Stepping-Stones to Community Energy in the Derbyshire Dales

Sustainable power, *for* and *from* local communities

Full Report

January 2021

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with thoughtful input from other Derbyshire Dales residents

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Foreword

Who are we?

We're a group of Derbyshire Dales residents. We care about our place, our people and our communities. We are keen to take local action on mitigating climate change and promoting social justice.

There are unique opportunities in our area for securing a healthy, flourishing future for all. We recognise community energy as a viable platform for stimulating social and ecological change – we hope to inspire other residents to engage with the idea of community-owned, renewable energy here in the Derbyshire Dales.

We are a non-partisan collective, bringing diverse skills and knowledge. If you wish to ***support the growth and success of renewable, community-owned energy*** *and act on the ideas presented in this report, in any capacity:*

contact us at: **ddenergyd@gmail.com**.

Stepping-stones to community energy in the Derbyshire Dales

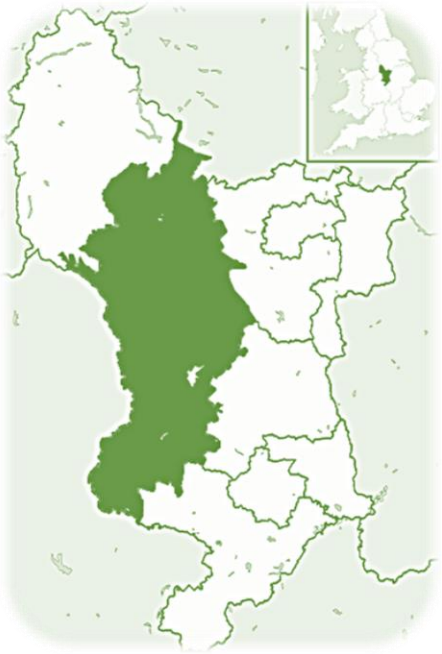
In this introductory report, we explore the important role of energy in transitioning to vibrant, exciting, sustainable futures.

The Derbyshire Dales District Council has declared a climate emergency. Responding to this, we look beyond a straight swap of fossil fuels for renewables and focus on the local benefits and wider advantages to be gained through **energy democracy**.

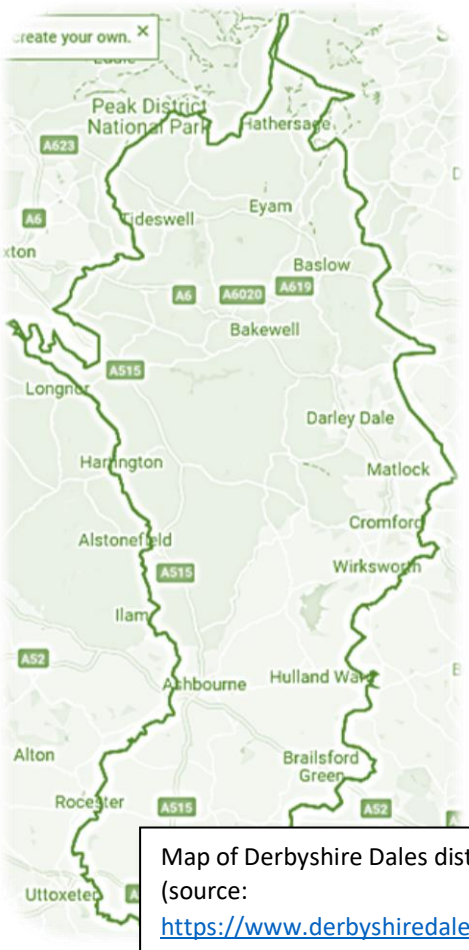
The Derbyshire Dales covers an area of 306 square miles. A large portion of this lies within the Peak District National park, which boasts some 560 miles of rivers. We have abundant natural resources, a rich variety of people and skillsets, and a cultural heritage of industry, innovation and creativity.

Average household electricity consumption in the Dales is 4385 kWh/year; above the national average of 3794 kWh/year. A decisive shift to community-owned renewables could empower and unify urban and rural communities across the district. As well as combating climate change, this could enable greater social equality, tackle fuel poverty and fund community causes. The creation of multiple, mutually-supportive energy co-operatives can help achieve these transformations.

Together, we can work *with* our environmental and social realities to step into an era of sustainable thriving.



Map of Derbyshire, UK, with Derbyshire Dales highlighted (source: https://upload.wikimedia.org/wikipedia/commons/e/e0/Derbyshire_Dales_UK_locator_map.svg)



Map of Derbyshire Dales district boundary (source: https://www.derbyshiredales.gov.uk/your-council/data-information/boundary-map)

Overview

Energy democracies are already powering place-based community revolutions. As individuals and communities, we share a responsibility to use energy systems for more than just the generation and consumption of electricity. With energy democracies, we can widen our scope to tackle issues such as environmental justice, economic equality and global wellbeing. In asking ourselves, "What *will* I permit in my back yard?" – we become empowered to creatively and proactively respond to the social and environmental challenges of our time.

Here, we explore the bright ideas relating to successful community energy. What does "energy democracy" actually mean? How does community-owned energy work? What are the key success factors, and how does it benefit people as well as planet? We include examples of existing projects to explore real-life stories of community energy.

This report provides an insight – a first stepping-stone – into **sustainable power *for* and *from* local communities.**

Energy democracies

The term "energy democracy" covers a range of different uses and contexts. It prioritises fair, inclusive ways of generating, providing and managing energy.

It advances the renewable energy revolution by including social and ecological benefits which are decentralised – i.e. local regions own and control the benefits, rather than large corporate monopolies. Often the benefits are 'noncommodifiable': they are social and ecological, rather than private financial gains.

Energy democracies recognise energy as a common resource to be supplied fairly across our societies. They involve participatory decision-making processes, employing local citizens' strong understanding of their community's needs and interests.

To create an energy democracy, we must rethink energy. What is it for? *Who* is it for and what does energy justice look like? How should it be distributed? How do energy networks need reconfiguring or creating to support this?

Community-owned renewable energy

Many community energy models exist, embracing the values of energy democracies. These initiatives are directed and controlled by the local citizens. They may exist as companies or co-operatives; may or may not interact with the National Grid; and often interact with other community energy projects – creating a unique energy ecosystem.

Community energy models are constantly evolving and adapting as technologies advance, regions develop, and regulations or support schemes change. Some examples of approaches include Peer-to-Peer Sharing, Energy Hubs, Smart Villages and Virtual Power Plants. These emerging models explore how to deliver efficient generation, provision, monitoring and/or exchange of energy amongst networks. Co-operatives are increasingly looking to energy storage systems to capitalise on mixed generation methods, increase self-sufficiency, increase their revenue or provide stability to a 'smart' grid.

Communities' options for electricity generation include wind turbines, hydro power and solar photovoltaic (PV) panels. Other renewable energy options include anaerobic digestion (biodegrading organic matter to produce methane (biogas) and digestate (fertiliser)), biomass and Combined Heat and Power systems. Whilst they can be useful, these latter examples produce greenhouse gas emissions, and therefore this report will focus on examples of 'cleaner' electricity from wind, water and sun.

Prioritise placing solar panels on rooftops, instead of ground-mounted on land. Whilst building solar farms *can* marginally improve biodiversity – e.g. compared to grazing pasture, by adding a wildflower seed mix or hedges – biodiversity could be improved much more if the whole site were regeneratively planted, or used usefully for food-growing. Given how precious our land is, we recommend that solar panels are first affixed to existing buildings/structures.

"As the number of dispersed, renewable energy schemes increase it is essential to engage the general public so they feel involved, consulted and supportive of the transition away from centralised fossil fuel and nuclear power stations. One of the most effective methods to engage people with projects is through ownership, where the benefits of development are received by both individuals and communities and are real and tangible."

– Energise South Co-op

Common features of renewable energy co-operatives

- They work outwards: from the place towards desired results (rather than inwards, from existing, external systems). As such…
- …they are not fixed to a standardised model: they respond to the physical and social realities of the place, and are constantly developing as the sustainable energy sector progresses.
- Groups usually require a defined legal structure – often a Community Benefit Society with a Board of 5-10 Directors.
- Participatory processes are embraced in all decision-making.
- They create something definable as a 'Local Energy Plan' (LEP) – an articulated, publicly available action plan.
- Finance is usually raised via share or bond offers which encourage local people to invest. These are sometimes supplemented with grants or loans.
- Share or bond offers are ways of recruiting members. Minimum investment is usually £100-£250, maximum usually £20,000-£100,000.
- Each member has one vote, regardless of the number of shares held. Members vote to elect the Board, and on new ideas and directions for the co-op.
- Some co-ops have an advisory/support organisation to offer expertise, facilitate share offers and manage administration.
- They can operate either on- or off-grid. The energy system can be connected to the National Grid via an electricity sub-station, which is metered and sold to an electricity supplier via a Power Purchase Agreement. Or, the energy system can be connected to a nearby building via private cabling, and sold directly to that building at a negotiated rate. Or… researchers are currently exploring the potential for 'microgrids' and alternative kinds of networks…
- The revenue generated from selling the electricity is used to create benefits to local people and projects: e.g. delivering returns and paying interest on members' shares (2-9%); funding environmental/community projects related to the co-op's objectives; or supplying electricity at a discounted rate to a nearby building.

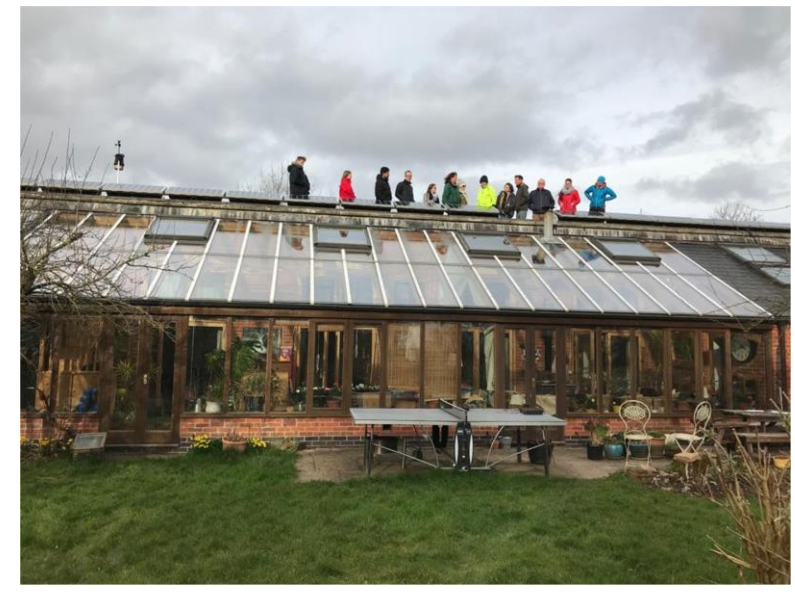
Decarbonising, democratising, decentralising

Common aims of energy co-ops: to combat climate change; alleviate fuel poverty; improve energy security; enable communities to have ownership of, and contribute to, renewable energy generation; provide local people with income/investment opportunities; create local jobs; fund local environmental or community related causes; educate and inspire people to use low carbon, renewable energy; and to advise others on sustainability and energy efficiency.

Co-operative values and principles:

Self-help and self-responsibility
Democracy and equality
Honesty and openness
Social responsibility
Autonomy and independence
Member economic participation
Opportunities for education
Concern for community
Co-operation among co-operatives

(From https://www.westmill.coop/co-op-values)



Case studies

Here we showcase existing community energy initiatives – some local to Derbyshire, some further afield – highlighting their successes and gaining inspiration from their stories.

Westmill Wind Farm Co-op: exemplary community engagement

Quick facts

Location: Swindon, Oxfordshire
Dates: co-op established 2004; electricity generation began 2008
Energy: 5 wind turbines generating 10.2 GWh/year (powering approx. 3000 homes/year), saving 2378 tCO_2e/yr
2260 **members**

The landowner, Adam Twine, is an organic farmer sympathetic to community and environmental issues. The wind farm was his idea…and it took him 13 years to gain planning and community approval. He created a local support group called WOW (Wind Over Westmill), which provided information and engaged the community through public meetings, talks, exhibitions, stalls, debates and open days on site. Eventually they sufficiently countered the many negative views and misconceptions about wind power – and raised £4.2 million through share offers.

"Without the dedication of Adam, WOW and the members, Westmill Wind Farm would not have succeeded."

Westmill have established a real sense of identity around their wind farm. Through their charitable trust, they have funded insulation and solar panels on community buildings and created education packs on energy and sustainability. Children from 5 local primary schools have named the turbines, and over 11,000 visitors have had educational adventures with Wind Warrior, Gusty Gizmo, Spinner X, Huff'n'Puff and Zeus… Even a long-standing objector changed his mind following his granddaughter's school trip there: she returned brimming with enthusiasm for the benefits to the community, the environment and her future.

"Westmill's success has demonstrated that ordinary people can co-operate to achieve what politicians talk about."

Four Winds Energy Co-op: a local example

Quick facts

Location: Duckmanton (near Chesterfield) and Shafton (near Barnsley)
Date: 2014
Energy: 2 wind turbines generating 2.5 GWh/year (powering approx. 715 homes/year), saving 583 tCO_2e/yr
842 **members**

Four Winds shows us that with a flexible approach – in this case, 2 wind turbines in different locations – we can create energy co-ops anywhere. Their share offer targeted locals but was open to all, and raised £3.4 million. Their community fund has recently paid for composting toilets at Rhubarb Farm and LED lights at the Oxcroft Centre.

They demonstrate the benefits of collaborating with other co-ops for greater success. They were supported by Energy Prospects Co-op, who afforded them additional finance for the project development phase. In 2016, Four Winds' community fund raised enough to pay for solar PV on Duckmanton primary school. They engaged the Schools' Energy Co-op, who installed the panels for free!

Torrs Hydro: cultural connections, past, present and future

Quick facts

Location: New Mills, Derbyshire
Date: 2007
Energy: 9m reverse Archimedes screw hydro turbine generating 136 MWh/year (powering approx. 40 homes/year), saving 32 tCO_2e/yr
230 **members**

One of England's first community-owned and -operated hydropower schemes, Torrs Hydro have built on their cultural connections as an old mill site, using local stone for the additional construction and providing picnic benches to invite visitors to soak up the atmosphere. The turbine is also fish-friendly due to its slow rotation. Torrs worked with the Environment Agency, who funded a fish pass to enable migratory fish to travel upstream.

Torrs used a combination of share offers and grants to enable them to fund the scheme: raising £125,000 in shares and the remaining £165,000 in grants. The electricity is sold directly to the local Co-op supermarket. Members receive share interest, or they can choose to donate it to the community benefit fund. This fund has contributed hugely to local projects, including: a solar schools initiative, community orchard, heritage centre, One World Festival, volunteer centre, environmental education programme and Walkers Are

Welcome. They have also sponsored trees, helped food banks and hosted art projects… ensuring the cultural connections extend long into the future.

Bristol Energy Co-op: rising to the challenge of decentralised energy

Quick facts

Location: Bristol
Date: 2011
Energy: solar PV generating 9.4 GWh/year (powering approx. 2700 homes/year), saving 2192 tCO_2e/yr. Energy storage: 1 x Tesla battery

Bristol Energy Co-op show us what can be achieved when we think big. Since their inception, they have raised over £12 million, established 13 rooftop solar sites, 2 solar farms and a grid-servicing battery, and donated £250,000 in community benefit payments. They have had several rounds of fundraising (including share and bond offers, grants and loans) to facilitate each subsequent expansion of energy provision. Their entrepreneurial, joined-up approach has enabled them to employ paid staff to develop the project further. They also work with the Centre for Sustainable Energy to fund research. Now, they're expanding into hydropower and exploring the potential for community 'microgrids'.

BEC are a perfect example of a co-op which tackles social and environmental issues concurrently. They fund initiatives which support vulnerable people, refugees and minority communities – for example, Lawrence Weston housing & health projects, the Green & Black Ambassadors Project and Solar Aid. In collaboration with another co-op, Low Carbon Gordano, they set up the Megawatt Community Energy Fund, which has funded tree planting, rainwater harvesting, cycle stands, energy efficiency in YMCAs and businesses, families' Gardening for Good…the list goes on and on.

Wey Valley Solar Schools Co-operative: bridging environment and education

Quick facts

Location: Surrey
Date: 2011
Energy: solar PV generating 500 MWh/year (powering approx. 145 homes/year), saving 117 tCO_2e/yr

This schools' co-op is showing how schools, their pupils and the planet can benefit from a collaborative approach. They've installed solar panels on 10 schools and 1 church. Each school has its own monitor, so pupils learn about solutions for a sustainable future from a

young age. The co-op donates profit to the schools, and so far have shared out £45,000 between them! This has a huge impact on our under-funded state schools, enabling them to upgrade facilities and implement programmes which benefit the pupils and the environment.

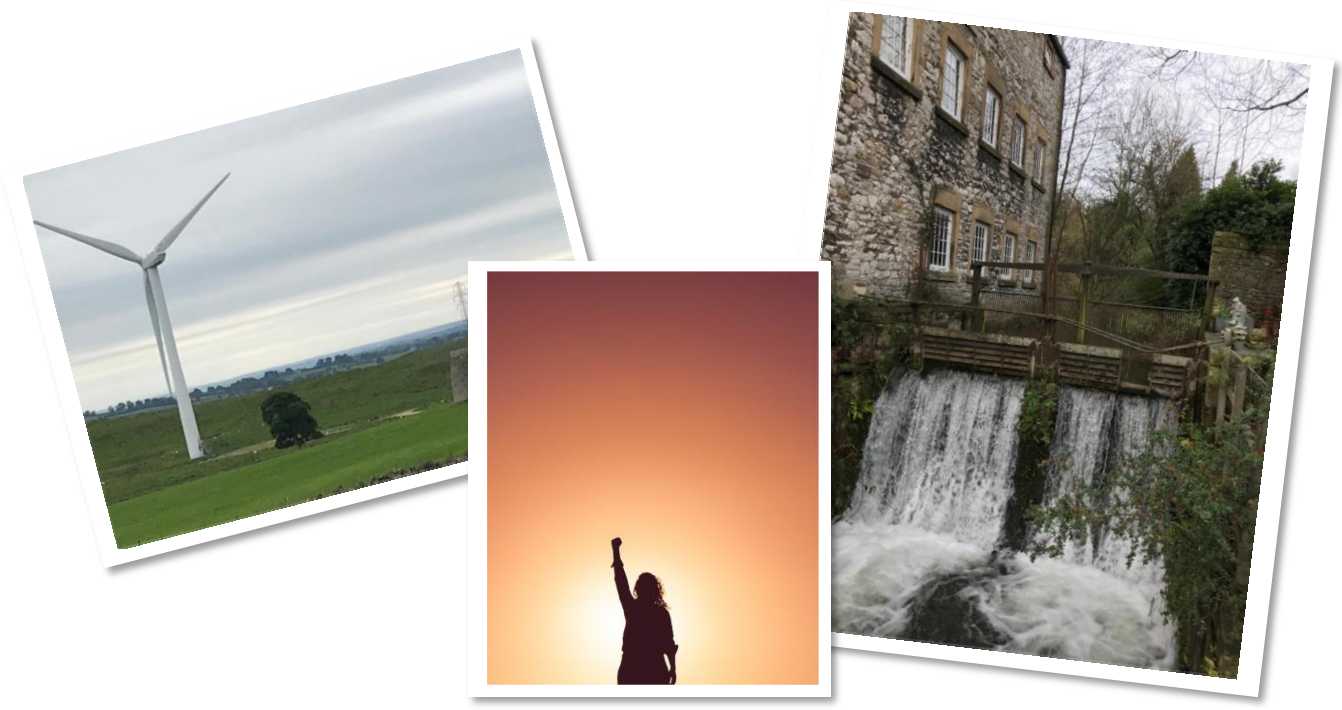
"[Pupils] will be able to monitor the output and see the savings made both financially and environmentally. It is a fantastic opportunity to see renewable energy live instead of just hearing about it or watching video clips, and to be involved."

M&S Energy Society: business going green

Quick facts

Location: nationwide
Date: 2016
Energy: solar PV generating 693 MWh/year (powering approx. 200 homes/year), saving 162 tCO_2e/yr

M&S have taken the initiative and formed a co-op, enabling people from across the UK to buy shares in their solar panels. This funded the installation of PV on the rooftops of 8 M&S stores, and this green electricity is bought and used by those stores. They provide 5% interest annually to shareholders. Once shareholders' capital is returned, they plan to build up their community benefit fund, and members will vote on which projects should be awarded funding.



Success factors

"We can live comfortably and responsibly" – Repower Balcombe

Here we present some of the key factors which contribute to projects' success:

Community & engagement

- **Environmentally- and community-minded stakeholders**. Supportive land- and site owners are especially important.
- **Creative community engagement** strategies which both 'speak and listen'. Locals need to be informed and also have their views heard.
- **Clear aims and targets**: enabling people to understand and 'get behind' the vision.
- **Use proactive, positive messaging** to unite people.
- **Prioritise locals** in the share offers: this can help engage people and foster a sense of ownership.
- **Amplify the benefits** by integrating additional ecological, social or economic initiatives into the project. Unite with other organisations to realise these ambitions.

Community engagement can be facilitated through surveys, open meetings, stalls, talks, workshops, social media, local media outlets or advertising campaigns…

Raine Power Co-op: a rural farming village of 160 people spread over 20 square miles. They **conducted a carbon footprint survey** and the results were unusually high – due to the lack of public transport and mains gas services, and the necessity of 4-wheel drives. This inspired them to take action to reduce their footprint.

Repower Balcombe: a clear aim of generating the equivalent of 100% of the village's electricity; with 10% through the first solar project. Positive messaging:

"We are not anti- anything: we are pro-community and pro-renewables."

West Solent Solar have planted hazel around their solar farm, which can be coppiced and used for structures or crafts.

Project planning and delivery

- **Work *with* the unique local assets**: geographical character, infrastructure, culture and community ambition.
- **Appropriate specialist knowledge** and expertise is needed to make the vision a reality.

- **Highly skilled members on the Board of Directors**: especially in finance, law and marketing. Other relevant professions include sustainability, renewable energy, engineering, science, ecology, policy, planning and management.
- **Strong and thorough project planning**, including a financial plan.

To access the necessary specialist knowledge, consider contracting professionals for technical assessments, installation and maintenance. Many successful co-ops also engage the support of an advisory organisation, e.g. Energy4All.

Some co-ops **include a Director with an unrelated or non-technical background**, who:

"asks the [valuable] stupid questions"…

Finance, partnerships and networking

- **Fundraising for development phase**, e.g. to cover feasibility studies and planning fees.
- **Identify people and organisations to collaborate with:** e.g. other co-ops, councils, charities, businesses, community groups…
- **Scale-up and network!** Governmental support for small-scale renewables is not strong at present, so communities and co-ops need to unite to create financially viable projects.
- **Actively participate in research projects,** which can enable further funding as well as develop the renewable & community energy sector.
- **Share resources** across your network: e.g. knowledge, research, ideas and finance.

Adding **battery storage can increase opportunities** for selling to the grid at peak times – and therefore for a higher price. This also builds the grid's 'smart' capacity, enabling greater grid stability.

Creating partnerships with large landowners, e.g. local authorities, can help projects scale up.

Other co-ops or grant bodies can **provide finance for project development phases**.

Action steps

What next for the Derbyshire Dales' local energy revolution? Here are some ideas for the next steps…

- ➔ Unite with other people/organisations who are interested in developing the idea of community energy within Derbyshire Dales. Actions to consider:
- What types of renewable energy are viable in our area? This may lead to feasibility studies, technical and Environmental Impact assessments. Are there any pre-existing initiatives near us?
- Gain a solid understanding of what is involved in instigating a community energy project. Seek advice from other co-ops or support organisations. Research the options for finance and networking: how to make it feasible.
- Attract people with the relevant skills to develop the project. Are there any skills missing in the group that we need to develop?
- Identify potential land or building owners who may interested.
- Gain an understanding of local residents' views, e.g. through open meetings or surveys.
- Instigate conversations with town, parish, district and county councils to discover if we can forge a mutually-beneficial partnership.

Further action could then involve:

- ➔ Formalising our project: gaining a legal structure for the group, designing aims and targets, comprehensive planning and fundraising…away we go!
- ➔ Creating an information hub for the district: to facilitate conversations, share knowledge and resources, and connect organisations and communities to further the development of energy co-operatives. This could include online spaces such as websites or social media forums, or (offline) meetings and education workshops.

Inspired?

To get involved and support this initiative, please contact us on:

ddenergyd@gmail.com