus broadens the understanding of the characteristics which define, shape and influence the sector, and the financial, social and environmental benefits that community energy brings to the UK. This information will help to define the barriers faced by community energy groups, whilst influencing and improving support mechanisms which will enable the delivery of low carbon energy and its benefits at the local level.

¹ See Methodology (para 1.4) for the definition of a community energy group used in this report

² Energy Saving Trust (2016) Community and locally owned renewable energy in Scotland at June 2016

³ DECC (2014) Community Energy Strategy: Full Report

⁴ Community Energy England (2015) Community Energy: Generating more than Renewable

⁵ 10:10 UK (2016) Community Energy: The Way Forward



1.3. The Community Energy Sector

Since the formation of Community Energy England in 2014 the community energy sector in England, Wales and Northern Ireland has seen high levels of activity but has also been subject to many challenges and changes.

In late 2015, the UK Government announced that there would be an early withdrawal of, and significant changes made to, many of the support incentives and mechanisms within the Levy Control Framework (LCF) that had helped the sector to grow in previous years. Substantial reductions were made to the Feed-in-Tariff (FIT), including the removal of pre-accreditation for sub-50kW solar projects. There were also changes to Renewables Obligation Certificates (ROCs) and the Renewable Heat Incentive (RHI). Community energy schemes were made ineligible for the Seed Enterprise Investment Scheme (SEIS) and Enterprise Investment Scheme (EIS) tax relief schemes. In addition, the Urban Community Energy Fund (UCEF), an important stream of funding for early stages of projects in urban areas, ceased altogether.

The research conducted as part of this report shows that the outlook for the community energy sector in 2017 remains challenging.

Recent changes, however, should be viewed in the broader context of the climate change policy agenda and energy systems at the global, national and local level. The UK energy system is undergoing a transition from a centralised system based on fossil fuels towards a system supported by decentralised renewable generation. This opens up possibilities for further democratising the UK energy system by allowing communities to generate, distribute, sell and consume their own energy. Despite the setbacks, innovative ideas to adapt to the current market are being developed. It is within this context that the community energy sector looks to maintain and increase its share of the growing low-carbon energy sector.

1.3.1. Community Energy England

CEE is the funder of this State of the Sector report. CEE was set up in 2014 as a not-for-profit organisation with a mandate to help create the conditions for the community energy sector to grow and advocate community energy sector's agenda. It acts as the representative body for community energy organisations in England, including partner organisations which support and work with the community groups.

1.3.2. Community Energy Wales

Community Energy Wales (CEW) provides a similar approach to CEE in supporting and advocating for community energy within Wales. It acts as the representative body for community groups in Wales and their external partners.

1.3.3. Scene Connect

Scene managed and administered the State of the Sector survey on behalf of CEE in early 2017 and is the main author of this report. Scene is a renewable energy consultancy focusing on developing renewables projects with communities and supporting the sector through research, including Energy Archipelago⁶ – the most comprehensive online database of community energy projects from around the world.

Scene is a founding member of the Scottish Community Energy Coalition and a contributing member to Community Energy England.

⁶ www.energyarchipelago.com



1.4. Methodology

A full methodology is provided in Appendix A. This section provides an overview of the research approach. For the purposes of this report, two key variables were used to ensure that all respondents could be considered both “community organisations” and “energy groups”.

“Community organisations” are defined as organisational bodies owned or managed (entirely or in part) by individuals from a community to the benefit of a defined area or group. This may include communities within defined geographical boundaries or more dispersed communities of mutual interest.

“Energy groups” within this study were defined as groups involved in one or more of the following activities: energy generation; energy storage; energy efficiency and demand reduction; and electric vehicles or low carbon transport initiatives. The groups within this study are primarily comprised of social enterprises – including Community Benefit Societies (BenComs), Cooperatives and Community Interest Companies (CICs).

Organisations were sourced from project partners’ membership and internal databases with further organisations identified through desktop research, following verification as community energy organisations within the stated criteria. The online survey, which was emailed to participants, was active between 20th January 2017 and 28th February 2017.

In total 144 groups participated in the survey. By region this was made up of 125 from England, 18 from Wales and 1 from Northern Ireland. The survey data provides the underpinning data for the majority of this report, augmented with secondary data to provide a more complete understanding of the sector. Secondary desktop data was collected for a further 78 community energy organisations. This included organisations that had been contacted but did not respond to the survey and organisations that were not originally contacted but were identified later in the process as community energy organisations. Secondary data was used to support some elements of the research, including data obtained from the Community Shares Unit (2016)⁷.

Although CEE and Scene have done their utmost to identify all organisations which meet the criteria outlined above, some organisations may have been missed. The survey will be repeated on an annual basis. If there are community energy organisations missing from this initial report that meet the criteria, they will be added in future years.

Data from organisations that do not meet the methodology criteria have not been included in this report. These include organisations which promote themselves as “community energy” organisations but which seek to extract value through high management charges and token community benefit and which CEE regards as primarily driven by commercial and fiscal (particularly tax relief) motivations.

The analysis of the data is split into five primary themes:

- Community organisations and their make-up;
- The activities these organisations engage in;
- Funding and financing of community activities;
- Community outcomes and future plans;
- The policy context, barriers to implementation and the future outlook for the sector.

⁷ Community Shares (2016) www.communityshares.org.uk/open-data-dashboard



2 Community Power in the UK

2.1. Community Power in the UK

To date there have been a limited number of studies which provide a comprehensive overview of the community energy sector in England, Wales and Northern Ireland. The only comprehensive overview prior to this report is the Coalition Government's Community Energy Strategy (2014)⁸.

A more in depth understanding of the UK community energy sector was provided by Community Energy England's 2015 report, "Community Energy: Generating More than Renewable Energy", undertaken by Quantum Strategy & Technology Ltd. The report surveyed 80 community energy organisations and identified 30 Megawatts (MW) of existing renewable energy capacity and a further 143MW identified as 'in planning.' Though much of this potential capacity was at an early stage of development several more developed projects were already subject to considerable uncertainty due to impending policy changes. Further to this, the report provided evidence of the social, economic and environmental benefits provided by the community energy sector.

In commissioning this report, CEE wanted to establish the current state of the sector and also gain better data on the size and capacity of the sector in England, Wales and Northern Ireland.

2.1.1. England

Alongside the reduction of support mechanisms and removal and tax incentives for renewable energy, the English community energy sector has also seen the closure of critical early stage funding and support instruments. In particular, 2015 saw the closure of the Urban Community Energy Fund (UCEF) which provided financial aid and expertise, supporting urban communities from conception through to planning. This type of early stage funding can be critical in enabling communities to assess options and invest time into energy ventures where organisations lack the necessary capital or financing options to do so themselves. Some support does still exist for rural projects under the Rural Community Energy Fund (RCEF) and the Rural Development Programme (RDP) for England through European Union (EU) LEADER funding.

Community Energy England's 2015 Report calculated that solar PV comprised 82% of the 80 identified projects and were predominantly located across the South East, South West and London. Though rooftop solar are by far the most numerous, the largest projects in terms of capacity are ground mounted solar PV arrays – such as Communities for Renewables' Ferry Farm 5MW solar farm in West Sussex. Various collaborative projects within solar were identified such as Solar SOAS where SOAS University London collaborated with the local community, students and alumni to deliver 65kW of rooftop solar across university rooftops.



Figure 2.1 - Plymouth Energy Community's 4.1 MW solar meadow, built in 2016, supports local economic development, fuel poverty reduction and climate change initiatives.

⁸ DECC (2014) Community Energy Strategy: Full Report



2.1.2. Wales

Wales has a strong history and resource in terms of hydroelectric generation. There have been a number of successful large community hydroelectric projects throughout the country, such as Ynni Anafon Energy's 270kW hydro project installed in late 2015. Further to this, a good wind resource has led to the development of a number of small to medium scale wind projects. Notable early examples include Bro Dyfi Community Renewable's 575kW of wind power in Mid-Wales.



Figure 2.2 – Wales's first community hydro project - Talybont on Usk - has supported a number of initiatives since 2006, including an eco-car scheme, solar PV and renewable heating projects.

Wales has benefitted from regionally specific support mechanisms alongside access to the Rural Community Energy Fund (RCEF), like in England. Ynni'r Fro offered development grant funding for community energy projects, and in some cases further capital finance past the planning stage, though the Ynni'r Fro programme concluded in 2015. The EU funded LEADER programme, delivered as part of the Wales Rural Development Plan (RDP), covers early stage

development costs of community energy. The RCEF and LEADER programmes are still in operation and are key in keeping the momentum of new community energy projects going.

2.1.3. Northern Ireland

The community energy sector in Northern Ireland was only initiated in 2012 and is still relatively limited in terms of project numbers, only three community energy organisations were identified within this study.

Wind energy is the most prevalent technology in the Northern Ireland community energy sector. The first, and still by far the largest example is Drumlin Energy Cooperative – an Energy4all supported co-operative which now has six community owned and managed 250kW wind turbines across Northern Ireland.

As in England and Wales RCEF support is still available, however in general there is a lack of institutional and policy support for community energy. The community energy sector in Northern Ireland is now aided by The Fermanagh Trust and there is some 'self-support' provided by Northern Ireland Community Energy (NICE), the country's first community solar enterprise. NICE was established by members of the NI community including several who are involved in the Drumlin Co-operative. NICE have supported 130kW of solar across 13 community groups since February 2015.



Figure 2.3 - Northern Ireland Community Energy (NICE) support communities to reduce and generate energy through the country



2.1.4. Scotland

The Scottish community energy sector is not included within this report, as separate data collection and reporting is conducted by the Energy Savings Trust on behalf of the Scottish Government⁹. Scotland has set a target of 500 MW of “community and locally owned”¹⁰ renewable energy capacity by 2020, which was achieved in 2016.

As of June 2016, the Energy Savings Trust identified 67 MW of energy capacity as being owned by community groups across 510 active community energy generation projects. Table 2.1. provides a breakdown of the technologies within this total, with wind generation forming around 70% of all community owned capacity in Scotland. 0.78 MWh of community owned energy storage was also identified by the report across 5 distinct projects, 4 of which are in off-grid island locations.

Technology	Capacity
Wind	47 MW
Biomass	6 MW
Energy from waste	5 MW
Heat pump	3 MW
Hydroelectric	4 MW
Solar PV	2 MW
Solar thermal	< 1 MW
Total	67 MW

Table 2.1. Operational Community capacity in Scotland (June 2016), adapted from Energy Saving Trust (2016)

Outside of energy generation, little quantitative research has been conducted around community energy efficiency, demand management and transport initiatives in Scotland.



Figure 2.4 - Coigach wind turbine in the North-West Highlands became operational in early 2017. The project will deliver £2.2m for local economic and social development over its lifetime.

More recently (since 2015), the rate of community energy development in Scotland has slowed considerably. Similar to the rest of the UK, the main reasons for this are less favourable financial prospects owing to reduced UK incentive levels and the difficulty of securing grid connections for electricity generating projects. At the same time, pressure is increasing for some significant changes in the energy supply system to meet decarbonisation targets and adjust to more intermittent renewable energy generation. This could unlock a new wave of community energy projects focused on energy storage and direct local energy supply in a ‘smarter’ system integrated with local transport and heating requirements.

This innovation agenda – and the opportunities it presents for strengthening local economies and communities – is now an important and rapidly developing topic in Scotland, as reflected in the Scottish Government’s Draft Energy Strategy (2017)¹¹ and through its two key measures, the Low Carbon Infrastructure Transition programme and the Local Energy Challenge Fund.

⁹ Energy Saving Trust (2016) Community and locally owned renewable energy in Scotland at June 2016. The definition of community and locally owned in the EST report includes community groups, local Scottish businesses, farms or estates, local authorities, housing associations and the public sector and charities.

¹⁰ The target includes community and local privately-owned renewables (e.g. farm scale wind turbines)

¹¹ Scottish Government (2017) Draft Scottish Energy Strategy: The Future of Energy in Scotland

2.2. Trends, Innovation and Barriers

Since 2015 the community energy sector has had to reassess and adapt to the new policy and support landscapes. Further adaptation is now required across all aspects of the community energy sector, from the activities in which groups partake, to the business models used to deliver the projects. Some major themes have emerged that indicate the possible future directions the community energy sector may go in.

Key discussions within the sector have centred around the need to retain money at the local level from the energy supply chain if it is to survive in a ‘post-subsidy’ world. In many cases this means making a virtual or physical link between the community groups generating energy and local consumers. Ideas of how this could be achieved have been floated, for example by entering the energy supply business or operating private wire networks. Energy storage, including electrical and thermal options, will provide another route to maximising local use of energy for communities. Further reductions in cost will make storage an increasingly viable option at domestic and community scales. Energy efficiency is still seen as an underserved aspect of the energy market and many community energy groups believe they are well placed to step in. This is because the more trusted the intermediary dispensing advice about energy efficiency or saving, the more likely the much needed behaviour change will happen. Behaviour change is crucial in unlocking the maximum benefits of energy efficiency.

Communities may also look to innovate in terms of mutual support and the amalgamation of activities to reduce risk and seek financial viability. Through upscaling of projects and combining of resources, communities are able to navigate some of the barriers within the sector and achieve financial viability through larger initiatives. This amalgamation can be supported by collaborative working with supporting service providers (e.g. Energy4all and Sharenergy), intermediary organisations (e.g. Mongoose Energy and Communities for Renewables) and through involvement with supporting “regional hubs”.



Figure 2.5 - Community Energy Fortnight provides a platform for mutual support, knowledge sharing and raising awareness of the benefits of community energy

There are, however, barriers that will not make these new operational methods easy. These barriers often centre on cost, capability and the novelty of many of the options, as well as unsupportive or difficult to navigate regulation. Many of these future options are relatively untested, without established business models or precedents for communities to follow. It will be hugely important for the community energy sector to adapt and evolve in a post-subsidy business environment. Facing many similar constraints and barriers as the commercial low carbon sector, communities have the capability to adapt and find value through a variety of means – from partnership approaches to local energy systems. Innovation in the sector will help to unlock the further potential for the community energy sector.



3 State of the Sector

This State of the Sector survey identifies and analyses the community energy sector in respect to five key themes:

- Community energy organisations;
- Community energy activities;
- Community energy financing;
- Community energy outcomes and impacts; and
- The policy context, barriers to implementation and future outlook for the sector.

3.1. Organisations

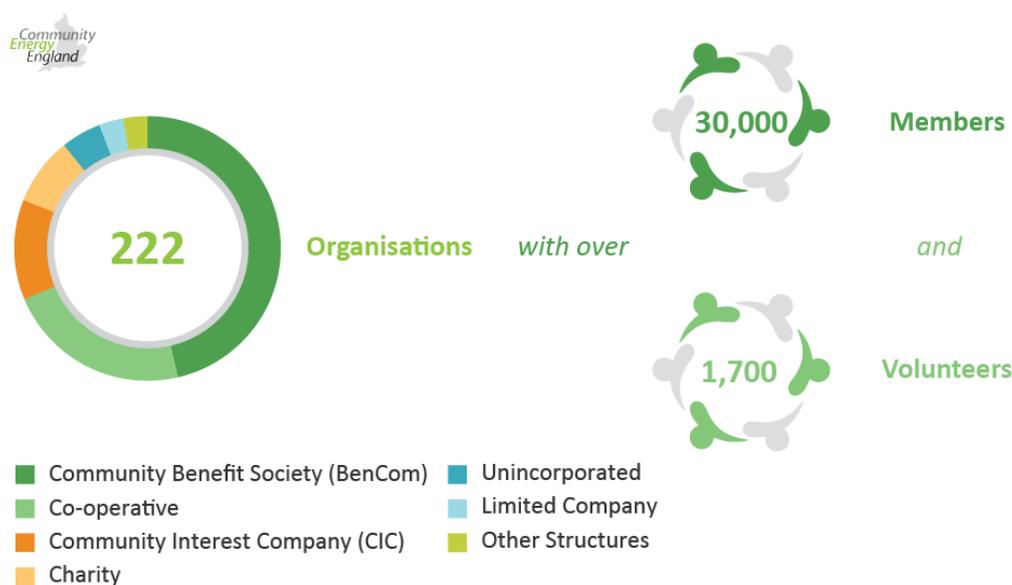


Figure 3.1 - Organisational overview of surveyed community energy organisations

Community energy groups are found throughout England, Wales and Northern Ireland. The number of organisations has risen rapidly over the last ten years: the community energy sector is now composed of groups utilising a diverse range of business models and legal structures and includes a range of financing approaches. Geographically, England has the highest concentration of active community energy organisations, with the most densely active areas in the South. Wales has the highest number of groups per capita, with greater concentrations towards the North of the country.

3.1.1. People

The identified community energy groups are supported by over 30,000 members, including formal members and shareholders. The research shows that whilst members may be geographically distributed, groups most often have a core of investors or members within the local area.

Across the 144 organisations directly surveyed, many of these members form part of a 1,700-strong volunteer workforce actively supporting community energy groups. A much greater number of occasional or project specific volunteers is reportedly available to groups, though due to a lack of management resources many groups are unable to quantify these numbers precisely.

In contrast, respondents reported 85 full time equivalent staff across 43 organisations. A further 101 organisations reported no paid staff, reinforcing the fact that communities are heavily reliant on volunteer time to deliver their community energy projects.



As this study is limited purely to active community energy projects, it can be assumed that a greater number of members and volunteers are engaged in the wider community energy sector, particularly within communities developing their first community energy projects.

Modest employment figures characterise a key problem within the sector. Poor economies of scale are achieved in the highly-distributed sector, in which many groups tend to operate relatively small assets. A large number of groups reported limitations to their aims and projects due to a lack of experience and difficulty maintaining volunteers over the course of their projects. This is compounded by limited financial capacity to invest inwardly to employ and manage staff with the necessary expertise.

A further 36 FTE staff are employed within the community energy sector across 6 identified umbrella bodies and support organisations. Providing assistance across business development, administrative services, feasibility services, and project financing, these organisations play a critical role in supporting and coordinating communities in the energy sector. Examples include Shareenergy, who currently provide administrative support for 25 community energy groups, and Energy4all, a cooperative involved in the setup and management of 22 energy cooperatives to date.

3.1.2. Legal and Corporate Structuring

Across the 222 identified community energy organisations, social enterprises were found to constitute the majority share. The social enterprise share includes Community Benefit Societies (BenComs) (44%), Cooperatives (22%), and Community Interest Companies (CICs) (11%). The further 23% is primarily made up of charitable groups and unincorporated community bodies engaged in energy activities.

Cooperatives and BenComs are both forms of social enterprise which are mission led and which, through their democratic governance structures, afford voting rights to all their members. They give individuals the chance to be active owners rather than just passive investors. There are some organisations particularly within the Community Interest Company (CIC) sector which are known to seek to extract value to a promoter through high management charges and token community benefit and which CEE regards as primarily a front for a commercial organisation. This research identified and excludes data from any renewable energy organisations which did not meet the required standards of behaviour and principles of the community energy sector which it represents.

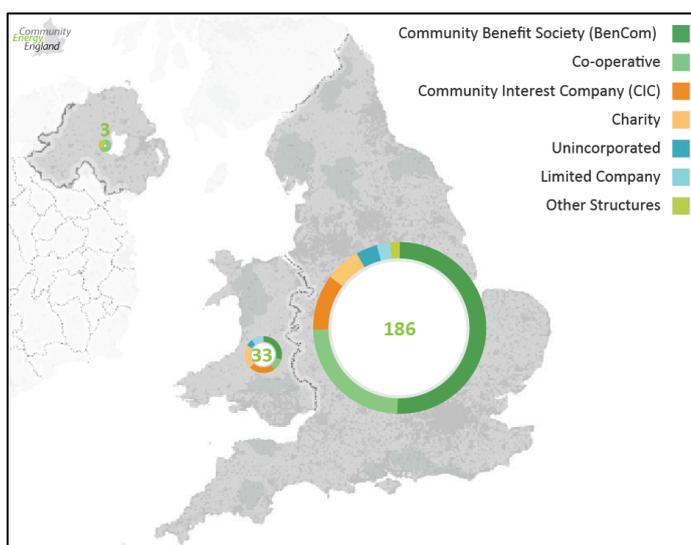


Figure 3.2 - Distribution of community energy group business models

Whilst most projects are wholly owned community projects, 23 partnership approaches to community energy were identified. Working in partnership with private developers, local authorities and other community organisations, can provide a lower risk route to project development. Partnership approaches can create opportunities for both communities and developers, through reduction in planning risk and sharing of financing and expertise.



Community Power Cornwall (CPC)

'A Collaborative approach to community energy'

Community Power Cornwall (CPC) set up as a co-operative in 2008, aiming to bring income into the local area whilst tackling environmental issues and poverty reduction.

CPC have installed over 800kW of solar and wind power through collaboration and partnership with a variety of local transition groups, private enterprises, and several local schools and churches. Further to this, the co-operative is looking to establish joint ventures with commercial developers in large scale solar and wind developments.

CPC's projects provide income to local community groups and enterprises, whilst reducing costs for a number of key community services. Furthermore, local finance raising through share raises is helping to keep income in the local area.

3.2. Activities

'Community energy projects provide over 121 Megawatts of low carbon energy capacity and are reducing energy use across 74 communities'



Figure 3.3 - Community Energy Activities across the sector

The study identified 269 distinct activities across the 222 organisations surveyed and researched in the study. 191 of these activities focused on the generation of electricity or heat, with electricity generation by far the most prevalent type of project. 40 organisations were found to be undertaking energy efficiency activities as a primary activity, with a further 34 organisations stated that energy efficiency constituted a secondary activity to the generation of electricity or heat. It is worth noting that this research has focused particularly on the primary and secondary activities of communities, meaning some auxiliary activities or projects may not be captured within this report.

Low carbon transport and energy storage initiatives are most often found as secondary rather than primary activities for community groups, with only 2 organisations reporting active projects in these areas. A further 7 groups reported that transport and storage activities form an important part of their future plans, most often complementary to existing generation or energy efficiency projects.

3.2.1. Electricity Generation

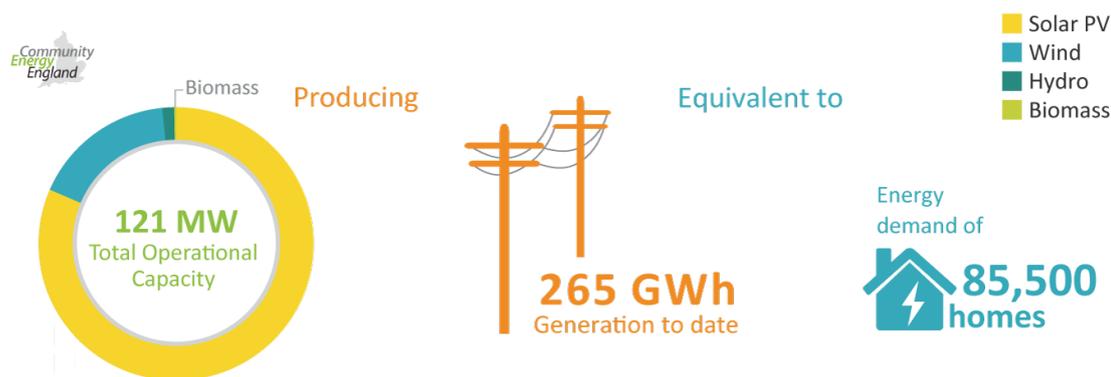


Figure 3.4 - Overview of community electricity generation

This study identified 121 MW of electricity generating infrastructure installed by community groups since 1997, generating 265 GWh, equivalent to the energy demand of over 85,000 homes¹². This is nearly double the operational capacity of community energy projects in Scotland, where there is currently 67 MW of installed capacity¹³. A further 29 electricity generation projects were found to be in development, including wind (7), hydro (7), solar (14) and anaerobic digestion (1) projects. 11 MW of in-planning electricity generation was identified across the 14 projects with known generation capacities.

Solar now dominates in terms of both project numbers and capacity, with a variety of projects reported, including several large ground mounted arrays up to 9 MW in capacity and a large number of small scale aggregated rooftop solar, across community, commercial and domestic properties. Wind, with only 20.5 MW of identified capacity, has a notably high total generation value to date due to the early deployment of this technology, with over 11 MW of wind capacity operational by 2009.

Technology	Number of Projects	Capacity (MW)	Generation to date (GWh)
Solar PV	101	99.0	128.0
Wind	16	20.6	128.5
Hydro	20	1.7	8.9
Total	137 Projects	121.3 MW	265.4 GWh

Table 3.1 - Generation and capacities across the community energy sector since 1997

In contrast, solar PV capacity has recently risen dramatically with limited generation capacity identified before 2011, rising to 20 MW by the end of 2011 and increasing by a further 79 MW over the last 5 years.

¹² Based on Ofgem Typical Domestic Consumption Values (TDCVs) (2015)

¹³ Energy Saving Trust (2016) Community and locally owned renewable energy in Scotland at June 2016

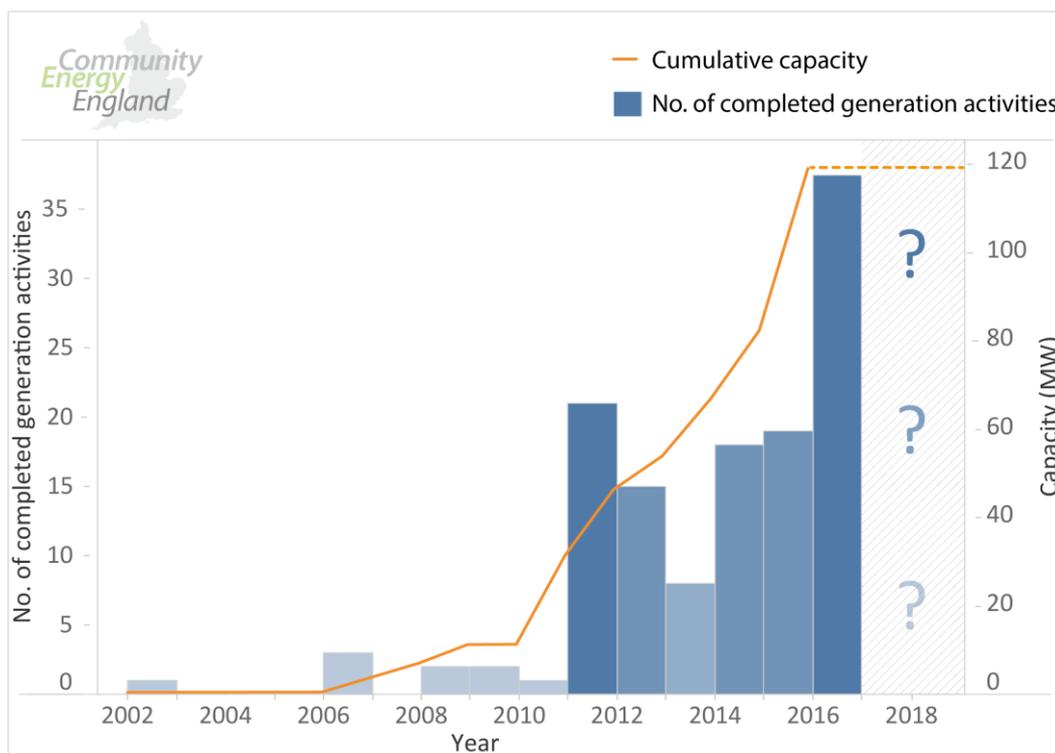


Figure 3.5 - Cumulative community energy generation capacity and numbers of new generation activities since 2002

Overall electricity generation by the community energy sector has seen rapid growth in the past 20 years with a few early forerunners beginning as early as 1997. Projects numbers grew rapidly from 2011 onwards after the introduction of the Feed-in Tariff. The growth rate has remained steadily high, with over 37 new generation projects installed in 2016. However many of the projects installed in the year to September 2016 were pre-accredited or pre-registered to receive FITs at the levels they were before the 2015 cuts. This data does not yet therefore show the full extent of the impacts of these policy changes.

Schools' Energy Co-operative 'Distributed generation throughout communities'

The Schools' Energy Co-operative was launched in 2014 to provide community sourced funding for solar panel systems on schools throughout England. Initially installing a flagship 150kW solar array on Glenleigh Park Primary, East Sussex, the cooperative has gone on to install panels on 27 schools, totalling over 1 MW of generation capacity.

Located throughout the UK, from the South coast to the North East of England, the Cooperative links schools with the necessary expertise and provide finance and legal support to enable schools to develop new solar arrays. Projects are financed through share offers – totalling over £1.2m to date – providing fixed price electricity to schools at reduced rates and the Cooperative also distributes its profits between the participating schools.

Figure 3.6 shows the general distribution and scale of generation projects across the UK. Wind can be seen to be comprised of a small number of high capacity installations, whereas solar has a much wider distribution, with the largest installations concentrated in the South of England.

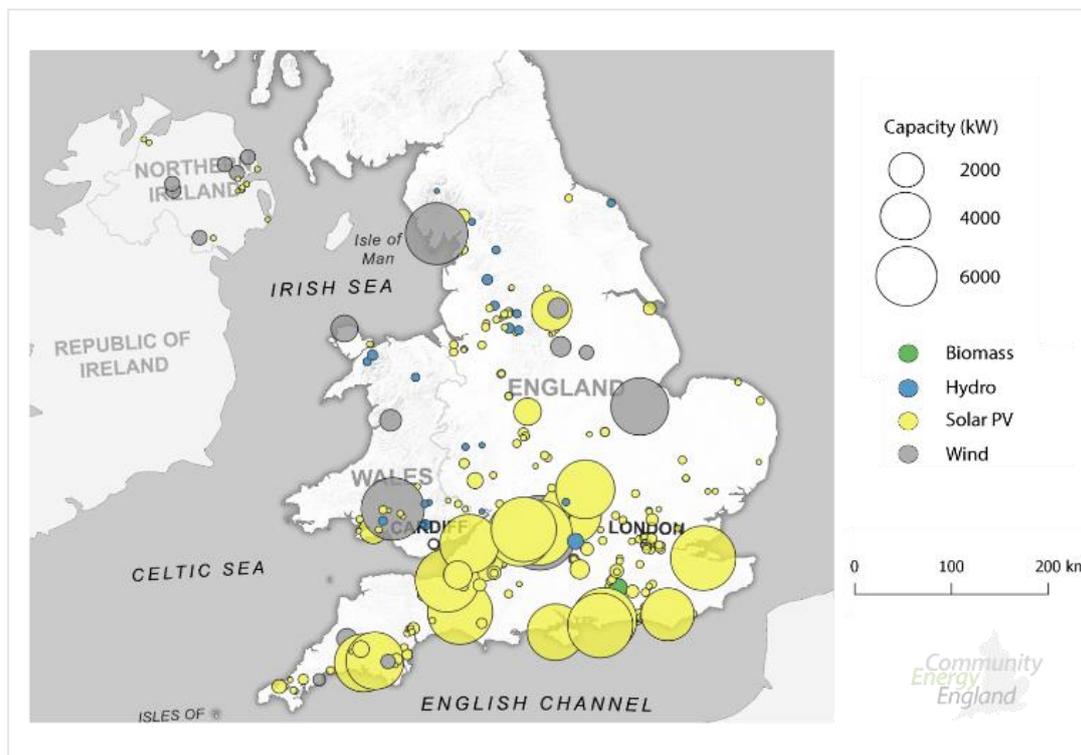


Figure 3.6 - Map of active community energy generation projects identified by scale and technology type

3.2.2. Heat Generation

Though heat constitutes the greatest energy demand in the domestic market, as much as 60% of domestic energy usage¹⁴, only 12 communities were identified as engaged in heat generation activities. Of these organisations, 6 reported active generating projects though just 3 projects were found to have generation capacities greater than 50kW.

Biomass is the dominant technology within heat generation making up 90% of the 270kW of installed capacity identified, with the rest made up by solar thermal and small scale heat pump installations.

Biomass represents the most viable technology at domestic and community scales, with larger schemes limited by the high cost and difficulty of deploying heat transmission and distribution systems.

Beyond the operational projects identified, several respondents noted an interest in district heating and fuel provision. This included district heating from industrial waste heat, off-gas-grid biomass networks and management of community woodland for biomass provision.

3.2.3. Energy Efficiency & Other Services

Energy efficiency improvement and demand management are playing an increasing role in improving the use of heat and power, often through relatively low cost interventions. Coupled with an often-ageing housing stock, there are numerous opportunities for communities to provide advice and support provision of improvements throughout their local areas.

¹⁴ DECC (2013) UK Housing Energy Fact File

74 of the organisations surveyed stated that their organisation provides energy efficiency or demand management support to members of their community. These range from providing advice and support, to services and funding.

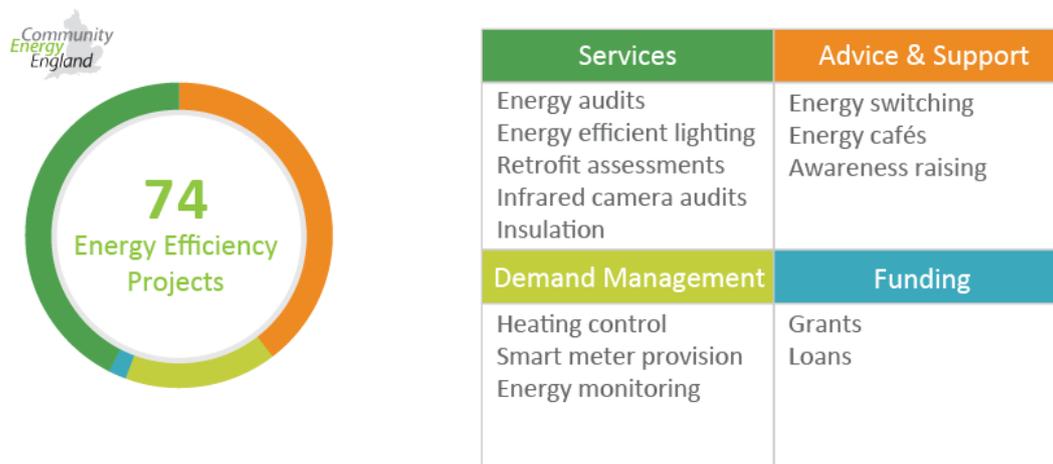


Figure 3.7 - Overview of energy efficiency projects in the community energy sector

40 of the 74 groups consider energy efficiency to be a primary activity, with a further 34 organisations considering it a secondary focus. In terms of distribution, the largest number of active groups are found in Southern England. Only 4 groups within Wales consider energy efficiency as a primary activity.

46% of all energy efficiency or demand management projects were considered secondary activities, building upon, or as a result of, existing energy generation projects. This is often considered a typical approach, as communities utilise generation activities to fund secondary energy efficiency and demand management work. Organisations reporting energy efficiency and demand management as a secondary focus were

Region	Number of Organisations	Percentage
North England	14	18.9%
Mid-England	8	10.8%
South England	44	59.5%
Wales	8	10.8%

Table 3.2 - Geographic distribution of energy efficiency and demand management activities

engaged in numerous activities, from funding insulation upgrades and providing LEDs to local homeowners to offering energy switching advice and cafes.

3.2.4. Transport

Very few respondents reported active low carbon transport initiatives or projects at the present time, with only one organisation actively installing electric vehicles in tandem with a solar array.

Four groups stated that they are at a preliminary stage of engaging with low carbon transport, including integration of energy storage and charging points and a scheme to run fully electric community transport. Beyond this, 10 groups stated that they provided advice relating to energy efficient transport.

Major reasons for this lack of engagement in clean transport activities may be due to the high initial costs of investing in electric vehicles, limited costs savings from transport switching and the need to augment with renewables generation and storage. Some respondents viewed transport as a next

step to their energy plans, building upon more financially viable options or to harness energy produced by existing or planned generation projects.

Brighton & Hove Energy Services Co-operative (BHESCO) 'Linking energy generation and saving'

BHESCO are involved in a number of community energy initiatives, including renewable electricity, heat and energy efficiency activities. With both solar PV and biomass installations, the cooperative further provide energy efficiency advice and services throughout their community.

BHESCO offer energy and emissions assessments to local businesses and homeowners, supporting and advising on measures such as LED lighting, insulation upgrades and energy switching.

Central to BHESCO's model is the 'pay-as-you-save' innovation, enabling customers to benefit from renewable technologies and energy efficiency measures, whilst paying off the costs through their savings from reduced energy bills over time.

3.3. Raising Finance

‘Community energy projects have raised over £190m in investment, supported by £1.9m of development funding’

The community energy sector is an increasingly self-supporting sector in terms of project funding and finance. With access to small amounts of early stage funding from regional, national and European sources, the community sector is capable of securing finance through a variety of routes, including share offers, loans and bonds. Share raises are a key financing mechanism within the community energy sector, both for raising investment and for engaging interested people in projects. Share offers can raise substantial funds through aggregation of relatively small investments.

Within this section, “development funding” denotes funding for project or organisational development up to a viable stage (e.g. up to financial close). “Project financing” denotes all investment after this point towards the capital costs of the project or activity.

3.3.1. Development funding

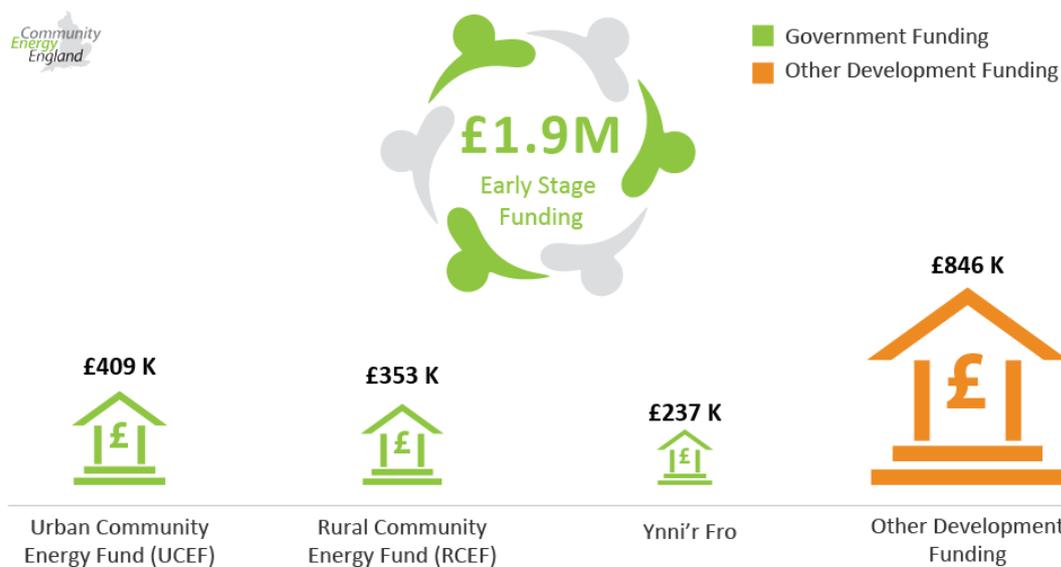


Figure 3.8 - Early stage funding in the community energy sector

Many community energy projects utilise small early stage grants for initial project development, from conception through to planning. Development funding supports a wide range of activities, from initial feasibility assessments through to formal consents, such as planning permissions and resource licences (e.g. water abstraction licences for hydroelectric schemes). Some alternatives to this are organisations such as Energy4All, where the 22 existing member co-operatives or community benefit societies support and help to pay for a small and experienced development team which gives external support to communities bringing projects forward and which are prepared to join the Energy4All ‘family of co-operatives’. If the project is successful they then in turn help other communities through their membership of Energy4All.

Without the ability to raise initial development finance or the collateral to borrow, community groups often access public funding streams, most notably the Urban Community Energy Fund (UCEF) (until it was suspended), Rural Community Energy Fund (RCEF) and Ynni'r Fro in Wales. Though many

groups utilise other sources of development funding, these streams are found to underpin a large number of projects identified within this research.

	Funding Value	Distinct Organisations	Average Funding Value
UCEF	£409,000	23	£17,900
RCEF	£353,000	19	£17,800
Ynni'r Fro	£237,000	9	£26,300
Sub-total	£999,000	49	£20,500
Other Funding	£846,000	29	£28,200
Total¹⁵	£1,845,000	66	£22,500

Table 3.3 - Development funding across community energy organisations

33% of surveyed organisations are currently using, or have previously used, grants from UCEF, RCEF or Ynni'r Fro to progress their project development¹⁶. Totalling over £762,000 across 42 projects, UCEF and RCEF provide an average funding value of £17,860. In Wales Ynni'r Fro has provided over £237,000 across 9 projects, an average value of £26,300.

Further sources of development funding were found to differ greatly across projects and regions, with over 30 unique funders identified, including private banks, government departments (DEFRA, DECC) and further grant funding programmes such as the BIG Lottery Fund and the Community Generation Fund.

It is evident that a variety of funding schemes and mechanisms support the initial development of community energy projects, especially in regard to UCEF, RCEF and Ynni'r Fro. There is also evidence of growing support outside of these key public funding streams, including private and third sector organisations, as well as through mutually supportive community networks and membership bodies.

The closure of UCEF in July 2015 sets a damaging precedent as no funding stream or support mechanism has been set up in its wake for urban community energy. Similarly, the closure of Ynni'r Fro in 2015 has left Welsh community energy heavily reliant on RCEF or further secondary funders. At about the same time the sector lost access to SEIS tax relief which was being used to raise high risk development funding (see section 3.3.2 for more detail). Finding new means to support the early development of many of the UK's urban community energy groups and maintaining and improving RCEF, or a similar funding stream, into the future will be key ways in supporting the continued growth of the sector.

¹⁵ A number of organisations were found to have accessed multiple sources of development funding, often across several projects

3.3.2. Project Finance

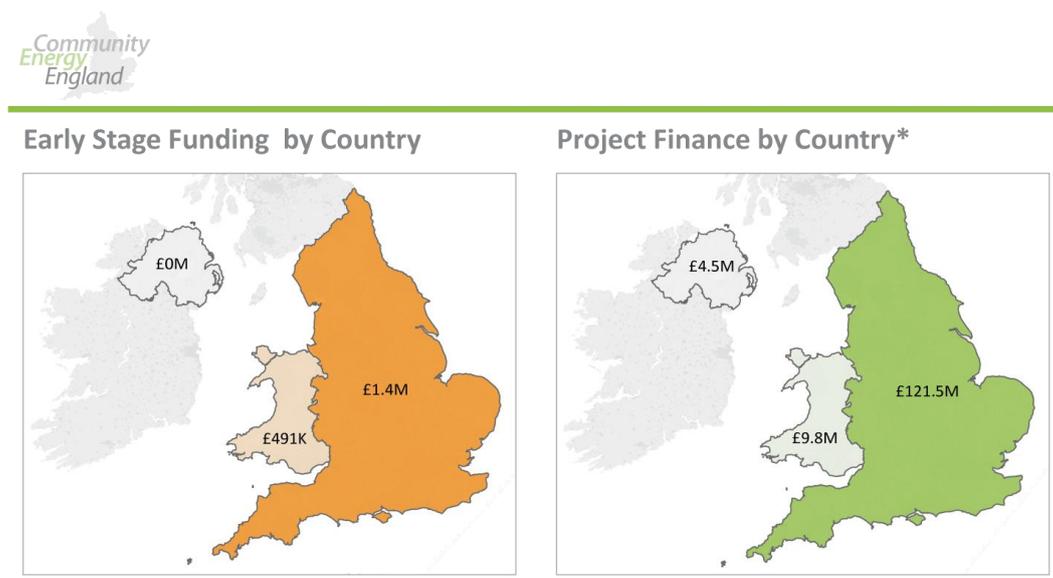


Figure 3.9 - Project financing in the community energy sector

Following on from funding for project development, community groups must source project finance to take their project through to operation. There are a range of options in terms of project finance, from more traditional approaches such as bank loans and grant funding through to more innovative approaches, including bonds, debentures and share raises.

Overall it was reported that £190m has been invested in financing projects across 108 community energy projects.

In terms of geographical distribution, England was found to be supported by a greater value of both development funding and project financing, due to the higher number of community energy projects in the country.



*£54.3m unreported investment source

Figure 3.10 - Distribution of development funding and investment in the UK community energy sector



Share raises were found to be the dominant form of fundraising within the 108 respondents detailing exact project investment. Communities reported a total share raise value of £63.1m, though data from the Community Shares Unit (2016)¹⁸ reports a further £22.9m of share raise finance, totalling £86m across the sector. The second most accessed financing source was loans, with communities raising £47.5m of investment through this method. A smaller number of projects accessed £25.1m of project financing through bond or debentures. 25 organisations did not supply exact financing routes and values as part of the survey.

	Number of Organisations	Total Value
Share Raise	74	£63.1m
Bonds / Debentures	13	£25.1m
Loans	46	£47.5m
Unknown	25	£54.3m
Total¹⁷	108	£190.0m

Table 3.4 – Breakdown of investment in the community energy sector

In terms of debt financing, respondents who provided in-depth data regarding their loan rates and repayment schedules suggested that some communities may access debt at around 5 – 7% with 15 to 20 year terms, with some communities accessing finance at rates as low as 4%. As communities are often cited as struggling to gain access to debt finance due to a lack of track record and/ or a lack of collateral, the success of the sector in gaining investment is notable. The majority of respondents that provided data on debt financing are well established community groups with existing large generation schemes. It is likely that well established community energy groups benefit from improved track records and the capacity to undertake larger projects, enabling access to cheaper debt finance. Many lenders now accept that that the project itself can be used as collateral for loans.

Bath & West Community Energy (BWCE) 'Supporting energy throughout the community'

BWCE were set up in 2010 and have since deployed over 12MW of solar and hydroelectric power across the Bath area and further afield. Ranging from 10kW rooftop installations on local schools to 5MW farm-based solar arrays, profits from the schemes feed back into meeting local needs.

Stimulating over £15m of investment, with £9m sourced through share raises and bond offers, BWCE provides a variety of local benefits – from distributing funds of up to £50,000 a year with the community to reduced electricity prices for local community services and buildings.

Raising of project finance is often underpinned by guaranteed, long-term incentives that reduce the risk for outside investment. The study found that 34% of all surveyed projects accessed the Enterprise Investment Scheme (EIS), with 7% accessing the similar Seed Enterprise Investment Scheme (SEIS) – these schemes are no longer open to community energy projects. Only one respondent stated its involvement in the new Social Investment Tax Relief (SITR) scheme.

Project financing is often a complex and challenging process for many communities, requiring expensive expertise and support. Though a large number of organisations source finance through

¹⁷ A number of organisations were found to have accessed multiple sources of project finance, often across several projects

¹⁸ Community Shares (2016) www.communityshares.org.uk/open-data-dashboard

loans, the bulk of investment was found to have been accessed through share raises, bonds and debentures. Critical to share raised finance is the platform and expertise to conduct the offer, which is currently and very effectively being led by a number of professional bodies, such as Communities for Renewables, Energy4all, Ehex, Mongoose and Sharenergy. Unfortunately, the removal of both EIS and SEIS has made this form of investment less attractive, a situation which could be remedied through further tax reliefs.

Energy4All

'Supporting collaboration in the community energy sector'

Energy4All is a social enterprise that was formed in 2002 to expand the number of renewable energy cooperatives in the UK. It is uniquely owned by the co-operatives it assists, operating as an umbrella organisation for community energy groups - offering administrative and financial services to its members in return for an annual fee.

Energy4All are a key institution within the UK community energy sector, both as a support organisation as well as an energy cooperative themselves. The enterprise provides expertise throughout the sector, helping communities to realise their energy plans. Furthermore, Energy4all provide a platform and expertise to help communities to finance their projects through share raises.

In 2016 Energy4All worked with the high-street retailer Marks & Spencer to develop a community based rooftop solar initiative. M&S Energy Society was created to provide an opportunity for customers of M&S Energy and members of the general public to help raise funds to install solar panels on 8 M&S stores.

3.4. Community Outcomes

‘Community Energy Organisations have delivered over £620,000 in community benefits in the last year, delivering a wide range of social and environmental projects’

3.4.1. Economic Benefit

Economic benefit for the wider community is often at the core of a group’s rationale for developing a community energy project, as seen in previous research conducted in the UK¹⁹. As a means to an end, economic benefits from a community energy project are the most straight forward means of supporting development in the local community.

Many groups utilise a community benefit fund to support local initiatives and objectives, offering a quantitative means to understand financial income flowing into communities from their energy activities. Though community benefit funds give a useful understanding of the value of money available for local reinvestment, further financial benefits are provided in the form of interest payments to shareholders and in many cases, direct funding for local initiatives and projects.

In total, the study found that community energy organisations generated £620,000 for their community benefit funds over the 12 months up until 2017, across 52 organisations. Respondents reported an average community benefit fund value of £12,000, with 81% of organisations with benefit funds reporting that their fund would likely increase in value over the lifetime of the project. This is often due to decreasing financing costs leading to increasing project profitability over time.

Limited community benefit fund values were reported by some respondents due to the nature of their project, such as their financial benefits being derived from cost savings from reduced electricity prices. Further to this, a number of organisations reported that their project was at too early a stage to have accumulated a benefit fund of notable value. 60 respondents stated that they expect an increase in community benefit fund value over the lifetime of their project. It is clear that the financial value of the sector goes far beyond the community benefit funds (see details in section 3.4.3), although the benefit funds will grow substantially in the coming years.

South East London Community Energy (SELCE)

‘The benefits of community energy where they are needed most’

SELCE’s primary aim and income has been to provide renewable energy across community buildings in South East London. 326kW peak of solar installed on 7 local schools will save them an estimated £445,000 on the costs of their electricity over the 20-year project and reduce CO2 emissions by 146 tonnes annually. These were financed through a local community share offer with a target return to investors of 4%.

Outside of the direct financial benefits of the project, SELCE has a commitment to reducing fuel poverty in their area. We hope to raise

£130,000 over the lifetime of the solar panels to fund fuel poverty alleviation. We have started working on this through grant-funded projects such as one-to-one advice and energy cafés in the local area, reaching over 1081 individuals and households over the last 3 years.

¹⁹ Hagget et al. (2013) Community energy in Scotland: the social factors for success



3.4.2. Environmental Benefit

Of the 144 organisations which responded to the survey, 34% of respondents reported environmental objectives as part of their community’s motivations for their energy activities.

Based on the annual generation values reported in this study, community energy projects have provided an emissions reduction of over 110,000 tonnes to date. This total equates to 1.2m passengers flying between Edinburgh and London or the annual emissions of 200,000 households²⁰.

The amount of CO₂e emissions offset by the sector is likely to be significantly higher, as generation activities provide the most accurate and quantifiable emissions reductions whereas it is difficult to define the emissions reductions resulting from other interventions, such as energy efficiency improvements, education initiatives or low carbon transport



Figure 3.11 - CO₂ savings from community energy generation

Community energy may represent a means to reducing or offsetting emissions at a local level through a positive feedback loop, where communities reduce emissions further through secondary or subsidiary energy activities to generation. 31% of groups involved in energy generation are reportedly active in improve energy efficiency, managing demand or investing in further renewables projects as a result of their initial community energy scheme.

The deployment of all types of community energy activities have been shown to greatly improve individual and community level awareness and engagement in low carbon behaviours and initiatives²¹.

3.4.3. Social Benefit

Understanding the key motivating factors behind communities’ energy projects is important in defining and targeting the support they will need over the course of their projects. A number of research projects have attempted to understand core motivations across the community energy sector, many of which are reflected within this study²².

Across the 144 organisations surveyed, the study found education initiatives to be a key outcome from respondents’ community energy projects, focusing on raising awareness and as a means of engaging the communities in the organisation’s work (47%).

More physical interventions included reinvesting in local environmental improvements (35%) (e.g.

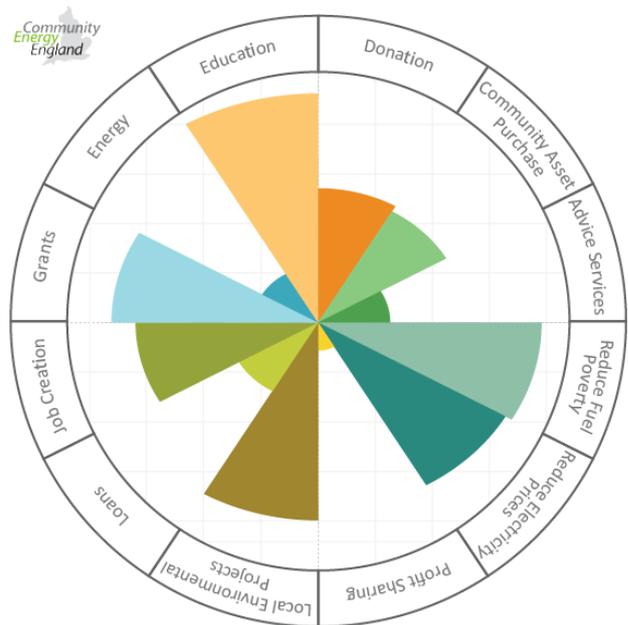


Figure 3.12 - Understanding community benefits in the community energy sector

²⁰ Based on average household fuel emissions in the UK (CSE (2013) Household emissions dataset)

²¹ 10:10 UK (2016) Community Energy: The Way Forward

²² Northern Powergrid (2016) Community Energy Research



developing community woodland) and reducing fuel poverty (33%) (e.g. supporting community energy efficiency improvements). Reducing electricity prices (31%) may also aid in fuel poverty reduction and included initiatives such as local deployment of solar PV within the community.

A smaller number of groups reported plans to provide grants (28%) and donations (16%) within their communities, much of which is linked to the creation of jobs (22%) in the local area through investment in new businesses and assets (e.g. business hubs). This ties in with several groups' plans to purchase community assets (14%), often in a very targeted manner (e.g. renovating a community hall). Few groups responded suggesting they would offer loans (5%), citing regulatory issues and a preference for direct investment or small grant giving.

The study shows that communities have a strong interest in reinvestment, but that the outcomes from their project offer as much value in social and environmental benefits, from awareness raising and improving educational programmes to obtaining and improving community assets. The added value of community energy is evident within this study and the willingness and enthusiasm of communities to share this information is testament to the importance of non-financial objectives in stimulating community energy groups and activities.

Within these benefits, there is both the scope and opportunity to create win/wins, where community energy stimulates further low carbon activity and understanding in the local community, across community energy networks and through introducing community energy to the next generation.

4 Policy & Barriers

A key objective of this report is to provide an understanding of barriers faced by community energy sector, especially in light of changes within UK energy policy and subsidy regimes. Understanding these barriers, as well as opportunities in a ‘post-subsidy’ UK, can be achieved through study of the successes and failures within the sector and analysis of the contributing factors. These factors and changing characteristics of the community energy sector, will help to define the direction the sector is taking, future opportunities within community energy and assist in defining the policy and mechanisms to support and continue sectoral growth.

4.1. A Changing Policy Landscape

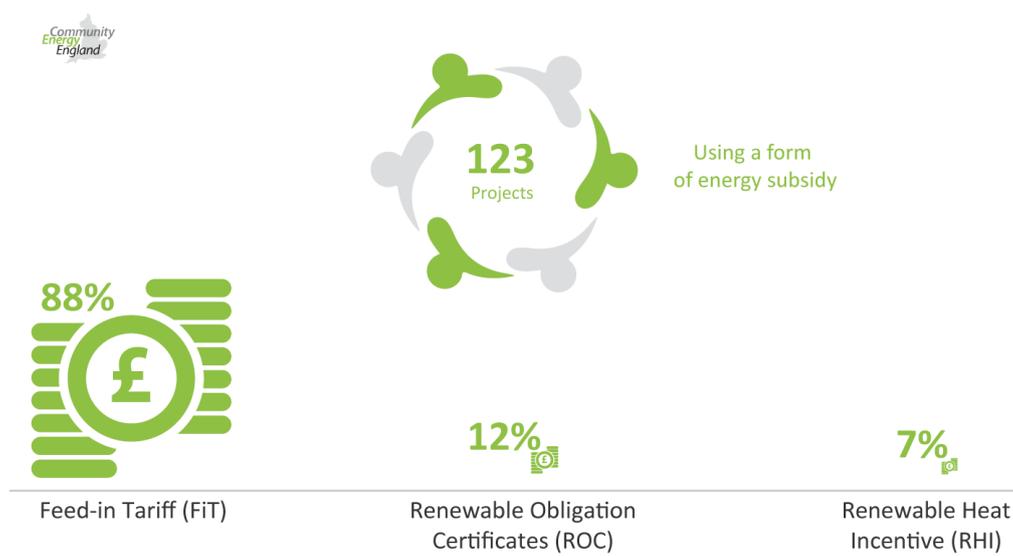


Figure 4.1 - Energy subsidy utilisation in the community energy sector

With dramatic changes in the last two years, including the reduction of the Feed-in-tariff, removal of EIS, SEIS and upcoming removal of the Renewables Obligation (RO), support for community energy projects has been greatly disadvantaged.

A large number of community energy projects have been adversely affected by these changes, including many respondents to this study. Of the 123 generation projects surveyed and which used a form of energy subsidy, 88% utilised the FiT subsidy, 12% used the ROC scheme and 7% used the RHI²³.

In terms of developing projects, 21 organisations stated that Feed-in Tariff changes was a key reason for their project stalling. A further 36 organisations stated that reinstatement of viable FiT levels or the creation of community specific support or subsidies are essential in enabling communities to realise their energy objectives.

In terms of incentivising investment in community energy projects, it was found that 60 projects had used the EIS and SEIS schemes to aid in project financing and community involvement. When looking specifically at electricity generation projects, 97% of organisations accessed EIS and SEIS to support finance raising. In total, schemes accessing either EIS, SEIS or both incentives raised a total of £89m

²³ Some organisations have accessed multiple subsidies across several projects

to finance their project, with £45.8m coming from share raises in particular. 7 organisations specifically stated that the removal of these schemes impacted negatively on the process and viability of obtaining finance for their project.

It is clear that the recent changes in the policy landscape have caused problems throughout the community energy sector at all stages and across all technologies. With a large number of successful projects reliant in part on the subsidies and incentives described above, there is a clear link between recent subsidy changes and an increasing number of failed or stalled community projects. These, or similar, support mechanisms are essential in providing the community energy sector with the security and viability to progress their projects and objectives.

4.2. Barriers to Community Energy



Figure 4.2 - Stalled community energy projects and the dominant barriers to development

The community energy sector is exposed to a variety of barriers typical within the renewable energy industry, including changing subsidy regimes, planning risk, access to finance, regulatory barriers and a requirement for niche expertise.

Of the organisations surveyed, it was found that 44 of the 144 organisations surveyed have a project that is considered stalled or currently inactive. Of these organisations, 48% stated that Feed-in Tariff changes are a major barrier to their project, with 34% also noting capital finance barriers, often as a result of a lack of subsidy support. Further barriers to project development included planning issues (25%), engineering issues (11%), lack of expertise and local opposition (7%).

Grand Union Community Energy (GUCE) ‘The impacts of reduced subsidy and support’

GUCE, based in Hertfordshire, are involved in both the generation of electricity and in providing energy efficiency through a ‘Transition Streets’ programme to local homeowners. Set up as a BenCom, GUCE plans to develop a variety of further energy plans, including biomass, hydro, ground mounted solar.

Using a grant to conduct several feasibility studies, GUCE have not been able to progress any of the projects due to a combination of big reductions in the price of oil (which makes biomass look uncompetitive), reductions in the FIT and RHI schemes and the added difficulty of raising finance in the face of increased risks and reduced incentives – particularly the EIS and SEIS tax



A number of respondents stated that their stalled projects and future plans would not go ahead as a direct result of reduced financial viability in the face of subsidy changes and in turn an inability to raise capital. A key factor for discontinuation of projects was the time and costs already sunk into projects and business proposals, coupled with a lack of access to further funding to progress alternative proposals in future.

Planning issues, particularly planning permission refusal by local authorities, were cited as a reason for several project stalls or failures. Of the schemes that had struggled at the planning stage, respondents suggested that a better understanding of the benefits of community energy on the part of local authorities could lead to a more equitable and impactful planning system.

Overall it is clear from the analysis that subsidy changes have had a dramatic negative impact on the viability and subsequent project successes in the community energy sector. A lack of viability across all generating technologies, and resulting lack of access to capital, is a critical issue in the downturn of the sector.



5 Local Authorities and Community Energy

Alongside the State of the Sector survey, a small sample of 9 local authorities were surveyed to demonstrate their current community energy activities, alongside any challenges and barriers they may face, so as to identify ways in which we can together support further activity to unlock potential community energy which contributes to the growing 'local energy' movement.

With a growing national movement actively looking to produce and supply energy at a local level there is a clear need for both the community energy sector and local authorities to understand how they can, together, help to advance and deliver powerful 'local energy' solutions. 'Local energy' can be considered to encompass "energy projects that are led by local actors for local benefit" and is increasingly recognised as an essential element in the move towards a decentralised energy system and a low carbon economy. It provides opportunities to invest in energy generation, transmission and supply, and similarly as identified and championed by community energy organisations, it allows the resulting benefits to be realised at the local level.

5.1. Investment

Where local authorities have made a serious commitment to invest in the creation and development of both community energy organisations, and subsequent community led renewable energy and energy efficiency projects there has been significant, sustained and recognised success. From setting up partnerships and development networks, to helping to facilitate the creation of community energy organisations, through to capacity building, support, leasing of roofs, funding, financing and installation - local authority investment through both financial support as well as resources, time and commitment has been an essential catalyst for community energy in their areas.

5.2. Regulatory & Financial support

Local authority support, guidance and policy has been influential in the advancement of community energy development and delivery. From reports and strategies which paved the way for, and laid out the benefits of, working effectively together with the community energy sector, to planning policies which have been adopted backing community led renewable energy schemes through local plans, neighbourhood plans and supplementary planning documents. The survey highlights that formal support to encourage the consideration and development of low carbon and renewable energy schemes which are led by or benefit the local community have been a key element in successful community energy activity in local authority areas.

Local authority grant funding has been fundamental to the initial creation of many community organisations and the development of their energy ideas from inception, feasibility and through to delivery. Local authorities have also demonstrated their ability to assist with the financing of community energy projects through loans to community energy organisations. In addition, local authorities highlighted the role they play in helping secure third party funding including; central government funding such as from the former DECC, charitable grant funding, and support for the securing of commercial loans. It is worth noting that 5 of the 9 respondents clearly highlighted that EU funding is important to their involvement and the support they provide to the development of community energy in their areas.

5.3. Engagement & Resourcing

Local forums, networks and partnerships have been shown to be an important and widespread method which local authorities can develop and sustain to engage with individuals and organisations interested in community energy as well as the wider community themselves. Such bodies provide a



mechanism by which local authorities can target and support groups, nurture ideas, share knowledge, discuss challenges and together keep informed of relevant policy and funding opportunities in the community energy sector.

It is apparent that in areas where local authorities have had dedicated staff whose role has included responsibility for supporting community energy, the result has been significant and sustained development of both vibrant community energy organisations and their associated projects. Local authorities clearly recognised that such supporting roles not only assists the development of community energy, but also helps achieve their wider policies, strategies and objectives.

**Plymouth City Council & Plymouth Energy Community
‘Mutual benefits through local partnerships’**

Plymouth City Council’s (PCC) support was integral to the development of Plymouth Energy Community (PEC) and PEC Renewables, who provide local solutions to tackle carbon emissions and fuel poverty.

The partnership has attracted over £6.5 million inward investment, delivering 32 rooftop solar installations across the city - including on rooftops leased from the Council. These rooftop schemes generate clean energy to meet needs of 500 homes and save over £100,000 per year for schools and organisations

Reaching over 12,000 households as part of efforts to tackle the cities fuel poverty level, the partnership has cleared £250,000 of fuel debt and helped save households over £500,000. PEC has trained 52 volunteers and created 7 new jobs.

PEC Renewables has also developed a ground-mounted 4.1MW solar array on land donated by PCC to Four Greens Community Trust - financed via community shares alongside a £2.8 million loan from PCC. The project will meet the annual energy needs of 1000 homes, generating £600k for the Community Trust and £2.9 million for PEC’s further work fighting fuel poverty and tackling carbon emissions.

5.4. Challenges and Barriers

The majority of the 9 local authorities responding to the survey highlight central government funding cuts to local authorities as one of the main constraints to their involvement and support to community energy organisations and projects. Alongside successive government cuts to local authority budgets, a further barrier to their involvement in community energy has been the lack of support from energy policy at a national level and the reductions to subsidies such as the FIT. Other factors affecting local authorities support to community energy in their areas highlighted through the survey included; the removal of EU funded programmes, planning policy barriers to developments, limited resources, lack of political will, and lack of experience or interest from the community itself.

5.5. Summary

This small sample of the 9 local authorities surveyed has highlighted that where support has been provided to instigate, nurture, develop and support community energy the result has been a thriving, vibrant, well developed and successful community energy scene. Where smaller levels of support have been provided, the levels of community energy activity are considerably less. It has to be remembered that the sample is just a snapshot of predominantly positive local authorities and

their relationship with community energy, it is not by any means a complete picture of the experience that community energy organisations have when engaging with local authorities across the country.

However, it can be surmised that the survey clearly indicates that support from local authorities can be an important factor in stimulating and sustaining community energy at the local level. Both parties can clearly benefit from collaborating in community energy development at the local level, but such collaborations and resultant benefits are threatened by cuts to local authority budgets, competition over resources, and the removal of subsidies and EU funding.



6 Future Outlook

The outlook for the community energy and wider energy sector is a challenging one, with an increased number of barriers to development. However, there are opportunities to innovate and find space for viable energy activities and projects which can provide a route to community benefit and development.

Of the 144 groups surveyed, 63 organisations stated that they have future plans already in place within the community energy sector, with a further 39 groups suggesting that they aspire to do further projects. Of those with plans, 36 groups intend to continue with solar PV installations, often distributed across residential and community buildings as a means to reduce local grid demand and thus energy costs. 9 groups stated intentions or progress towards community scale heat networks and associated heat generation projects.

Reduction of energy use ‘behind the meter’ has also stimulated an interest in energy storage integration to more effectively use locally produced energy. This has been aided by improvements in energy storage technologies and reduced storage costs in recent years. Projects such as these are part of an increasing focus on ‘energy systems,’ where viability is sought through integration of multiple technologies and models. As seen as part of the Scottish local energy agenda, local energy systems offer opportunities to design locally beneficial and financially viable systems with limited or in the absence of subsidy support.

Repowering Balcombe

‘Collaborative innovation in energy storage’

REPOWERBalcombe has donated £15,000 from its community benefit fund to install three 4 kWh Sonnen batteries at Turners Hill School, East Sussex. These Lithium Iron Phosphate (LiFePO₄) batteries are more expensive than the more common Lithium batteries but have a much longer life span.

The batteries will principally be charged from the school's 22kW solar array and may be charged overnight from the grid during winter months. The system currently covers almost all of the night time load and daytime demand peaks. On one day, all but 6kWh of the school's 150kWh daily demand was covered.

REPOWERBalcombe are closely monitoring the system and the information is being shared with the local authority, Imperial College London and other interested community groups.

A number of respondents stated their intentions to identify partnership and joint venture opportunities with private and public entities. Many of these groups were at advanced stages of negotiation, with collaborative approaches to solar the most common. Collaborative development of projects with private or public partners can enable communities to extend their energy ambitions to projects which communities would be unlikely to resource on their own. Reduction in financial risk to communities, as well as planning risks to developers, can make this type of model mutually beneficial. Similarly, partnership with local authorities can provide the opportunity for projects (e.g. development of public assets) and mutual local benefit in the form of income, community asset development, expertise sharing and the creation of dialogue for further collaboration.



Particularly innovative projects were also found to be at various stages, from preliminary scoping to feasibility assessments, including: hydrogen storage; local energy supply; integrated solar, battery and electric vehicle systems; energy services; and waste heat networks. These projects help to illustrate a necessary adaptability within the community energy sector, as organisations are forced to shift their focus in line with available technologies, funding and support. Though higher risk, these innovative opportunities show the resilience of the community energy sector and the drive of the organisations that form it to continue to identify and exploit opportunities to the benefit of their communities and wider networks.

Though a challenging period for the sector, community energy organisations have opportunities through a variety of innovative models and technologies. Finding means to benefit economically from low carbon technologies will be a continuing trend whilst the necessary subsidy and support mechanisms are absent. Alongside this, best practice principles and learning through partnership models with developers, public institutions and other local stakeholders may help to reduce project risk and open up further methods for benefit in the low carbon sector.

7 Conclusions

This report has provided an assessment of the current state of the community energy sector across England, Wales and Northern Ireland and it provides a platform to build upon and improve understanding of a sector that provides value and beneficial outcomes throughout communities and regions in the UK.

The frequency and impact of regulatory and tax changes as well as the large number of subsidy reductions, changes and removals have been extremely challenging for the community energy sector and are a critical contributing factor to the slowdown in sector growth. High risks and increasingly limited rewards will play a huge role in limiting the deployment of community energy projects, whilst influencing changes in the sector over the coming years.

The community energy sector is showing impressive resilience through the development of innovative new approaches to project development. From untested technologies and system innovation to partnership approaches, communities are pioneering new routes to community development and benefit in the context of an increasingly unsupportive political and economic climate. Collaboration between communities and with supporting organisations will also form an ongoing trend, reducing project risks and barriers through upscaling and resource sharing.

Creating the conditions for the continued prosperity of the community energy sector will require more than just the skills, creativity and passion of those within the sector. As the UK energy system moves away from more traditional models of energy generation and use, communities must be supported in their intentions to access new opportunities and ideas, particularly at the early stages of their energy activities. This is where government support is crucial - in supporting community successes, innovation and, ultimately, development throughout the UK.



The voice of the sector

Community Energy England (CEE) was established in 2014 as a not for profit organisation to provide a voice for the community energy sector and to help to create the conditions within which community energy can flourish. We do this by coordinating the grassroots of the sector and by advocating for supportive policies at national and local levels.

CEE represents and supports those committed to the community energy sector. Our primary objectives centre around creating a voice for the sector, supporting sector development and building cross sector partnerships. We work to support the growth of the sector by helping communities and companies raise their profile whilst encouraging new entrants with a range of tools to help get them started.

Membership is open to any organisation which shares CEE's objectives for the development of the community energy sector.

Join CEE

www.communityenergyengland.org

CEE manages the Community Energy Hub, a free to use, single point of access for information on community energy. It is designed at its core to be a platform where community energy groups can share information and resources amongst themselves and with other organisations, including potential funders or project partners.

hub.communityenergyend.org