The Climate Action Fund Learning Signposts #6

Energy: community energy, energy efficiency and skills development

Produced by Rhona Pringle, CAG Consultants, on behalf of The National Lottery Community Fund

Contents

Energy: community energy, energy efficiency and skills development

Who is this for?

This learning signpost is primarily intended for people involved in Climate Action Fund projects and other projects or groups that are involved in reducing energy use or generating low carbon energy. It shares some of the early learnings from Climate Action Fund projects that are working in this area.

Introduction

Energy use in UK buildings contributes to significant levels of carbon emissions through heating, hot water and use of appliances. This presents opportunities to reduce carbon emissions through local renewable energy generation and energy efficiency projects, along with lowering energy bills.

More recently, significant increases in energy bills have highlighted the challenges of our dependence on global fossil fuel markets for power and heat; partly driven by energy supply shortages as countries recovered from the COVID-19 pandemic in late 2021/early 2022. This was exacerbated by renewable energy sources, such as wind and solar, producing less power and experiencing increased demand for heating during the winter months[1].

Figure 1: Urban Sustainability Accelerator NKCE celebrates a solar installation on the Westway Sports Centre. Photo by Joe Burrows

Community energy projects can have multiple benefits, including lower energy bills, building skills in a community to develop and manage energy systems, stimulating the local economy, as well as reducing carbon emissions[2]. They are also 'uniquely placed to engage the public in the energy transition to a decarbonised network'[3].

1 energysavingtrust.org.uk/why-are-energy-bills-going-up/

2 communityenergyengland.org/pages/ben-efits-of-community-energy

3 committees.parliament.uk/publications/5718/documents/56323/default/

Some lessons emerging from the projects we highlight in this resource are:

Do:

- **Keep up to date with regulations**, but also recognise that regulations are constantly changing and that there is a need to be adaptable!
  - Example; Nottingham Energy Partnership is a member of the Retrofit Centre for Excellence, run by the Retrofit Academy, which gives access to **PAS 2035**[4], along with updates and other information about standards, but also recognise that regulations are constantly changing!
- **Be ambitious, but recognise where additional resources are needed**, e.g. staffing, training, volunteers etc. and devise a plan for securing these.
- **Prioritise recruitment** to ensure you have the right resources to deliver.
- **Think carefully about recruitment** (when, how and exactly what you need) and allow for flexibility. The perfect person may not be out there, so consider how training, sharing a role or changing plans might allow you to achieve the same aims.
  - **Be open to adapting the project based on the needs of the community and the wider context** – e.g., the effects of energy price rises and the cost or availability of retrofit materials.
- **Ground conversations** in the issues that are important to your stakeholders rather than to you.
- **Ask for advice** from experts.
- **Reach out to other organisations** and ask what they can offer in terms of sessions, visits, workshops etc.
- **Ask students for feedback** (in this case the Climate Challenge College energy module students).

4 knowledge.bsigroup.com/products/retrofitting-dwell-ings-for-improved-energy-efficiency-specification-and-guidance-3/standard

Don't:

- **Don't put too much emphasis on individual action.** It can be easy to get caught up in the energy use of individuals and households, but it's important to keep linking back to the bigger picture and what can be achieved through collective action. For example, simple energy efficiency measures installed in an individual household might only achieve a few kWh energy and CO2e savings, but if all households across a city did this, this would be a substantial amount.
- **Don't forget to follow up with those you've engaged with.** Getting as many people signed up to mailing lists will help ensure they get regular updates. The Future-Fit Homes project is developing a database of individuals they have engaged with, adding contact details and permissions given for how they want to be contacted in the future. They are also scheduling in follow-up questionnaires for individuals who have taken part in the Future-Fit homes part of the project to find out what they have been able to action based on the services that have been provided, and to signpost them to further services (workshops, grants and funding etc.) that could be helpful.
- **Don't assume that everyone's motives are the same.** You may be interested in the **Britain Talks Climate** toolkit developed by Climate Outreach, which is 'designed to support any organisation that wants to engage the British public on climate change'. The evidence-based toolkit groups the population into seven different segments based on people's core beliefs.
- **Don't try to fit too much into the curriculum.**

Project 1: Urban Sustainability Accelerator

Led by Repowering London, a not-for-profit community energy development organisation and Energy Garden. They are working in partnership with Community Energy London and Imperial College to accelerate the urban energy transition by developing a local energy service model, building new tools to engage and empower local communities to take action on climate change, and developing innovative finance mechanisms for community energy projects.

Support from the Climate Action Fund has allowed project partners to invest in their teams and spend more time outside of their organisations, building new networks and recruiting allies that haven't been involved in climate action before. This has in turn generated new conversations, new ideas and injected new energy into their work.

How Repowering London installed new renewable energy capacity

"We have recently completed the first rooftop solar project of our newest co-operative Aldgate Solar Power. We have secured grant funding from the Mayor of London and the City of London Corporation and taken out a loan from the Esmée Fairbairn Foundation to cover the remaining project costs. The solar panels were installed in April, and in August we completed a community share offer to pay back our loan and bring the solar panels into community ownership. The volunteers, Directors and our Community Champion worked together on the community share offer and achieved a resounding success – the funds were raised in less than two weeks. The share offer was even oversubscribe, receiving more than £25,000 of pledges.

"We are close to completing a number of feasibility studies across London, including in Lambeth where we aim to install 1MW of community-owned rooftop solar – as part of our wider goal of installing 5MW of community-owned rooftop solar in London by 2025. As Lambeth Council is prioritising other means to install rooftop solar on their building stock, we are working with our volunteers and Champions to identify private/commercially owned sites in the Borough. To gain a better understanding of the different risk profiles involved, we are taking advice from community energy groups across the country who have experience in this field. At the same time, we are developing new financing mechanisms to support community energy installations subsidy-free, and legal templates that reflect these new business models."

Figure 2 - Urban Sustainability Accelerator, ASP panel on the Middlesex Street Estate. Photo by Joe Burrows

How Repowering London engaged with communities and individuals and how this translates into them taking climate action

"With the support of our Community Champions, we have engaged a diverse range of communities and individuals in our community energy co-operatives, which include Lambeth Community Solar, North Kensington Community Energy (NKCE) and Aldgate Solar Power (ASP). Their engagement has taken various forms: volunteering for their local co-operative; taking on leadership roles as directors; becoming community energy supporters, and participating as co-operative members.

Volunteers, Directors and Community Champions have worked together on different projects and activities such as organising local climate events, running educational workshops on energy efficiency and solar power, connecting with local environmental groups, building political support for community energy, identifying sites for solar panel installations, and developing communication materials to explain the benefits of community energy to a diverse audience."

Taking climate action with our community energy co-operatives enables further behaviour change. A survey conducted in 2021 by Community Energy England among our co-operative members and volunteers showed that:

- Almost half of the respondents said their relationship with Repowering London was "extremely" or "very helpful" in enabling them to learn how co-operatives work and talk more to friends, family, neighbours or colleagues about community energy.
- More than half of the respondents said that Repowering London had some influence over them taking pro-environmental actions such as reducing energy consumption, changing lights to LED bulbs and fittings, and switching to a green/renewable energy supplier.

"We have also engaged with communities and individuals in other London boroughs, by participating in local events to present our work, growing our communications through our website, newsletters and webinars, and running climate and energy efficiency workshops.

All this work has enabled us to grow our network of community energy supporters. People have pledged to invest in future share offers of our three co-ops, and we are continuously increasing the number of subscribers to our mailing list. This contributes to our potential to raise more funds through community share offers in the future."

Successes so far

- The profile of community energy has increased significantly as more people look for alternatives to the current energy system and we get better as a sector at telling our stories.
- The film **We The Power**, a collaboration between Energy Garden and Patagonia, has been viewed over one million times.
- ITV news recently included Repowering London in a segment on the evening news.
- New renewable energy capacity has been installed through photovoltaic arrays (PV).
- There has been engagement with new community groups and people who haven't taken climate action before.
- Advice and support have been provided to communities struggling with the effects of high energy costs.
- New financing mechanisms have been developed to support community energy installations.
- Relationships have been strengthened with local authorities, transport authorities and other public sector bodies whose property portfolios can support new low-carbon and biodiversity infrastructure.
- New relationships have been built with private sector businesses who wish to support the community energy movement.

Learning so far

Engaging with diverse communities

- This is key to demonstrating that community energy can be for everyone and building a wider movement, which in turn can raise more investment, identify new sites for low-carbon infrastructure, and create demand for more community and climate-friendly policies at a local and national level. An important part of the project has been building a more diverse movement.

Funding

- One of the main challenges faced has been the lack of government support and funding for community energy. The project teams have been finding ways to increase the revenue that community energy projects can generate and develop alternative sources of funding.

Growing teams

- The project teams have grown significantly in a short amount of time, which has required more management and pastoral support. This was particularly challenging during a time when we were also managing the ongoing effects of the pandemic.

Consider working with a wider range of site owners for rooftop solar projects early in the process

- Delivering rooftop solar projects on privately/commercially owned sites involves different risk profiles from the organisations' existing projects and poses new challenges. However, it also helps to mitigate the risks of a narrow focus on partnerships with particular site owners, such as local authorities. "We would consider working with a wider range of sites and landlords earlier in the process."

Start work on other retrofit technologies sooner

- The recruitment process for new team members to work on the programme of retrofit work has been slow. This process could have started earlier to maximise the window for developing and delivering much-needed retrofit initiatives.

Site-specific challenges

- There are complexities involved in installing solar PV in an urban environment.
- There has been a lack of communication from some local authorities and site owners.

Links

Sources of information that the project team have found really helpful include:

- The Carbon Co-op webinar programme and Friends Provident Foundation have information looking at the community-led delivery of low-carbon retrofit, which inspired the team's thinking as they move beyond rooftop solar projects.
- To find out more see: repowering.org.uk

Project 2: Future Fit Homes, Green Meadows

Nottingham Energy Partnership are working with homeowners in the Meadows area to develop step-by-step, bespoke Future-Fit Home plans which lay out a pathway to reduce household energy use by at least 50% over the next 15-20 years.

Nottingham Energy Partnership followed the steps below to do this:

Carry out an in-depth assessment of the home and how the occupants use it

Complete detailed modelling based on the result of the survey

Assess which energy efficiency improvements would be suitable

- Model the potential energy and cost savings
- Estimate installation costs

Produce a detailed, step by step plan for the homeowner

Nottingham Energy Partnership then deliver the plan to the homeowner and go through it with them in their home, answering any questions and making further recommendations about measures that they could complete themselves. They also discuss how the wider Green Meadows project can support the adoption of the plan, e.g. their DIY Future-fit workshops, which provide homeowners with the practical skills to implement parts of the plan, as well as the knowledge to confidently engage installers and contractors.

The project uses the information gathered to build a database to allow modelling of different decarbonisation scenarios for the area. This is to determine the barriers to reducing the energy use and carbon emissions of the Meadows and to target the projects' work to overcome these barriers.

nep nottingham energy partnership

How Nottingham Energy Partnership have carried out the in-depth assessment of the home and how the occupants use it

"The assessment is based on a PAS 2035 retrofit assessment, and includes:

- a measured survey of the property
- survey of the building construction, materials, any adaptations to the original building
- review of existing energy efficiency measures (insulation, renewable technologies)
- occupancy assessment, gathering information about how the household uses energy in the home, and their priorities (e.g. reducing energy bills, improving comfort, reducing carbon emissions)
- building condition survey, picking up on defects which might affect the installation of any energy efficiency measures, or upcoming repairs and maintenance which could be coordinated with upgrades
- significance assessment (if the property was constructed before 1919) to identify important elements and features of the building for conservation purposes
- airtightness testing
- survey of heating system and other building services including ventilation."

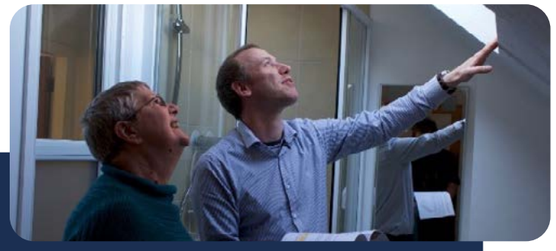

Figure 3 - Future Fit Homes, home assessment plan being delivered and explained to the client

Figure 4 - Future Fit Homes, plan being delivered and explained to the client

How Nottingham Energy Partnership do the detailed modelling based on the result of the survey

"Using the information gathered via the assessment, the team complete full Standard Assessment Procedure (SAP) modelling for the building. This includes calculating the u-values of all building elements, and quantifying other heat loss paths (e.g. thermal bridging, air leakage) to compare how energy is lost via different parts of the building.

We then model a full range of appropriate energy efficiency measures to evaluate the different retrofit options and estimate costs for each, to allow the payback periods and cost-effectiveness of measures to be compared. The results of this modelling and assessment process inform the Future-fit plan that we produce for the household."

Learning so far

Impact of changing regulations

A lot of new regulations have been introduced around domestic retrofit since the project application was submitted. These include PAS 2035 and the associated British standards (e.g. BS5250[5] for moisture in buildings, BS7913[6] for conservation of historic buildings). The team decided that the work they are doing would be most helpful to the community in the long-term if they could make it compliant with these new regulations. "This required the team to work in a certain way, to get staff members qualified via relatively long and intensive training courses, and to tailor the recruitment according to the requirements of the new standards." This had a big impact on project timelines and delayed the launch of the Future-fit project.

Adapting the project scope

- The team had to apply for match funding in order to engage professionals with specific conservation accreditations, so that the project could include work with certain house types (those in the conservation area). This part of the project had diverged significantly from the original plan, which was simply to complete surveys of homes in order to gather information to model different retrofit and carbon reduction scenarios at a local level.
- Overall, the direction that the project has taken will have more direct benefit for the households themselves and embed learning and knowledge transfer within the project to encourage more bottom-up action.

A longer development phase needed

- Since starting the project, it became apparent that the skill sets and expertise required to fulfil some roles were quite niche, particularly with new regulations requiring specific qualifications to be completed for compliance purposes.
- The recruitment landscape has changed significantly since the project began, and recruiting for the assessor role has been a struggle which has further delayed progress. "In hindsight, recruiting much earlier for this role and assigning a larger budget for salary and training would have been beneficial." Equally setting aside a greater amount of time for the development of the service was necessary – the hope had been to be able to hit the ground running but in fact most of the first year has been spent in development, which has been hugely valuable but has not produced the results hoped for in the first year.

Links

To find out more see:

- Nottingham Energy Partnership: greenmeadows.uk/future-fit
- Video of the Future Fit Green Meadows project by CAF Content Creation Partner Glimpse

5 energysavingtrust.org.uk/why-are-energy-bills-going-up/
6 communityenergyengland.org/pages/benefits-of-community-energy

Successes so far

- There has been a good level of uptake for the project, even though it is still in the early stages of delivery and marketing has been kept to a minimum.
- The plans have been well received and the experiences of working with communities to pilot the project and develop it based on their feedback have been positive.
- A comprehensive library of information has been built up about different energy efficiency measures with accessible language and effective images.
- The development process has allowed us to determine where there are gaps in current retrofit supply chains and delivery models and to adapt the programme in response. An **Energy Systems Catapult** report shows there are retrofit skills gaps in: property assessment, advice and customer care, low carbon heating installation and technology integration.

Project 3: Climate Challenge College

The Climate Challenge College is part of Tod college, run by the Todmorden Learning Centre and Community Hub. The College teaches an Energy module as part of the curriculum on their Green Futures course. The module covers many different types of energy sources including renewables, such as wind and solar, and alternative options, such as biomass and nuclear. The course also includes the current energy situation and what the issues are with relying on fossil fuels as a main energy source.

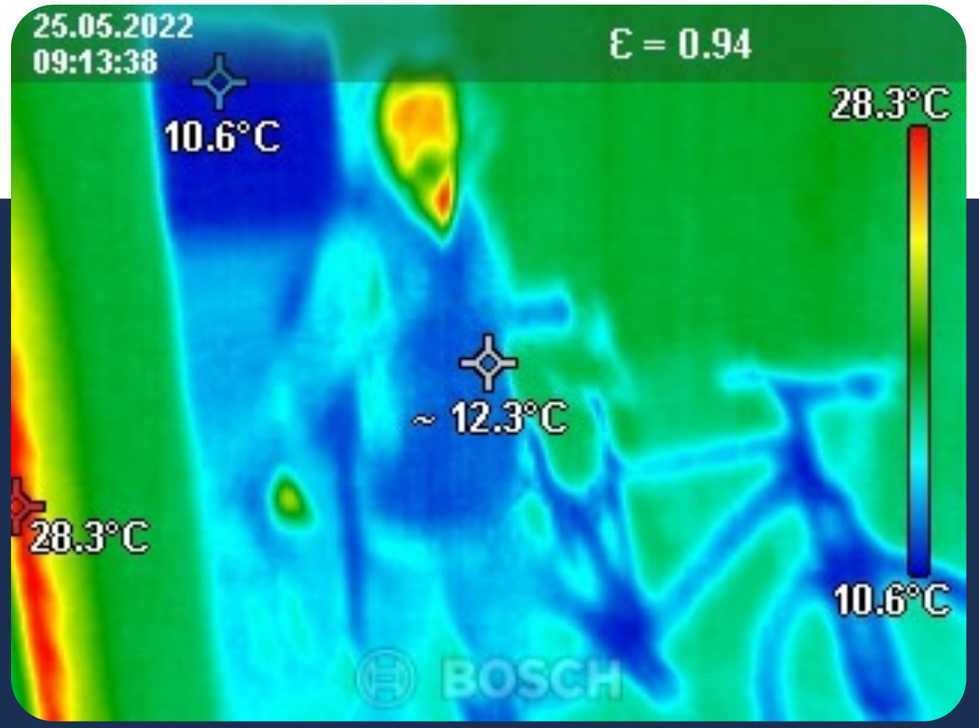

Figure 5: Climate Challenge College, Image from the thermal imaging camera

Learning so far

Outcomes for learners

- The course has provided the students with an insight into a variety of different energy sources. It has given them an understanding of current energy issues and the alternative options that are available. The course has also shown them examples of these energy sources in use and has introduced them to people working in the field.

Adapting teaching methods aid understanding

- The practical, hands-on demonstrations and visits have worked well. They have solidified the learning of the theory. For the students, the module proved to be more technical and scientific and some struggled with the complexity of the subject. They found the classroom-based sessions weren't engaging and would have liked more practical elements, as with the other areas of the course. The college would like to include more practical workshops, such as a build-your-own mini wind turbine, where the students could gain a full understanding of the technology. They would also try to teach energy subjects in a different way, again through something practical, rather than teaching a class with a presentation.

External expertise helped guide curriculum choices

- It was difficult for the college team to put together the content for the energy module as they didn't have much background knowledge or experience to build upon. A panel of advisors was set up who had expertise within the field to help guide the choices for the curriculum. This was also the area of the course for which the college didn't have a regular tutor, meaning that teaching was scattered across many different people.

Knowledge gained from first year informing future module development

- The college team now have a better understanding of the subject and can make informed decisions about what to include on the curriculum. With experience and working with experts in the field, they are now more aware of what works well as part of the course, and what doesn't.

Figure 6 - Climate Challenge College, Visiting a wind farm

Links

To find out more see:

- Tod College Climate Challenge College: tlchub.org.uk/climate-college/
- Green Building Store: greenbuildingstore.co.uk/
- Trust Renewables: trustrenewables.com/

Successes so far

The Energy module has included the following:

- A variety of workshops, talks and visits have been delivered, covering different areas of energy, from small-scale wind to large-scale hydro. Examples include:
  1. A representative from Trust Renewables, a solar energy company, came to talk to the students about solar technology.
  2. A community hydro expert presented his work in the specialised area of Archimedes screws.
  3. A visit was made to a local mill which relies 100% on renewable energy with solar panels, an Archimedes screw and a ground source heat pump.
- Energy efficiency of homes and buildings is another topic included on the course. It explores the problems with the way many buildings work in terms of energy efficiency and examines how initiatives such as retrofit can lead to improvements. This includes using a thermal imaging camera while exploring the college building to identify where heat escapes.
- The college worked with the Green Building Store which specialises in the **Passivhaus building standard** with high energy efficiency, as well as in **Enherphit**; the Passivhaus standard of retrofit. Visits were made to two buildings, one of which was a new build home that was built to Passivhaus standard and a barn which had been retrofitted to meet the Enerphit standard.

How the Advisory Panel supports course development and delivery

The Advisory Panel (AP) brings together a range of individuals with specialist knowledge to contribute to the project. The role of the AP is consultative; panel members were consulted on specialist topics throughout the course development and delivery stages. The input of the AP has been crucial to shaping how the curriculum looks today. During the development process, we consulted with the AP to gather initial objectives which to structure each module. Once these were fleshed out, we shared drafts again for feedback. This process was repeated three times; each version becoming more detailed and specific.

During course delivery, panel members were also invited to the college to meet with the students on three occasions. The purpose of these sessions was for the students and panel members to find out about each other, their interests, share ideas and network. During these sessions, some of which were planned by the CCC staff and others by the students themselves, students had the opportunity to share their initial project ideas for questions and feedback. Debate and discussion took place around a 'big question' and climate anxiety. AP members were able to share their experiences, advice and talk about their work and career path. This was helpful in broadening the students' awareness of the education, training and 'green jobs' which could be available to them in the future.

Other resources produced by The National Lottery Community Fund

The National Lottery Community Fund has produced a Power of the Collective Energy piece, which shares information on community energy projects – which include both energy efficiency and energy generation, with links to sources for further information.

A video of the Greener Kirkaldy project providing energy advice in the community has been developed by The National Lottery Community Fund's content creation partner, Glimpse.

Other sources of information

- The Climate Change Committee – **Heat and Energy Efficiency in Buildings**
- **Energy Savings Trust**
- **Northern Ireland Community Energy**
- **Community Energy Wales**
- **Community Energy Scotland**
- **Community Energy England**
- IEA Commentary: **Empowering people to act: How awareness and behaviour campaigns can enable citizens to save energy during and beyond today's energy crisis.** 13.7.22
- **Carbon Co-op People Powered Retrofit**

Acknowledgements:

We are grateful to the following for their help in compiling this resource.

- Felix Wight, Repowering
- Eva Goudouneix, Repowering
- Laura Brain, Green Meadows project, Nottingham Energy Partnership
- Chelsie Naylor, Climate Challenge College, Tod College

COMMUNITY FUND

About the Climate Action Fund

The Climate Action Fund is a ten-year £100 million fund supporting communities across the UK to take action on climate change.

About The National Lottery Community Fund

We are the largest non-statutory community funder in the UK – community is at the heart of our purpose, vision and name. We support activities that create resilient communities that are more inclusive and environmentally sustainable and that will strengthen society and improve lives across the UK. We're proud to award money raised by National Lottery players to communities across England, Scotland, Wales and Northern Ireland, and to work closely with government to distribute vital grants and funding from key Government programmes and initiatives. As well as responding to what communities tell us is important to them, our funding is focused on four key missions, supporting communities to:

4. Come together
5. Be environmentally sustainable
6. Help children and young people thrive
7. Enable people to live healthier lives.

Thanks to the support of National Lottery players, we distribute around £500 million a year through 10,000+ grants and plan to invest over £4 billion of funding into communities by 2030. We're privileged to be able to work with the smallest of local groups right up to UK-wide charities, enabling people and communities to bring their ambitions to life.

National Lottery players raise over £30 million each week for good causes throughout the UK. Since The National Lottery began in 1994, £47 billion has been raised and more than 670,000 individual grants have been made across the UK – the equivalent of around 240 National Lottery grants in every UK postcode district.

www.tnlcommunityfund.org.uk

ENERGY: COMMUNITY ENERGY, ENERGY EFFICIENCY AND SKILLS DEVELOPMENT
Produced 2022 Published 2023