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Rural Community Energy

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Non-technical abstract

Community energy involves locally-led renewable energy and energy-saving initiatives, often addressing climate goals and community benefits. In rural England, such projects play a crucial role in reducing carbon emissions, enhancing energy security, and fostering local resilience. Historically, community energy evolved through three phases: grassroots innovation from the 1970s, policy-driven expansion in the early 2000s, and post-2008 efforts emphasising democratisation and citizen empowerment. A fourth phase is emerging, driven by the urgent need to decarbonise and electrify society.

Rural areas face unique challenges due to high grid reinforcement costs, making decentralised energy generation and storage essential. Community organisations are well-suited to deliver these solutions, leveraging local infrastructure and long-term planning. However, barriers such as financing, governance, and grid connectivity remain significant.

Despite these obstacles, the sector is growing, with rising renewable capacity and impactful community benefits. National policy shifts, including the formation of Great British Energy, signal increasing support for scaling community energy, offering hope for overcoming current challenges and advancing rural energy sustainability.

Summary

Community energy initiatives represent a grassroots approach to achieving renewable energy, energy efficiency, and energy independence, particularly in rural areas. These projects often combine local leadership with external technical expertise, aiming to reduce carbon emissions while providing economic and social benefits. Historically, community energy has evolved through phases, from grassroots innovations in the 1970s to policy-driven expansions in the 2000s and democratisation efforts post-2008. A new phase is now emerging, driven by the imperative to decarbonise the economy and enhance energy system resilience.

Rural areas face unique challenges due to the prohibitive costs of grid reinforcement needed for widespread electrification. Community energy offers viable alternatives, such as distributed generation and local storage, leveraging communal assets such as village halls and sports facilities. However, barriers such as planning, financing, and governance persist, necessitating external support and cooperative approaches to share risks and costs.

Despite challenges, the sector is growing, with a 9% annual increase (CEE, 2024b) in renewable capacity and notable environmental and economic benefits. National policy developments, including Great British Energy and Local Power Plans, signal growing recognition of community energy's potential. To fulfil this promise, further policy and support mechanisms are needed, ensuring equitable access and scaling of community-led energy solutions.

Background

Community energy refers to the delivery of community-led renewable energy, energy demand reduction and energy supply projects, whether wholly-owned and/or controlled by communities or through a partnership with commercial or public sector partners (CEE, 2024a). Rural community energy projects in England represent a grassroots movement toward renewable energy and local energy independence. These initiatives often address dual objectives: reducing carbon emissions and improving energy security while fostering local economic and social benefits.

Rural areas have often been at the forefront of community energy development with well-known examples of the Isle of Eigg Electric and the Centre for Alternative Technology being rural pioneers of micro-grids and renewable energy. Hewitt et. al., (2019) argue there have been three phases in the development of community energy:

- 1970s-2000: Initiated by environmental movements and the 1970s oil shocks, focused on grassroots innovation and energy autonomy.
- 2000-2008: Expansion driven by state policies, subsidies such as Feed-in Tariffs (FiTs), and market liberalisation.
- Post-2008: A response to the economic crisis, emphasising energy democratisation and citizen empowerment.

It could be argued that we are now entering a fourth phase. One which is driven by the need to decarbonise the economy and build reliance into our energy system. As the country transitions to net zero, the main component of which will be to electrify transport, industry and building heating, greater pressures are placed on the electricity grid. In rural areas this pressure is felt more acutely with the cost of reinforcing the grid to cope with increased demand often being prohibitive. This means alternatives such as distributed generation and storage of electricity become the only cost-effective option to manage electrification in rural areas (Cowie et. al., 2020).

Community energy organisations are ideally placed to deliver this rural electrification. They have access to key community infrastructure such as village halls, sports facilities, community pubs and shops that can host the generation and storage of electricity. They also have the long-term planning horizons and capacity necessary to develop complex, technical and time-consuming projects.

Most of the barriers to greater development of community energy projects are non-technical. Issues around planning, financing, grid connectivity and governance of projects are time-consuming and costly for community organisations to overcome. Communities therefore need external technical support to deliver these types of projects. There is also a strong argument for tackling these projects collectively through cooperative or joint institutions. This approach pools capacity and expertise and reduces some of the risks for individual community buildings. It also spreads the costs between buildings which means some smaller rural community buildings, that on their own would be unviable, can benefit from a collective approach.

Evidence

The evidence base for community energy in the UK is fragmented, with limited quantitative data to support policymaking. Previous surveys, such as those by the Low Carbon Communities Network, the Energy Saving Trust, and Friends of the Earth, highlight that community energy initiatives prioritise sustainable energy, focusing more on conservation than generation. These initiatives often have grassroots origins, with high volunteer involvement (59%-85%), but no independent surveys have comprehensively targeted community energy groups (Sayfang et. al., 2013).

Community energy projects are founded on a mix of local place-based knowledge coupled with extra-local technical knowledge. As such they are a classic form of neo-endogenous rural development (Shucksmith, 2010). There is need to mobilise a range of actors at both the local and extra-local scale. Community energy projects also require nitration of local, regional and national socio-technical systems.

Qualitative research sheds further light on the dynamics and challenges of community energy projects, emphasising their holistic approach that integrates behaviour change, efficiency measures, and microgeneration. Key success factors include strong group leadership, adequate resources, community engagement, supportive networks, and favourable policies. Challenges mirror these factors, including resource shortages, public disinterest, and inconsistent policy support (Sayfang et. al., 2013).

There is evidence that communities are starting to find ways to overcome many of these socio-technical barriers. The 2024 Community Energy State of the Sector (CEE, 2024b) report highlights significant growth and diversification in the UK's community energy initiatives. Between 2022 and 2023, installed renewable capacity grew by over 9% annually, now producing 617 GWh, with 228,530 tonnes of CO_2 emissions saved. The sector expanded its workforce, increased bill savings, and added services like energy advice and retrofits. Challenges include stalled projects (270 MW) due to regulatory and grid issues.

There are some issues of equity and equality in the distribution of community energy. A paper by Creamer et. al., (2018) critiques the view of community energy as localised and bounded, presenting it instead as part of a trans-scalar network requiring multi-sectoral collaboration. Effective intermediary organisations play crucial roles in bridging gaps, fostering partnerships, and ensuring equity in participation and outcomes.

Community energy projects therefore are a blend of grassroots efforts, influenced by cultural, social, and geographical factors coupled with extra-local partnerships with the public sector and private sector technical specialists. Getting the balance between these stakeholders is key to delivering equitable community energy projects. The risk is that only those communities with high levels of human, financial and social capital will be able to fully engage in these initiatives.

1. There is still a need for changes to national energy policy to promote and support community energy. There is some evidence that policy under the new Labour Government is shifting in the right direction. One of the five national missions is to make Britain a clean energy superpower. This includes initiatives such as the formation of Great

British Energy which will have as a priority "scaling up municipal and community energy" (Labour, undated). There is also a new Parliamentary enquiry, "Unlocking community energy at scale" which is considering the policy steps that can be taken to support community energy. These initiatives do show a move to take a more coordinated approach to community energy from a policy context which is welcome.

Final overview

Community energy is moving to a new phase. This reflects the challenge of decarbonising and electrifying society and the economy. This is shining greater attention on community energy as a key piece of the decarbonisation jigsaw, particularly in a rural context.

Whilst there is evidence of community energy's growing impact and achievements, there are still significant barriers to its continued growth. These challenges span governance, finance, grid connectivity, availability of smart meters, planning and smart export guarantee tariff levels.

Despite these challenges, community organisations have demonstrated the sector's viability, achieving an 80% increase in energy output between 2017 and 2023 (CEE, 2024b). Local initiatives continue to engage residents in sustainability efforts and create economic and environmental benefits.

National policy developments such as the formation of Great British Energy and Local Power Plans give hope that the challenge is understood at the highest level and steps are being taken to resolve and overcome the challenges.

Community energy has the potential to be transformative for rural energy sustainability and resilience. As it develops and grows it does need continued support to ensure the momentum being developed is not lost and wasted.

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